ICT Development trends and approaches for Digital Transformation

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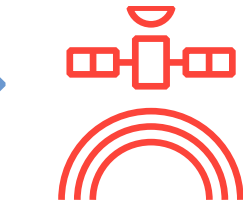
4 September 2019

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

+800 MEMBERS FROM THE PRIVATE SECTOR, ACADEMIA AND INTERNATIONAL AND REGIONAL ORGANIZATIONS

Asia–Pacific: Opportunity in diversity

38 Member States

79 Sector Members,

76 Associates

48 Academia

Small Islands Developing States (12)

Least Developed Countries (12)

- AFGHANISTAN
- Bangladesh
- BHUTAN
- Cambodia
- LAO, PDR
- NEPAL
- Myanmar
- Timor Leste

- Kiribati
- Solomon Is.
- Tuvalu
- Vanuatu

- Fiji
- Maldives
- Marshall Islands
- Micronesia
- Nauru
- Tonga

Low-Income States (10)

- D.P.R. Korea
- India
- Indonesia
- MONGOLIA
- Pakistan
- Philippines
- Sri Lanka
- Vietnam

Middle and High Income States (10)

- Australia
- Brunei Darussalam
- China/Hong Kong
- I.R. Iran
- Japan
- Malaysia
- New Zealand
- Rep. Of Korea
- Singapore
- Thailand

Land Locked Developing Countries (5)

Digital transformation is key to accelerate our progress towards SDGs..

17 Sustainable Development Goals

169 Targets

Broadband Commission for SDG 2025 Targets

1. By 2025, all countries should have a funded national broadband plan or strategy, or include broadband in their universal access and services definition.
2. By 2025, entry-level broadband services should be made affordable in developing countries, at less than 2% of monthly gross national income per capita.
3. By 2025 broadband-Internet user penetration should reach:
   a) 75% worldwide
   b) 65% in developing countries
   c) 35% in LDCs
4. By 2025, 60% of youth and adults should have achieved at least a minimum level of proficiency in sustainable digital skills.
5. By 2025, 40% of the world's population should be using digital financial services.
6. By 2025, un-connectedness of Micro-, Small- and Medium-sized Enterprises should be reduced by 50%, by sector.
7. By 2025, gender equality should be achieved across all targets

Growth

1

Enable and foster access to and increased use of telecommunications/ICT in support of the digital economy and society

by 2023...

65%
of households worldwide with access to the Internet

70%
of individuals worldwide will be using the Internet

Internet access should be
25%
more affordable (baseline year 2017)

all countries adopt a digital agenda/strategy

increase the number of broadband subscriptions by
50%

40%
of countries to have more than half of broadband subscriptions more than 10 Mbit/s

40%
of the population should be interacting with government services online

Goal 1

Inclusiveness

2

Bridge the digital divide and provide broadband access for all

by 2023...

in the developing world,

60%

of households should have access to the Internet

in the least developed countries,

30%

of households should have access to the Internet

in the developing world,

60%

of individuals will be using the Internet

in the least developed countries,

30%

of individuals will be using the Internet

the affordability gap between developed and developing countries should be reduced by **25%**

(baseline year 2017)

Goal 2

Inclusiveness

2

Bridge the digital divide and provide broadband access for all

by 2023...

broadband services should cost no more than

3%

of average monthly income in developing countries

96%

of the world population covered by broadband services

gender equality in Internet usage and mobile phone ownership should be achieved

enabling environments ensuring accessible telecommunications/ICTs for persons with disabilities should be established in all countries

improve by

40%

the proportion of youth/adults with telecommunication/ICT skills

Goal 2

Sustainability

3

Manage emerging risks, challenges and opportunities resulting from the rapid growth of telecommunications/ICT

by 2023...

improve cybersecurity preparedness of countries, with key capabilities: presence of strategy, national computer incident/emergency response teams and legislation

increase the global e-waste recycling rate to

30%

raise the percentage of countries with an e-waste legislation to

50%

net telecommunication/ICT-enabled Greenhouse Gas abatement should have increased by

30%

compared to the 2015 baseline

all countries should have a National Emergency Telecommunication Plan as part of their national and local disaster risk reduction strategies

Goal 3

Innovation

4

Enable innovation in telecommunications/ICT in support of the digital transformation of society

by 2023...

all countries should have policies/strategies fostering telecommunication/ICT-centric innovation

Goal 4

Partnership

5

Strengthen cooperation among the ITU membership and all other stakeholders in support of all ITU strategic goals

by 2023...

increased effective partnerships with stakeholders and cooperation with other organization and entities in the telecommunication/ICT environment

Goal 5

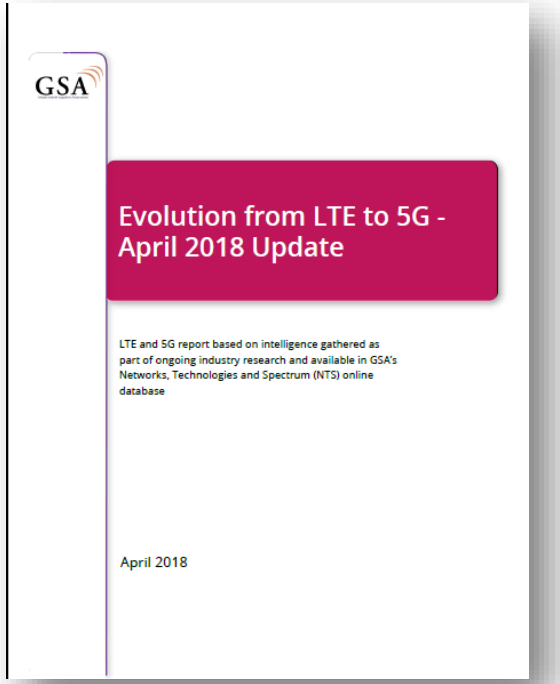
Estimates of the Global Market: 2015, 2016, 2017, 2020 and 2021

	2015	2016	2017	2020	2021
Mobile cellular subscriptions	7.2 bn (ITU) 7.2 bn (GSMA) 7.2 bn (E)	7.4 bn (ITU) 7.5 bn (GSMA) 7.5 bn (E)	7.74 bn (ITU) 7.8 bn (E)	8.3 bn (GSMA) 8.4 bn (E)	8.4 bn (GSMA) 8.6 bn (E)
Unique mobile phone users	4.6 bn (GSMA) 5.0 bn (E)	4.8 bn (GSMA) 5.1 bn (E)	5 bn (GSMA) 5.3 bn (E)	5.4 bn (GSMA) 5.7 bn (E) 5.4 bn (Cisco)[3]	5.5 bn (GSMA) 5.8 bn (E)
LTE subscriptions	1.1 bn (GSMA) 1.1 bn (E) 1.37 bn (ABI Research)[4] 1.068 bn (GSA)	1.8 bn (GSMA) 1.9 bn (E*) 2 bn (Strategy Analytics[5])	2.6 billion (GSMA) 2.8 bn (E*)	4.1 bn (GSMA) 3.5 bn (ABI) 4.8 bn (E) 3.6 bn (4G Am)	4.5 bn (GSMA) 5.3 bn (E)
5G subscriptions	-/-	-/-	-/-	70 m (GSMA) 55 million (E)	220 m (GSMA) 190 million (E)
Mobile broadband subscriptions	3.2 bn (ITU) 3.4 bn (GSMA) 3.6 bn (E)	3.65 bn (ITU); 4.1 bn (GSMA) 4.5 bn (E)	4.2 bn (ITU) 4.8 bn (GSMA) 5.3 bn (E*)	6.5 bn (GSMA) 7.0 bn (E)	6.9 bn (GSMA) 7.5 bn (E)
Smartphone subscriptions	3.3 bn (GSMA) 3.3 bn (E)	3.9 bn (GSMA) 3.8 bn (E)	4.5 bn (GSMA) 4.4 bn (E*)	5.9 bn (GSMA) 5.8 bn (E)	6.2 bn (GSMA) 6.3 bn (E*)
Fixed broadband (ITU)	820m (ITU)	884m (ITU)	979m (ITU) 1bn (E*)	1.1 bn (E*)	1.2 bn (E*)
Internet users (ITU)	3.21 bn (ITU)	3.49 bn (ITU)	3.58 bn (ITU)	4.16 bn (ITU)	-/-
Facebook users	1.59 bn MAU 1.04 bn DAU[6] (Dec 2015)	1.71 bn MAU 1.13 bn DAU	2.13 bn MAU 1.4 bn DAU	-/-	-/-
LINE users	215 million	217 million	207 million	203 million	-/-
Sina Weibo users	222 million	313 million	392 million	411 million	-/-
Vkontakte users	66.5 million	77.8 million	81.1 million	97 million	-/-
WeChat users	600 million*	806 million	963 million	1 billion	-/-
Smartphone stock	2.2 bn (Del)	-/-	-/-	2.1 bn (BI)[7]	-/

Source: Various. EST = Estimate. BI= Business Intelligence; Del = Deloitte; Facebook, E = Ericsson Mobility Report June 2018 at: https://www.ericsson.com/assets/local/mobility-report/documents/2018/ericsson-mobility-report-june-2018.pdf GSMA = GSMA database.

MAU = monthly active users; DAU = daily active users.

** Mid-year figures. https://investor.fb.com/investor-news/press-release-details/2018/Facebook-Reports-Fourth-Quarter-and-Full-Year-2017-Results/default.aspx and https://zephoria.com/top-15-valuable-facebook-statistics/*

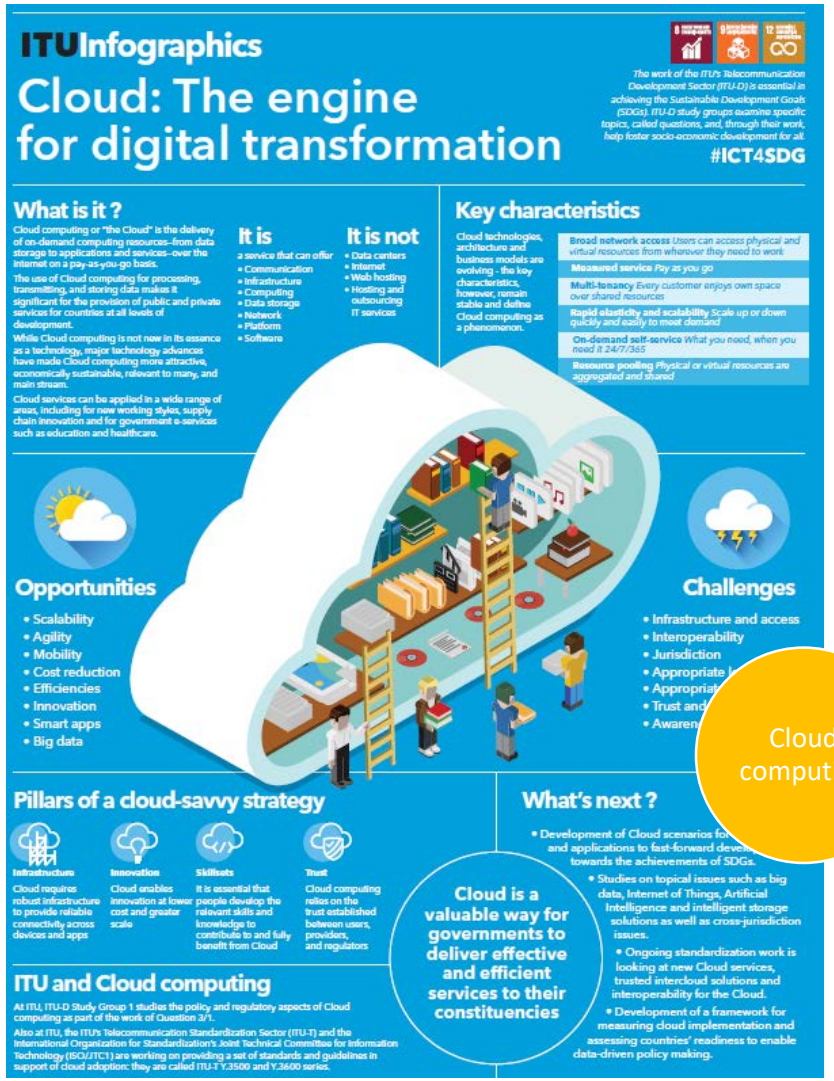


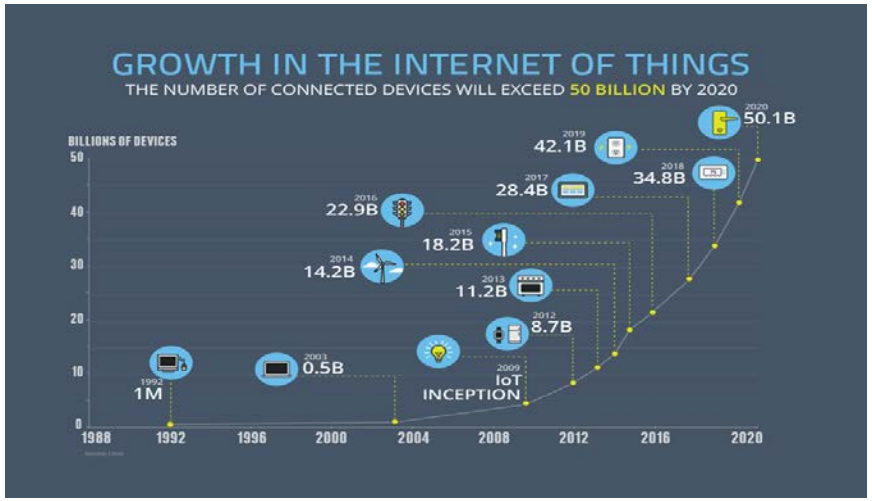
Report: Evolution from LTE to 5G, GSA

https://gsacom.com/

•• **858** operators investing in LTE, including pre-commitment trials.
•• **672** commercially launched LTE or LTE-Advanced networks in **204** countries, including those using LTE for FWA services, and including **111** LTE-TDD (TD-LTE) networks launched in **58** countries.
145 commercial VoLTE networks in **70** countries and **224** operators investing in VoLTE in **102** countries.
•• **241** launched networks that are LTE-Advanced in **115** countries.
•• **four** launched networks that are capable of supporting user equipment (UE) at Cat-18 DL speeds (within limited geographic areas)
•• **680–700** anticipated commercially launched LTE networks by end-2018 (GSA forecast).
•• **50** NB-IoT and **15** LTE-M/Cat-M1 networks commercially launched with **58** other operators investing in NB-IoT and **19** other operators investing in LTE-M/Cat-M1 in the form of tests, trials or planned deployments.
•• **134** operators that have been engaged in, are engaged in, plan to engage in, or have been licensed to undertake 5G demos, tests or trials of one or more constituent technologies.
•• at least **48** operators that have now made public commitments to time-lines for deployment of pre-standards '5G' or standards-based 5G networks in **33** countries.

Cloud Computing, IOT, AI, Big Data , Blockchain Machine Learning





Internet of Things

Big data

Cloud computing

Artificial Intelligence

Focus Group on Technologies for Network 2030: ITU- T SG 13

32 UN Agencies (May 2018)
35 innovative project proposals leveraging the power of ICT

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?

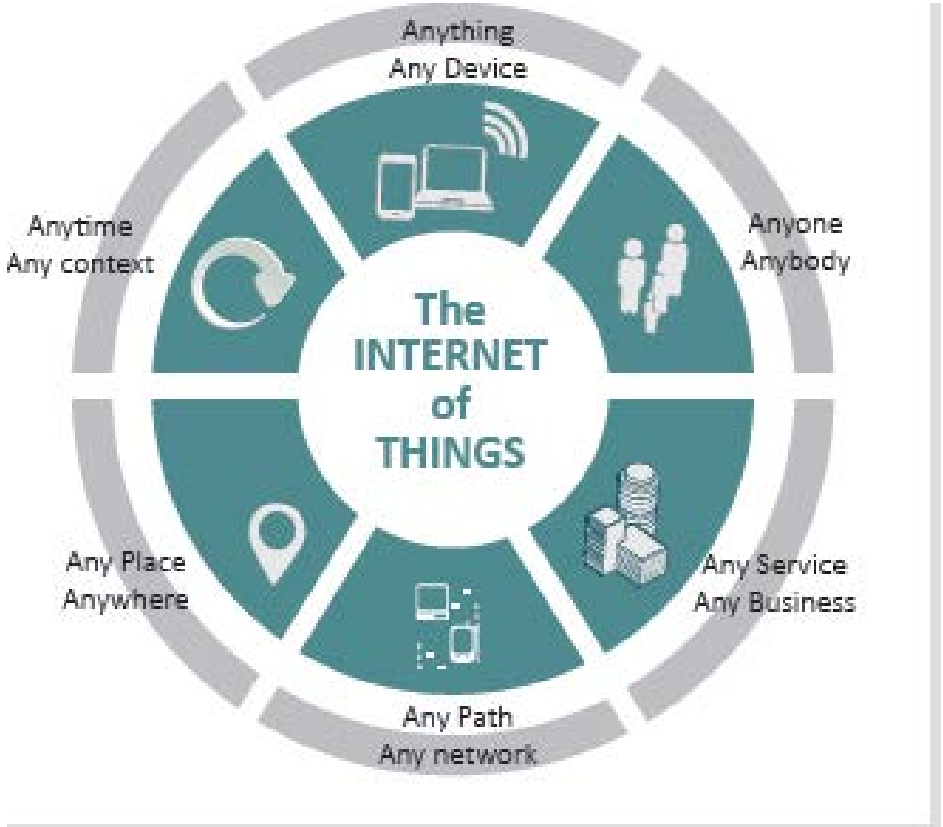
Device manufacturers, network operators, application platforms, software developers and (cloud-based) data analytics services providers

How Is It Accessed?

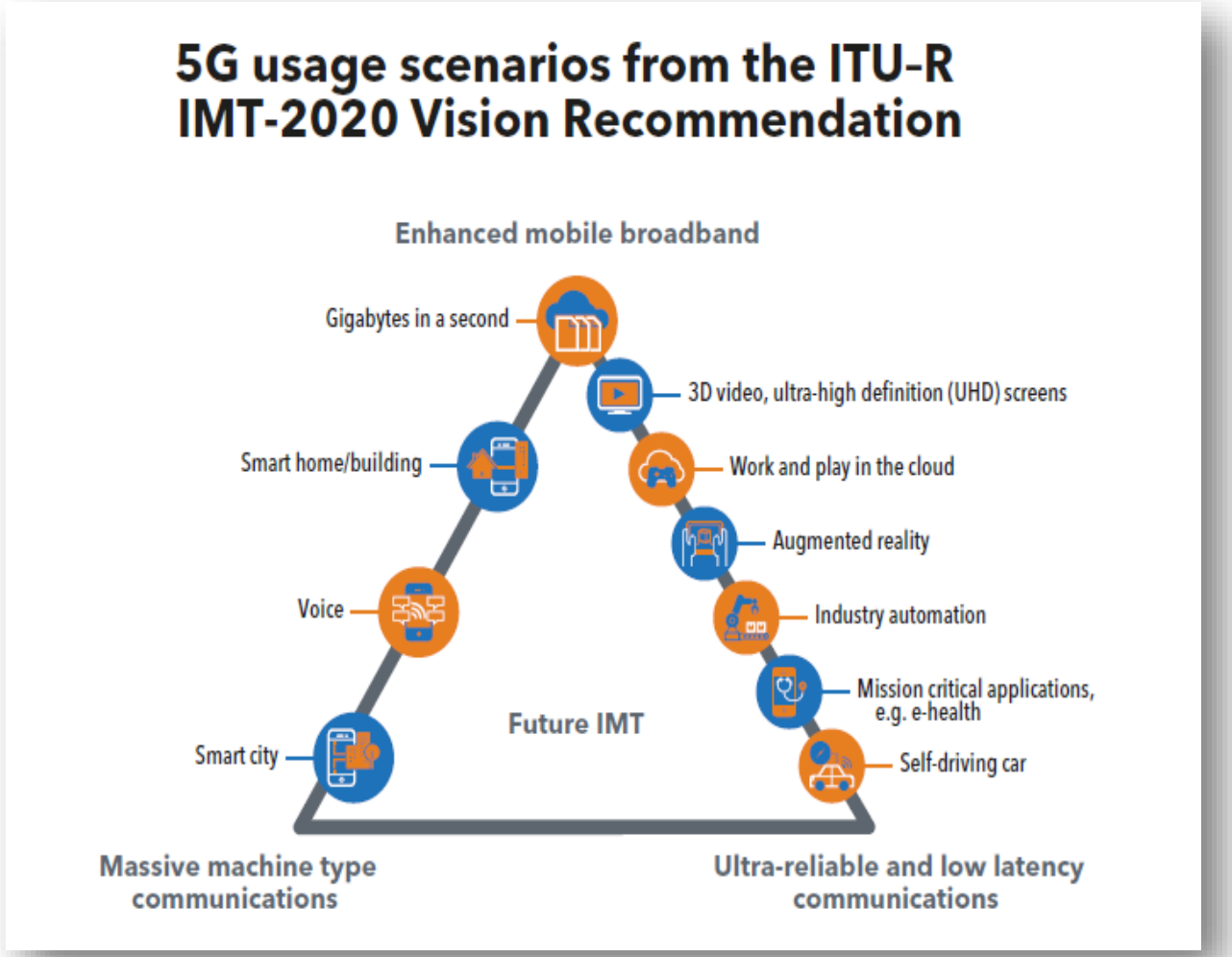
Connection of IoT devices via Wi-Fi, Bluetooth, mobile phone networks, specialized radio networks, global Internet

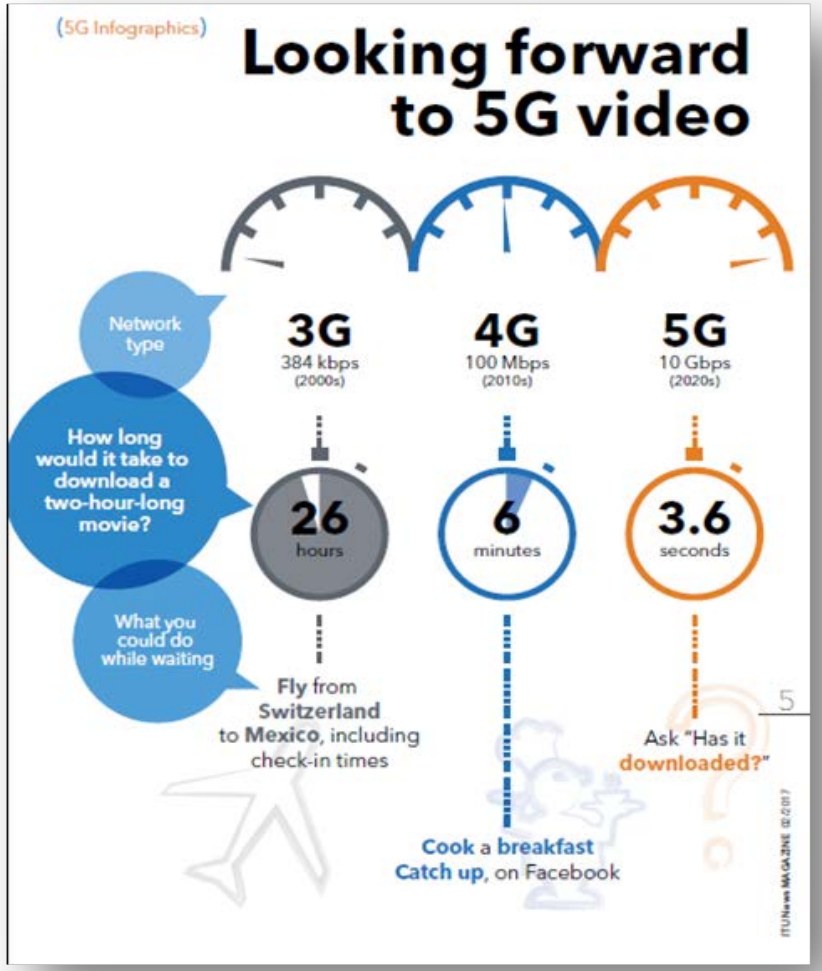
Main current areas of investment

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

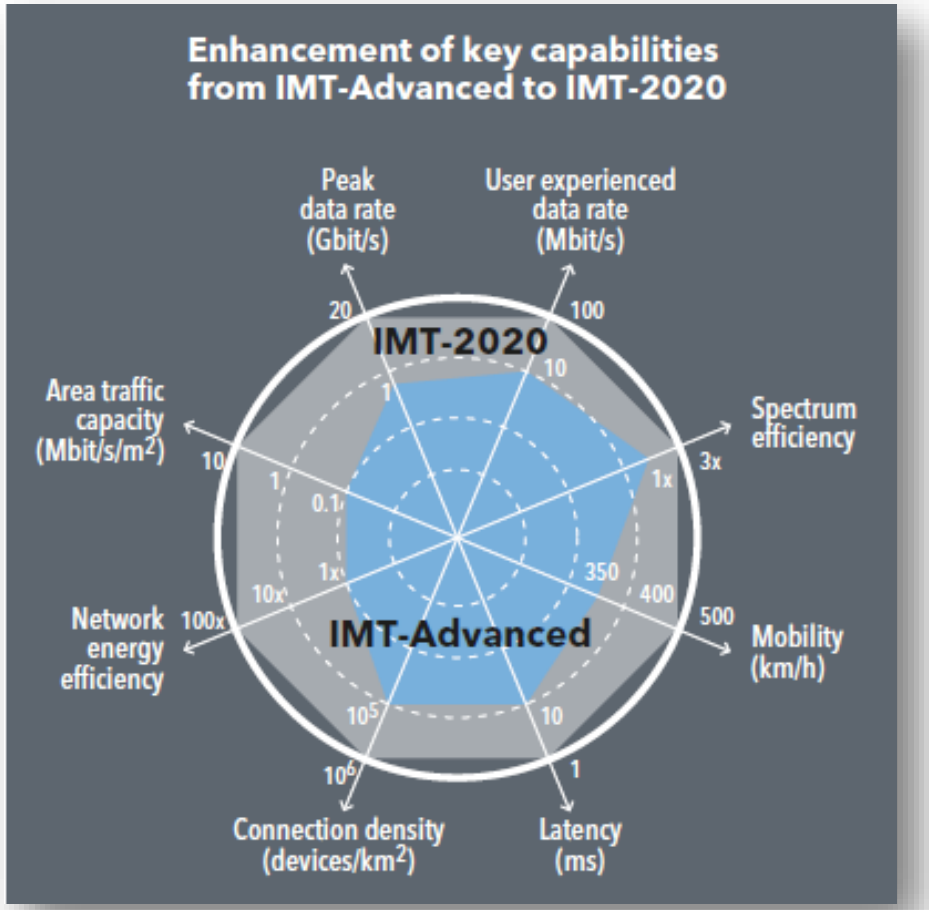


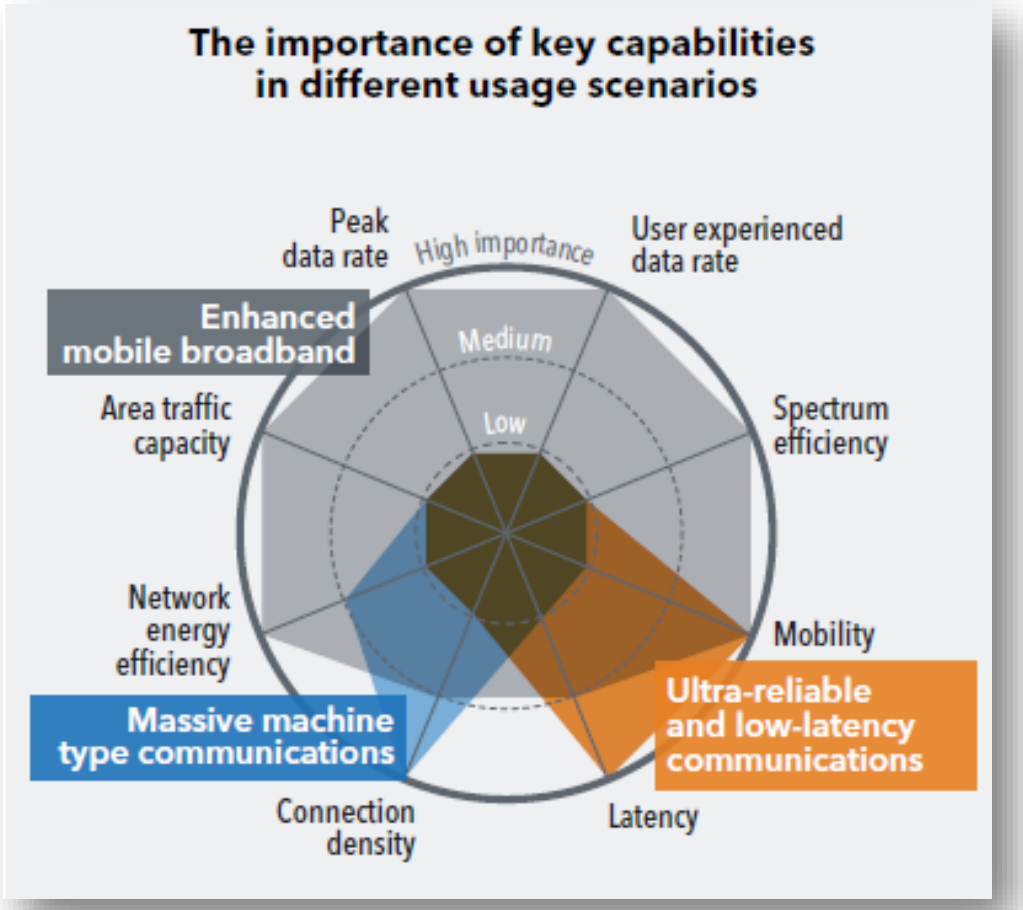
IMT 2020 : 5G and beyond….





IMT 2020 : 5G and beyond….





The values in the figures above are targets for research and investigation for IMT-2020 and may be revised in the light of future studies. Further information is available in the IMT-2020 Vision (Recommendation ITU-R M.2083)

AI for Global Good

Artificial intelligence (AI) is continuing to evolve rapidly. It will play a key part of our everyday lives and has enormous potential for social good. If the scalable power of AI can be leveraged correctly, it can rapidly accelerate progress on the United Nations' Sustainable Development Goals. ITU along with 37 UN Agencies

ITU-D: Global and Asia-Pacific regional priorities (2018-2021)

.. aligned to accelerate digital transformation and realize and inclusive digital society

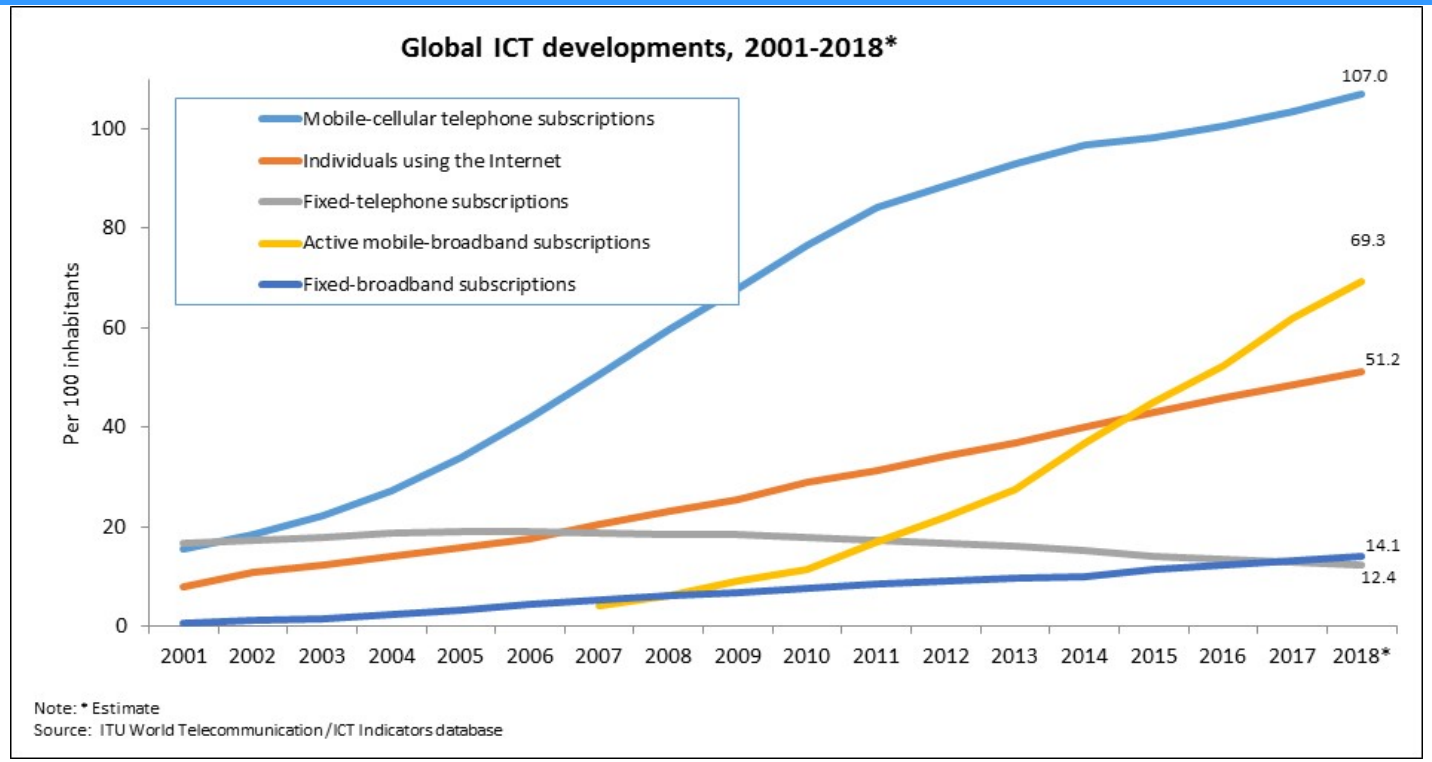
- International cooperation and agreement on telecom/ICTs
- Modern and secure telecommunication/ ICT Infrastructure
- Enabling environment
- Inclusive digital society

4 GLOBAL PRIORITIES

5 REGIONAL PRIORITIES

- ASP RI 1 Addressing special needs of LDCs, SIDS (incl. PIC), LLDCs
- ASP RI 2 Digital economy and inclusive digital society
- ASP RI 3 Digital infrastructure
- ASP RI 4 Policy & Regulation
- ASP RI 5 Security & Resilience

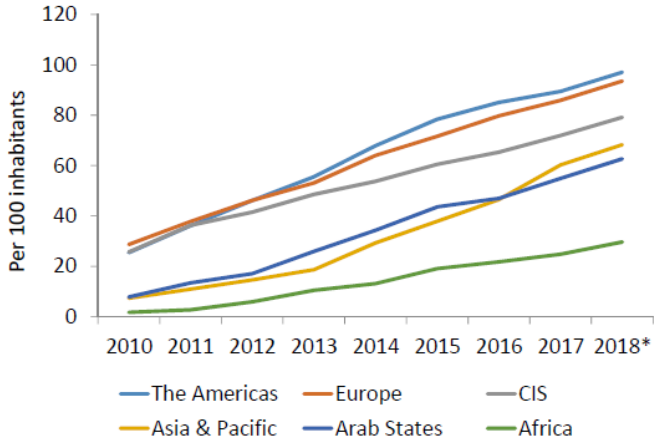
Global ICT Development Trends 2001-2018



- For the first time, more than half of the world's population is online. But much needs to be done to ensure the remaining 49% of the population that is not yet using the Internet can also join the digital era.
- Digital skills and capacity development has become an important if not critical element of building a digital economy and society

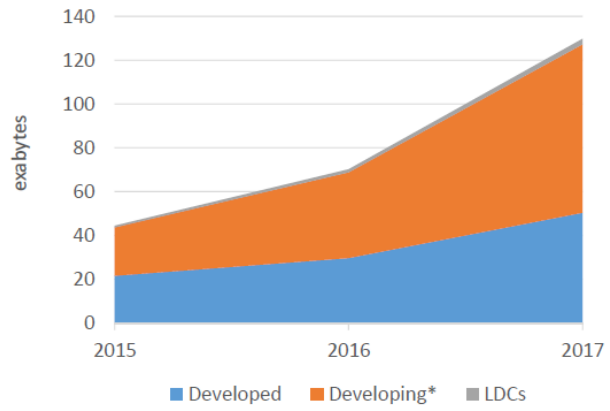
- Almost 60% of the population lack standard digital skills and only 5% know how to write a computer programme.
- AI technologies can be leveraged to strengthen the education sector as well as good models of preparing and ensuring an AI skilled labour force.
- Potential applications of AI across the digital ecosystem has led to the expectation by many that AI will be a key enabler in achieving the Sustainable Development Goals.

LDCs and LLDCs need catalyst to accelerate their journey..



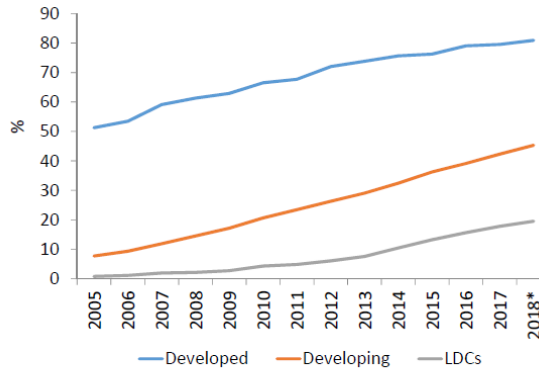
Note: * ITU estimate.
Source: ITU.

Active mobile-broadband subscriptions per 100 inhabitants, by region, 2010–2018*



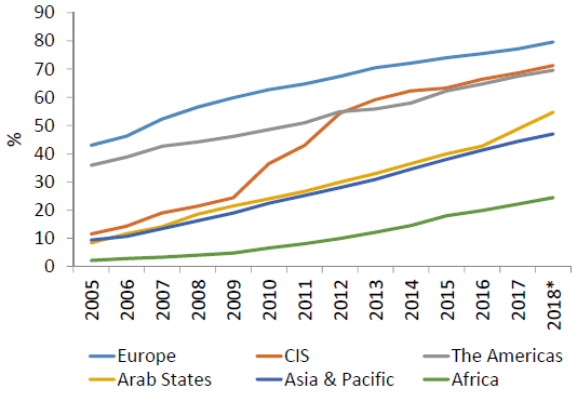
Note: * Excluding LDCs.
Source: ITU.

Mobile-broadband traffic, exabytes, 2015–2017



Note: * ITU estimate.
Source: ITU.

Individuals using the Internet by development status, 2005–2018*



Note: * ITU estimate.
Source: ITU.

Individuals using the Internet, by region, 2005–2018*

Digital Transformation & Digital Economy

IOT, DLT, AI, 5G, BIG DATA

Broadband networks,
Analytics, Platforms

IPv6, Internet

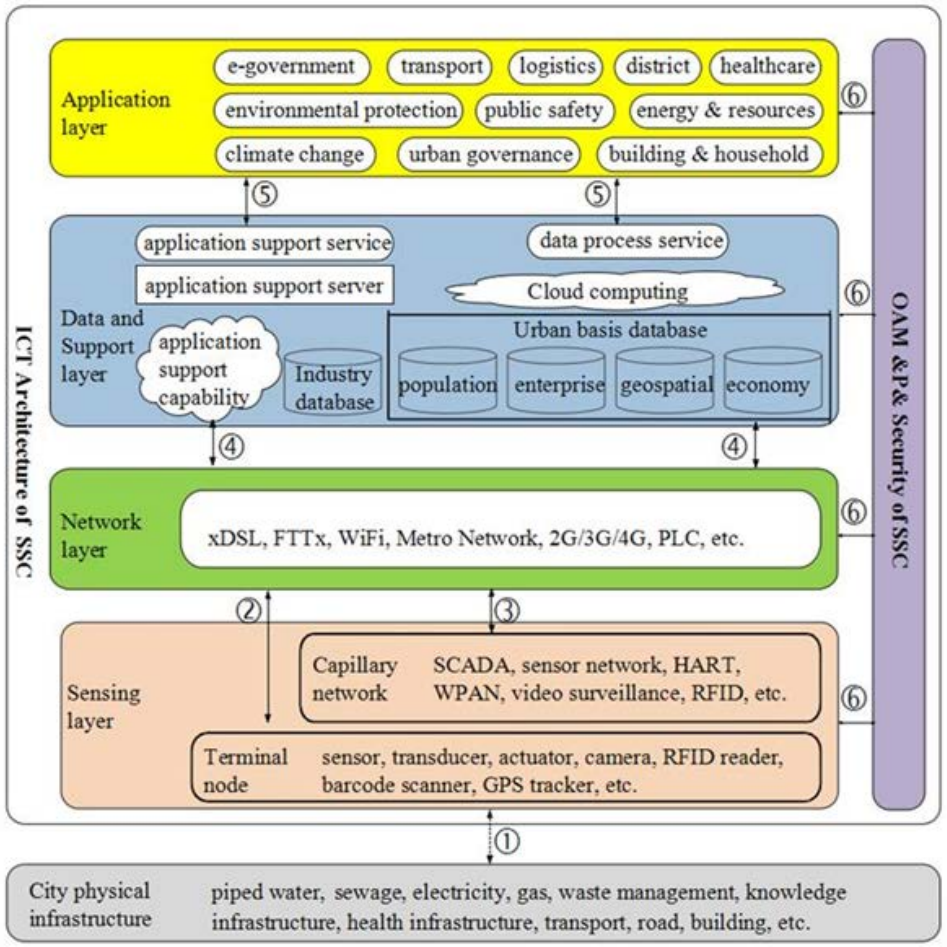
Conformity & Interoperability

IPv6 Roadmaps
Case studies
Forums
Technical assistance
trainings
Projects and Partnerships

Bhutan, Brunei, Cambodia, China, Fiji, India,
Mongolia, Pakistan, Sri Lanka, Thailand

Digital infrastructure development

Digital transformation requires an ecosystem approach



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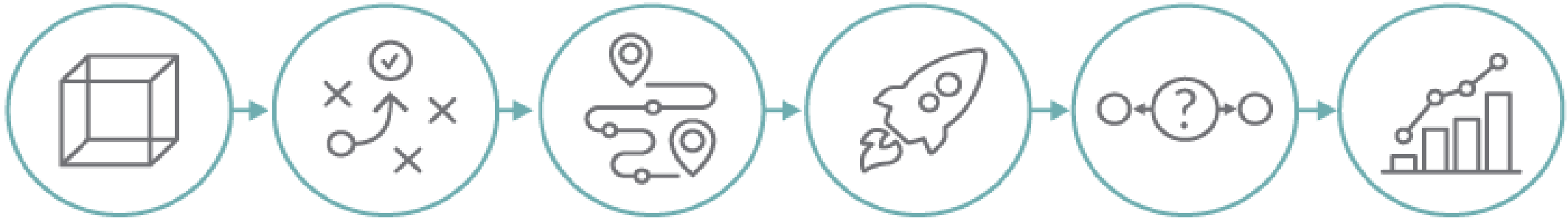
Enabling Environment , Digital Inclusion

Skills and capacity Building

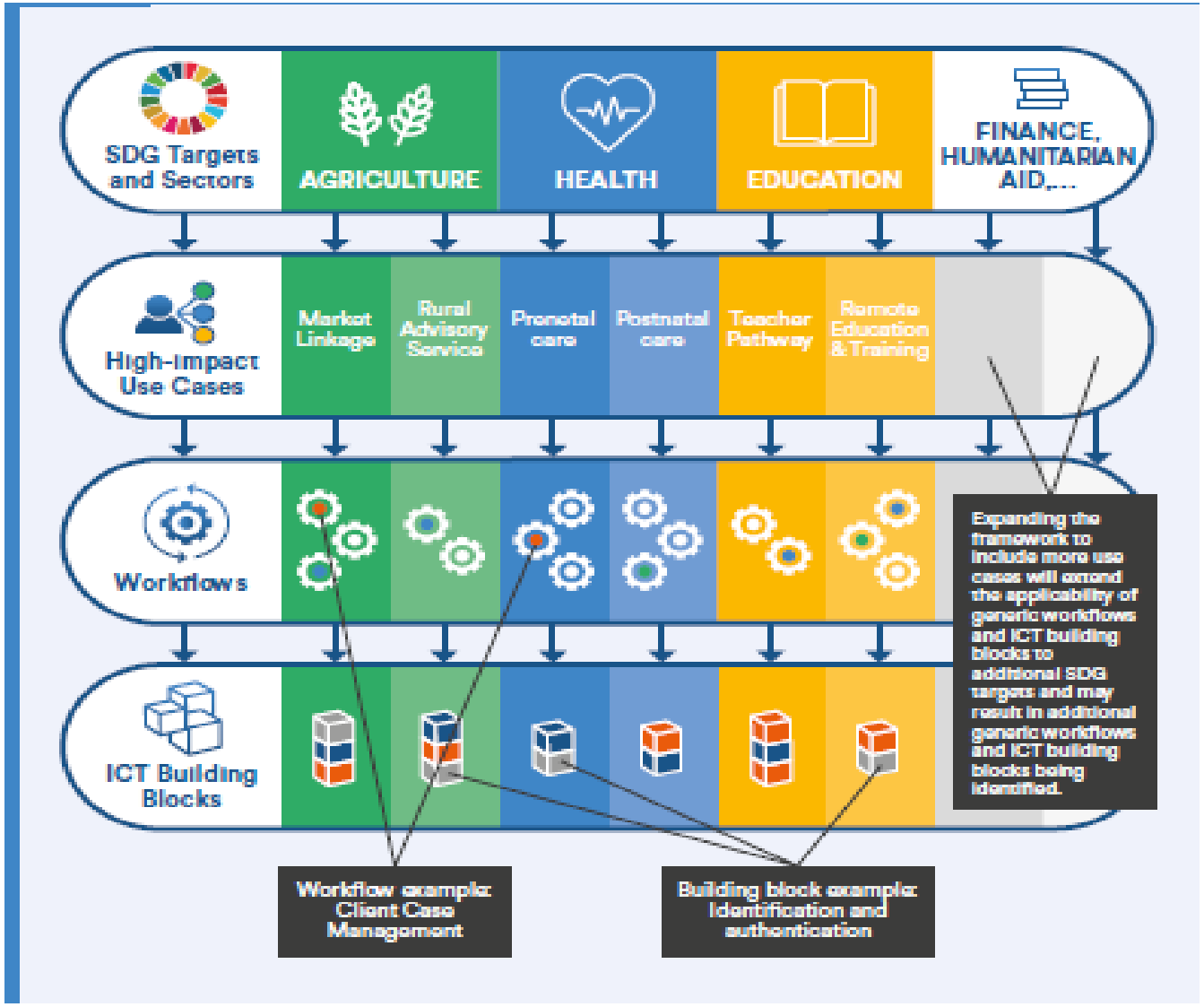
Innovation

Source: ITU-T Focus Group on Smart Sustainable Cities

Digital Transformation Process



Example architectural map using the SDG Digital Investment Framework



Common ICT Building Blocks enable generic business processes, or WorkFlows, that can be combined and repurposed in multiple ways to deliver priority Use Cases that contribute to SDG Targets.

National governments can prioritize Use Cases according to citizens' needs (eg improve neonatal outcomes), map functionality across sectors, and then invest in shared infrastructure comprising ICT Building Blocks.

GSR-18 Best practice guidelines
New Regulatory Frontiers to Achieve Digital Transformation

Regulators participating in the 2018 Global Symposium for Regulators, recognize that, flexible and innovative policy and regulatory approaches can support and incentivize digital transformation. The best practices in this regard would allow us to respond to the changing landscape and address the continuing need for secure and reliable ICT infrastructure, affordable access to and delivery of digital services, as well as protect consumers and maintain trust in ICTs.


ITUGSR
GENEVA 2018

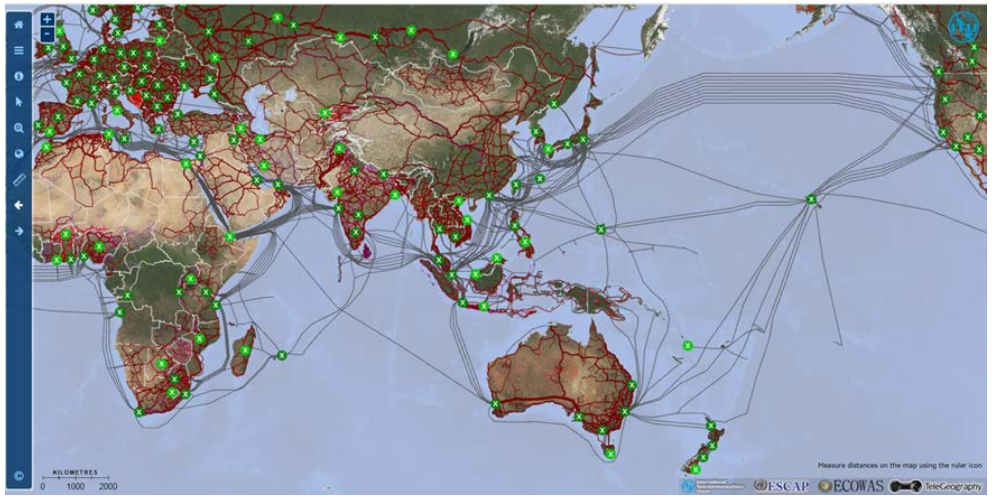
GSR18 BEST PRACTICE GUIDELINES ON NEW REGULATORY FRONTIERS TO ACHIEVE DIGITAL TRANSFORMATION

I. **Fostering the potential of emerging technologies for digital transformation**
II. **Business and investment models to support digital transformation**
III. **Policy and regulatory approaches for continued innovation and progress**

Achieve SDGs through Cross- Sectoral Collaboration

Digital infrastructure - Key to digital transformation

- Core transmission networks are the essential underpinning of broadband access networks.
- The IP connectivity required to deliver these content, services and applications is achieved at certain Tier 1 points of presence (POPs), which are physically located in buildings in certain places.
- What to make available and to whom? Policy controlled through the format in which the map and its underlying database is made available, and the level of disclosure is addressed as part of a formal validation process



- Over 3.4 million km of Transmission Networks are now represented in the map interface for all regions (increase of 29% over the last 12 months, compared to July 2017)
- Asia-Pacific region remains the largest region represented in the map in terms of data, with almost twice the number of kilometres as the next largest region (CIS)
- Asia-Pacific contains over 1 million kilometres of network data. Over 200,000km have been added in the last 12 months (= 26% increase since July 2017)
- Submarine Cables and Global Internet Exchange Points are now displayed by default when the Transmission Map loads, offering a full view of the complexities of international transmission networks when the map loads.

(**Link** : http://www.itu.int/itu-d/tnd-map-public/)

Food and Agriculture Organization of the United Nations

E-agriculture

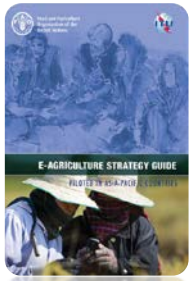
WORLD BANK

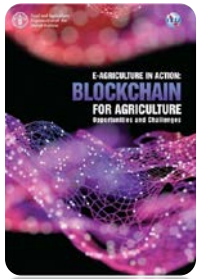
Digital finance

World Health Organization

m-health

Smart sustainable cities and digital government





agriculture SOLUTIONS FORUM

National strategies
Case studies
Solutions support
Forums
Trainings
Projects and Partnerships

Australian Government
Department of Communications and the Arts

nanb.

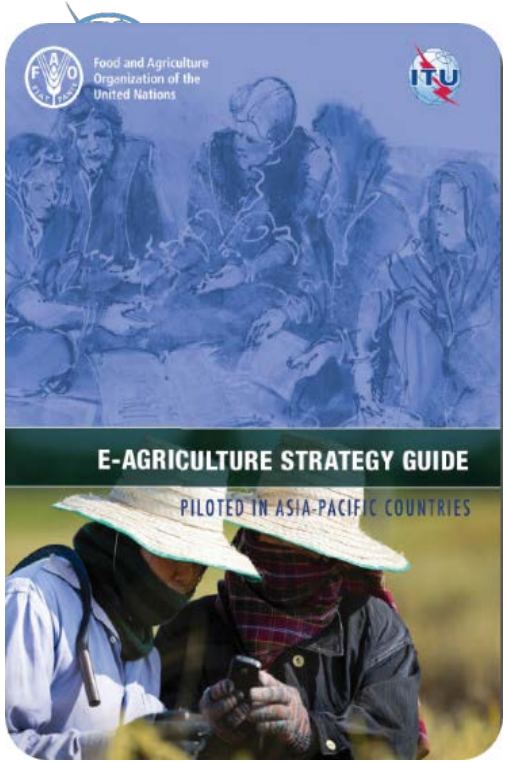
WeGO

PITA

BILL & MELINDA GATES foundation

Afghanistan, Bhutan, China, Fiji, India, Mongolia, Pakistan, Papua New Guinea, Philippines, Sri Lanka,

Digital Economy and inclusive digital Society

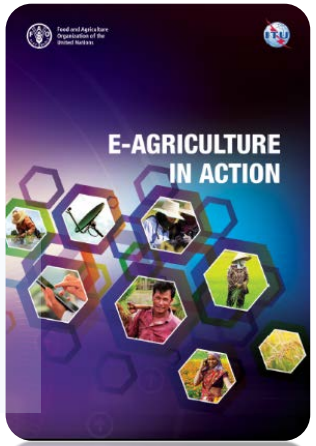


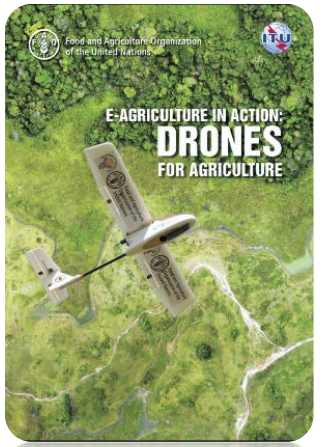
Strategy Guide

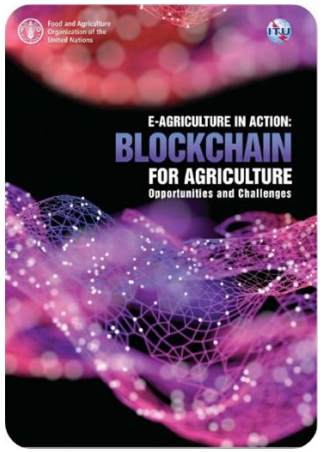
Country Assistances

Afghanistan
Bhutan
Fiji
Mongolia
Papua New Guinea
Pakistan
Philippines
Sri Lanka

Case studies







Solutions Forum

agriculture SOLUTIONS FORUM 2016

agriculture SOLUTIONS FORUM 2018

Trainings

FAO-ITU: E-agriculture Strategy Development
FAO-ITU-GIC: Use of drones, satellite imagery and GIS from agriculture

Food and Agriculture Organization of the United Nations

ITU

E-agriculture – Asia-Pacific

Digital Financial Services – Asia-Pacific

Mongolia (2017)

Digital Financial Services (DFS) and Digital Financial Inclusion (DFI) Ecosystem in Mongolia: A study with focus on cross-sectoral policy and regulatory collaboration

China (2018-2020)

Cooperation with World Bank, Bill & Melinda Gates Foundation and CAICT as part of FIGI project

India (2018)

Capacity building on Understanding Digital Payments with Niti Aayog and DOT

Thailand (2018)

Regional CoE training on Distributed Ledger Technologies with NBTC and MDES (Thailand)

Ongoing discussions during various regional forums, e.g. ITU Regional Development Forum 2018 (Bangkok)- Thank UNCDF to share experience in 2018

ITU activities global (examples)

Best Practice Guidelines on Collaborative Regulation for Digital Financial Inclusion (2016)

Focus Group Digital Financial Services (FG DFS) (2014-2016)

Focus Group on Digital Currency including Digital Fiat Currency (FG DFC)

Focus Group on Application of Distributed Ledger Technology (FG DLT)

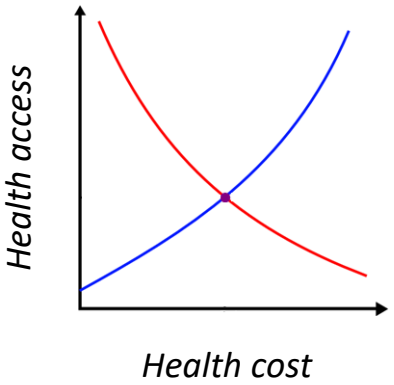
FIGI Project (ITU, World Bank, Bill & Melinda Gates Foundation)

ITU-WHO : ICTs for better health outcomes :e Health (SDG 3)

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

NCD Deaths – **38 million** annually

2011 UN High-level Declaration on NCDs



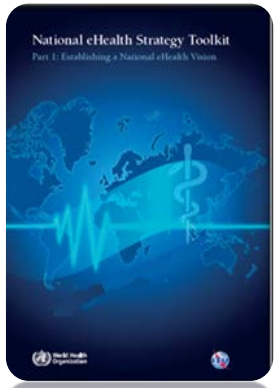
Country Assistances

India : mTobacco Cessation
Philippines : mTobacco Cessation
Request from 100 countries

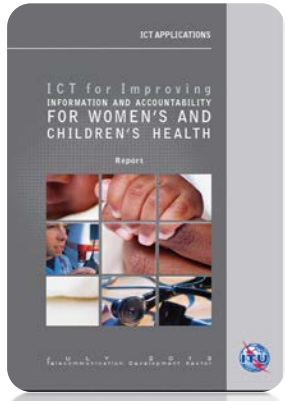
Survey on Tobacco : Compliance / Non Compliance

Thailand
Pakistan
Mongolia
Chile

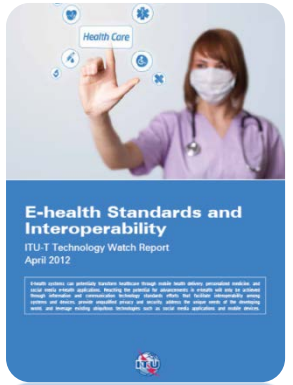
tobaccospotter.org #ReadySpotGo



National eHealth Strategy Toolkit
National Strategies : 69
eHealth Information System : 76



ICT for Women & Children's Health



Interoperable standards on e-Health

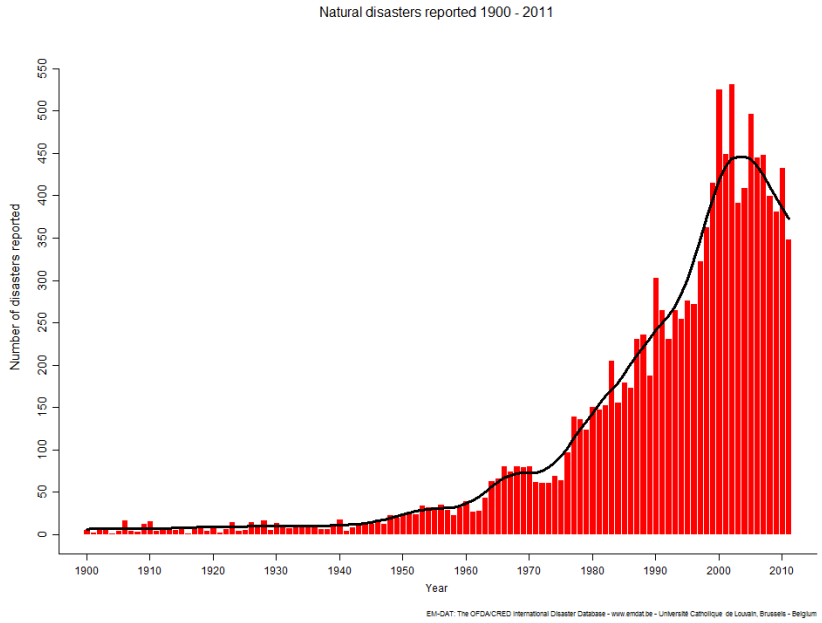
United 4 Smart Sustainable Cities (U4SSC): SDG 11

U4SSC is a United Nations Initiative coordinated by ITU and UNECE that advocates for public policy to encourage the use of ICTs to facilitate and ease the transition to smart sustainable cities.

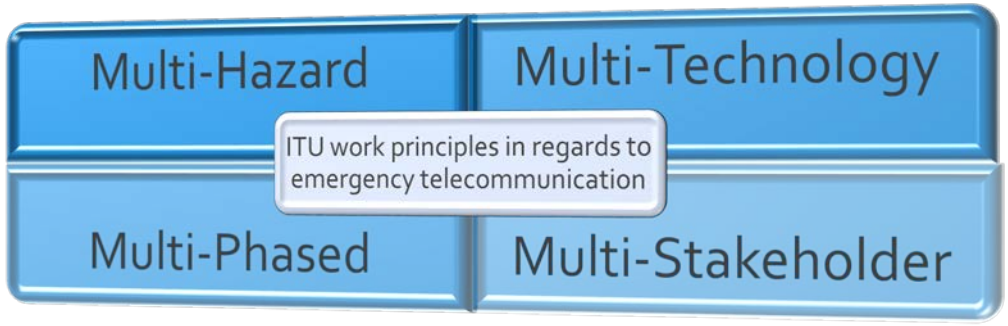
U4SSC was launched by **ITU and UNECE** to respond to the **Sustainable Development Goal 11: "Make cities and human settlements inclusive, safe, resilient and sustainable**

UN4SCC developed set of KPI criteria to evaluate ICT´s contributions in making cities smarter and more sustainable, and to provide cities with the means for self-assessments in order to achieve the sustainable development goals (SDGs).

ICTs for Saving Life :Emergency Telecommunications



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.

1.7 TRILLION DAMAGES (USD)

2.9 BILLION AFFECTED

1.2 MILLION KILLED

Disaster Mitigation and Preparedness

GET 2019
Mauritius
6-8 March

National Emergency Telecommunication Plans

- Papua New Guinea
- Samoa
- Solomon Islands
- Vanuatu

Workshops and capacity building

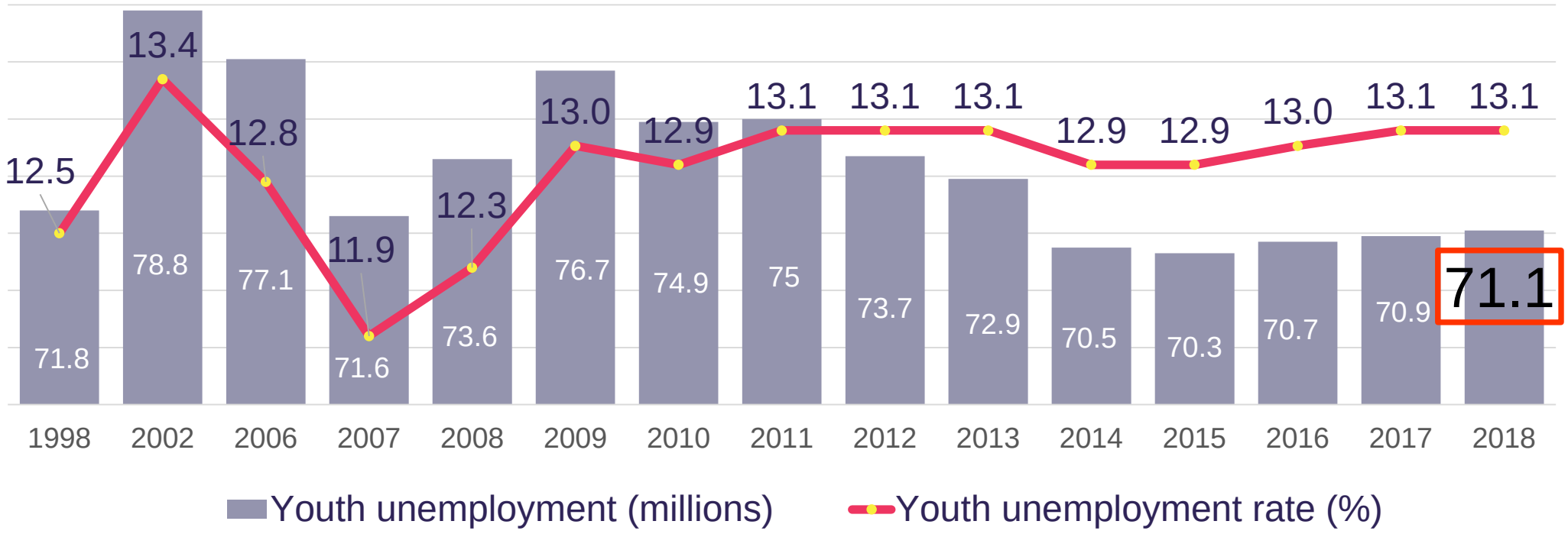
- Global meeting (GET)
- Regional and national trainings

Australian Government
Department of Communications and the Arts

WFP

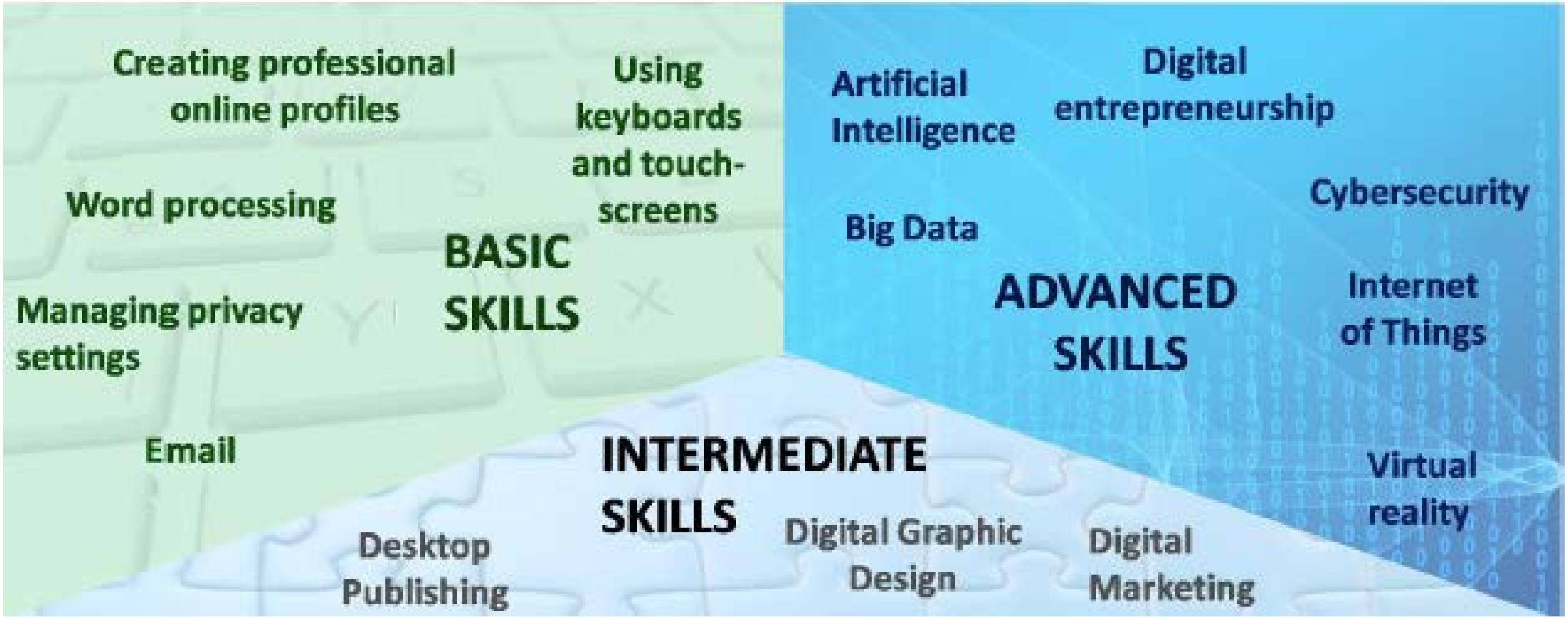
Digital Skills for the Future

Youth employment:
A challenge of both quality & quantity jobs

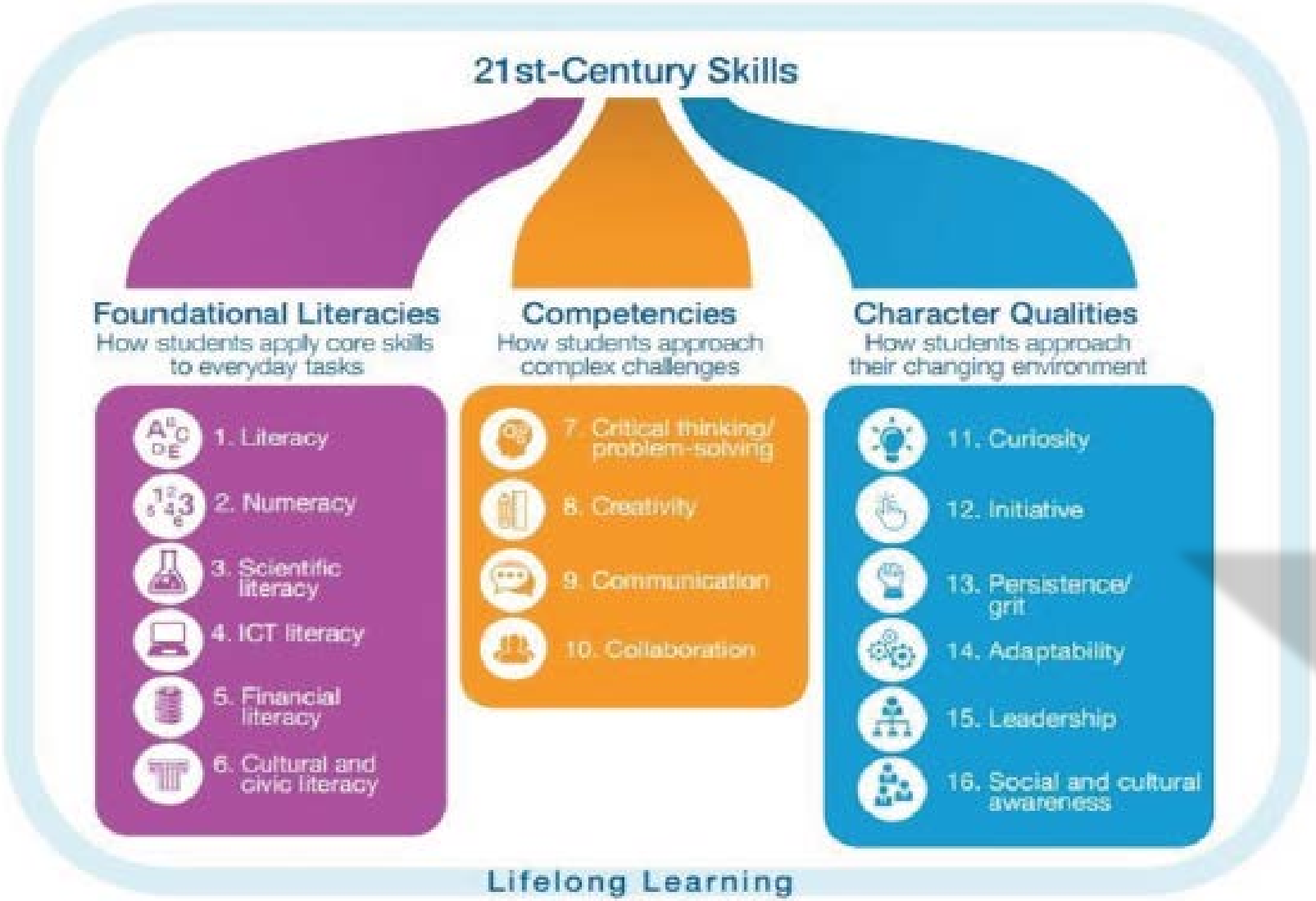


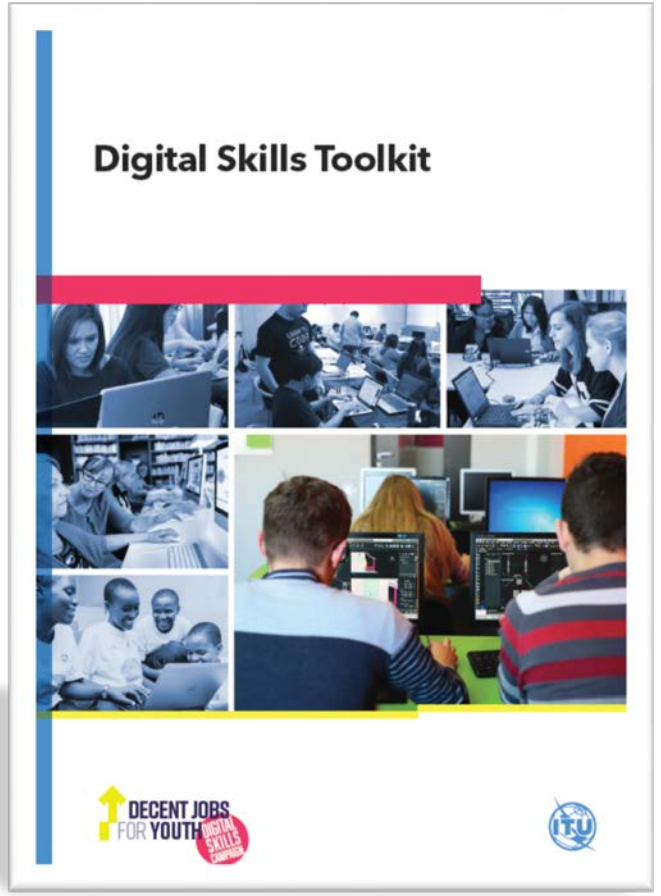
71 million youth are unemployed and
160.6 million are employed but live in poverty

Continuum of Digital Skills



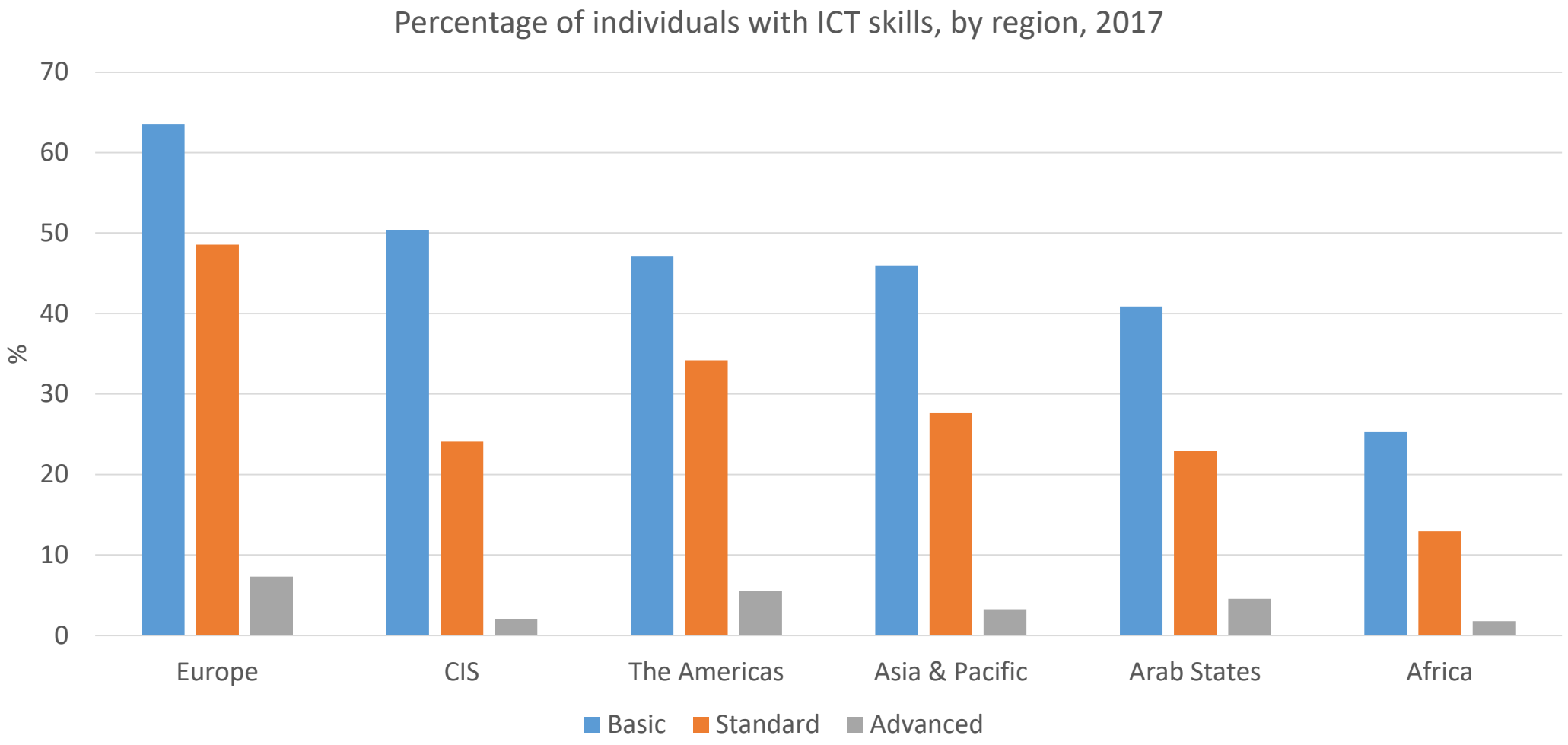
21st Century skills



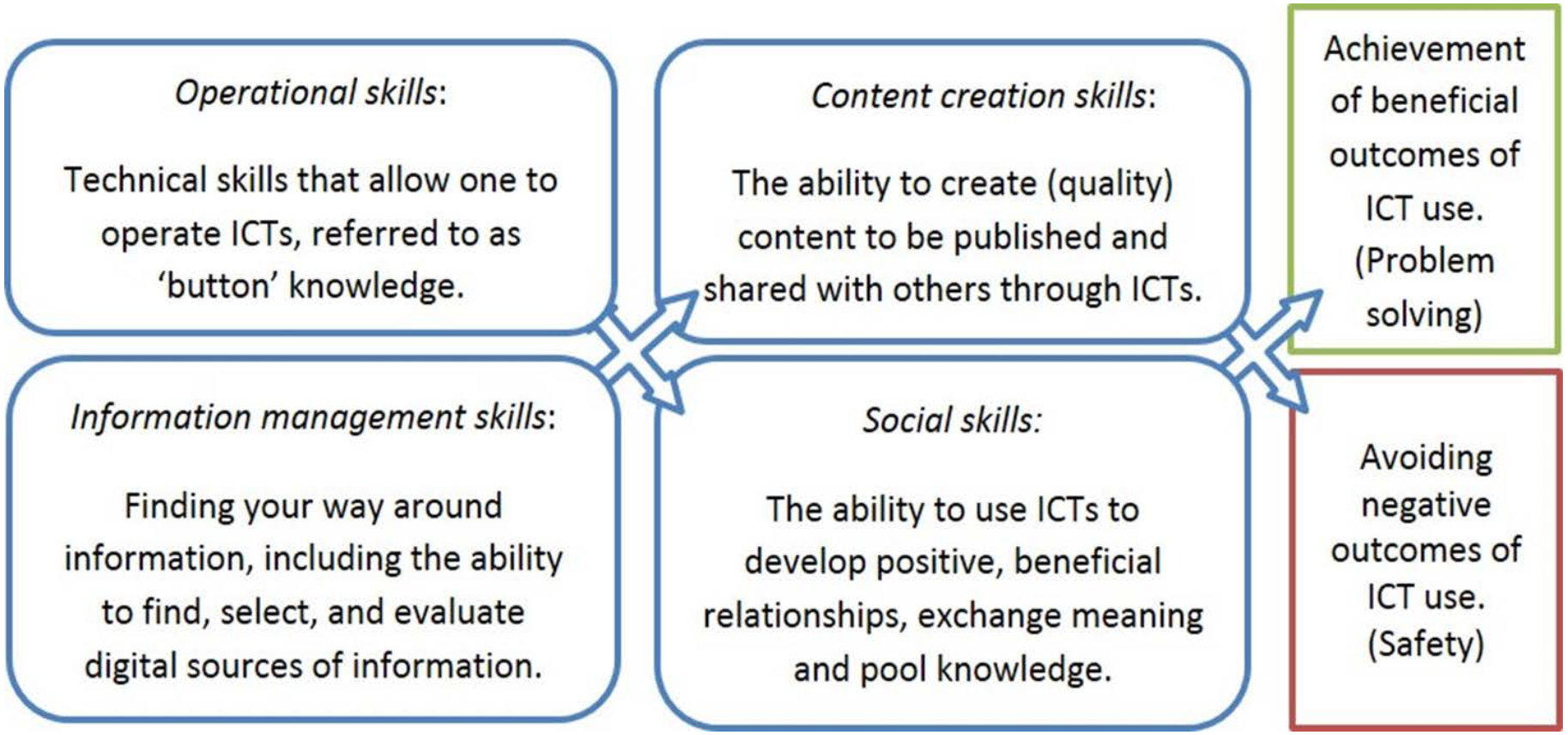


Source: World Economic Forum

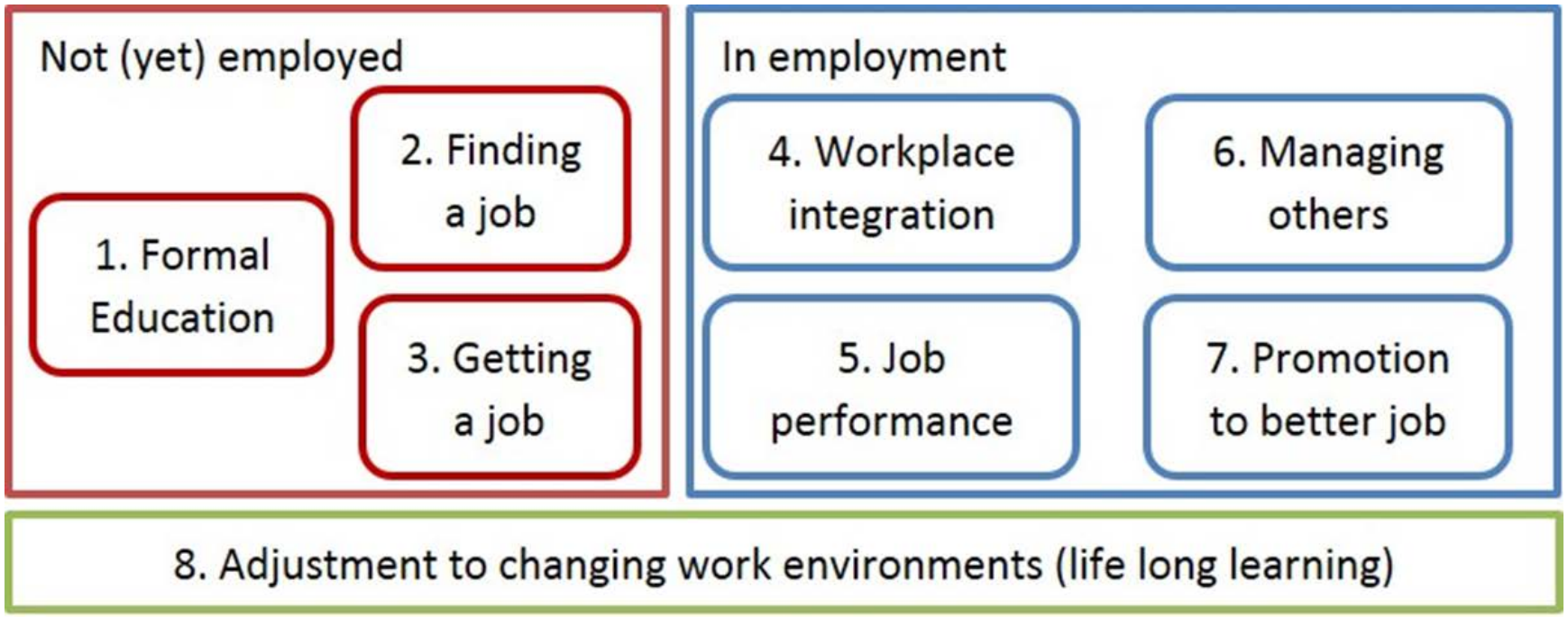
Skills differences have impact on effective use of the Internet



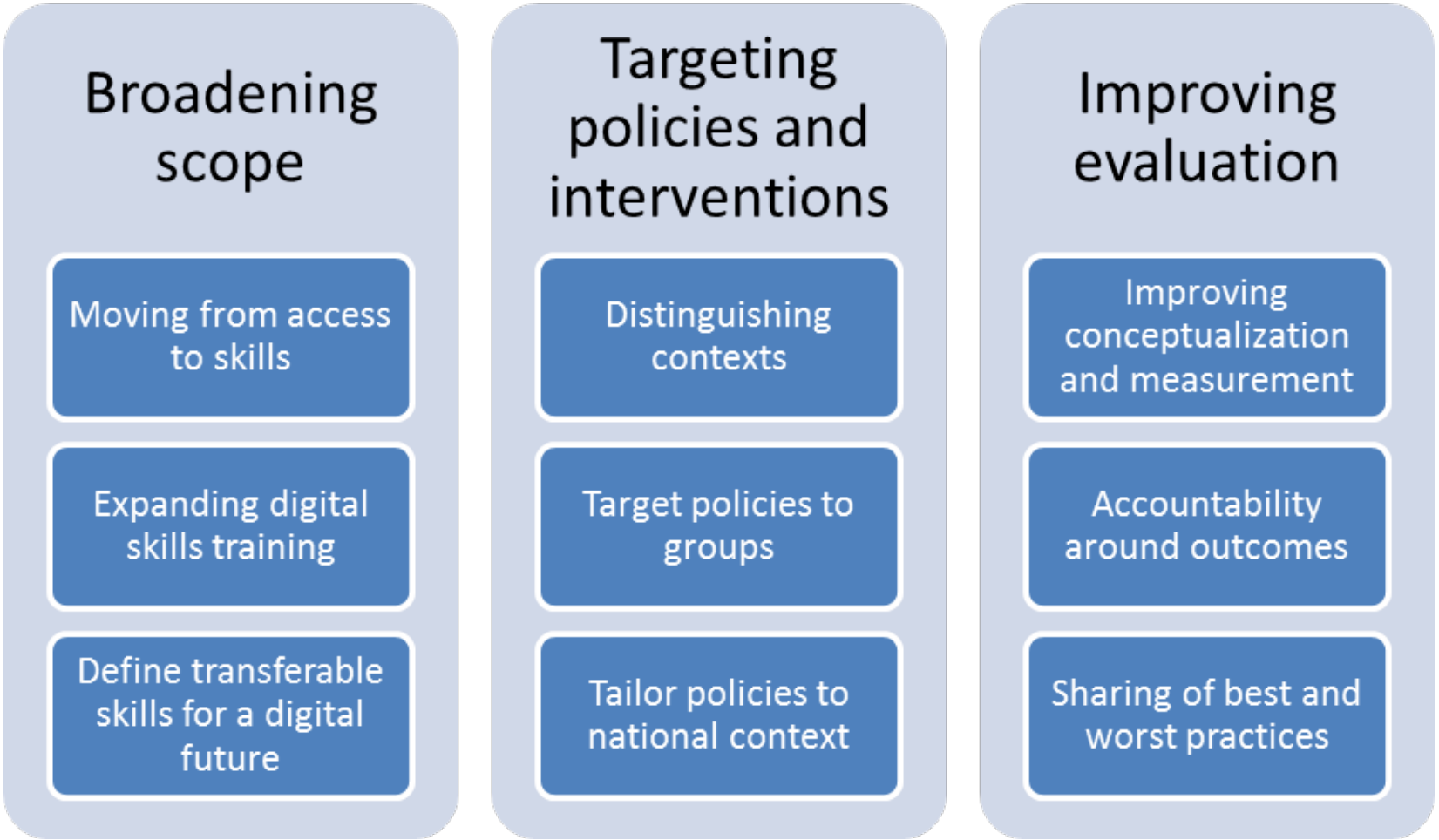
The Importance of Digital Skills in Society



Skills are important at every stage of employment



Policy agenda



ITU-ILO : Digital Skills for Decent Jobs for Youth Campaign to train 5 million youth with job-ready digital skills

- ILO and ITU are leading the Digital Skills for Decent Jobs Campaign as part of the Global Initiative on Decent Jobs for Youth in order to foster decent and inclusive employment and entrepreneurship opportunities in line with the Sustainable Development Goals.

- Advanced digital skills: related to technology development such as coding, software and app development, network management, machine learning, big data analysis, IoT, cybersecurity or blockchain technology;
- Basic digital skills: related to the effective use of technology, necessary in most professions. They include web research, online communication, use of professional online platforms and digital financial services;
- Soft skills: skills necessary to all professionals to ensure collaborative and effective work in the digital economy. They include leadership, communication and teamwork skills, client-orientation, among others.
- Digital entrepreneurship: digital skills required by entrepreneurs, including online market research, strategic planning and business analysis, using financing and crowdfunding platforms, online marketing, and online networking and establishing mentoring relationships

DECENT JOBS FOR YOUTH DIGITAL SKILLS CAMPAIGN

Ministers of ICT, Labour and Education, national governments, the private sector, training providers, Academia, NGOs, other members of the UN family as well as other interested parties are actively encouraged to participate

Digital Inclusion example- Asia-Pacific

More than 70 events reported for Girls in ICT Day (Asia-Pacific) in 2019

THAILAND

(EXAMPLE)

Enhance employment opportunities for girls and young women in Thailand by imparting employable digital skills relevant for the local job market

Food and Agriculture Organization of the United Nations

- Around 400 girls trained (2017-19)
- 8 trainings held
- More partners have joined
- Partnership continues in 2019

In 2019, events were held in 102 countries around the world (more than half of ITU member states). In terms of regional distribution, there were 43 events in Africa, 167 events in the Americas, 8 in Arab States, 79 in Asia and the Pacific, 7 in CIS Countries, 76 in Europe and an additional 6 events in other places.

Thank You