



Setting the standard

# ITU-T: Standardization to promote ICT development

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# Benefit of standards

## The effect of standards on the Nordic economies



Source: The Influence of Standards on the Nordic Economies, Menon-Publication No 31/2018.

Studies from Germany, France and UK confirmed that standardization increases a country's GDP.

Estimated impact of standards on growth of GDP:

- 0.9% for Germany
- 0.8% for France
- 0.3% for UK



## Benefit of standards

- ① Interoperability and scalability effects
- ① Reduced variety of intermediate goods
- ① Quality assurance
- ① Access and competition in global market
- ① Support to innovation



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# IMT-2020/5G



In 2012, ITU established a programme on **International Mobile Telecommunications (IMT) for 2020 and beyond**

~ Framework for 5G R&D worldwide

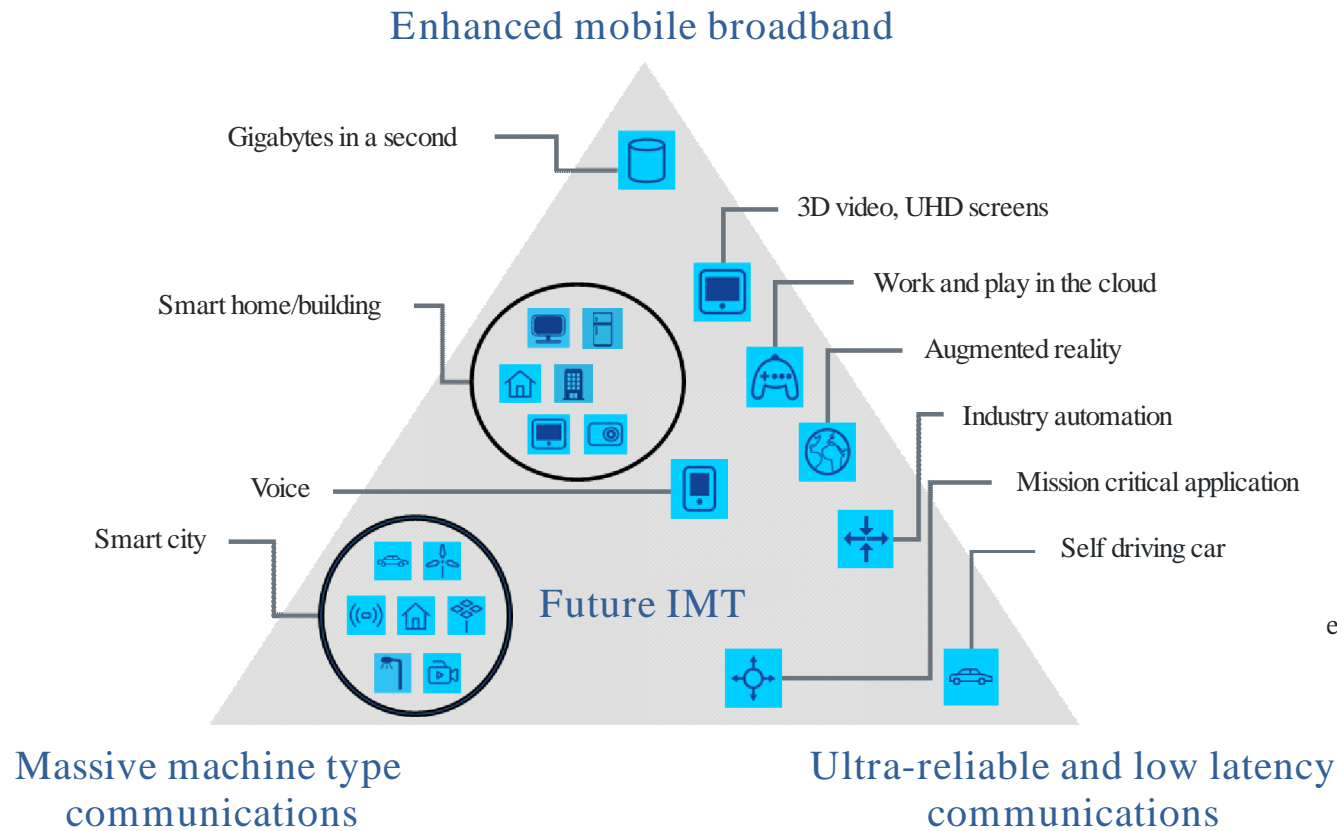


**ITU's Radiocommunication Sector (ITU-R)** is coordinating the international standardization and identification of spectrum for **5G mobile development**

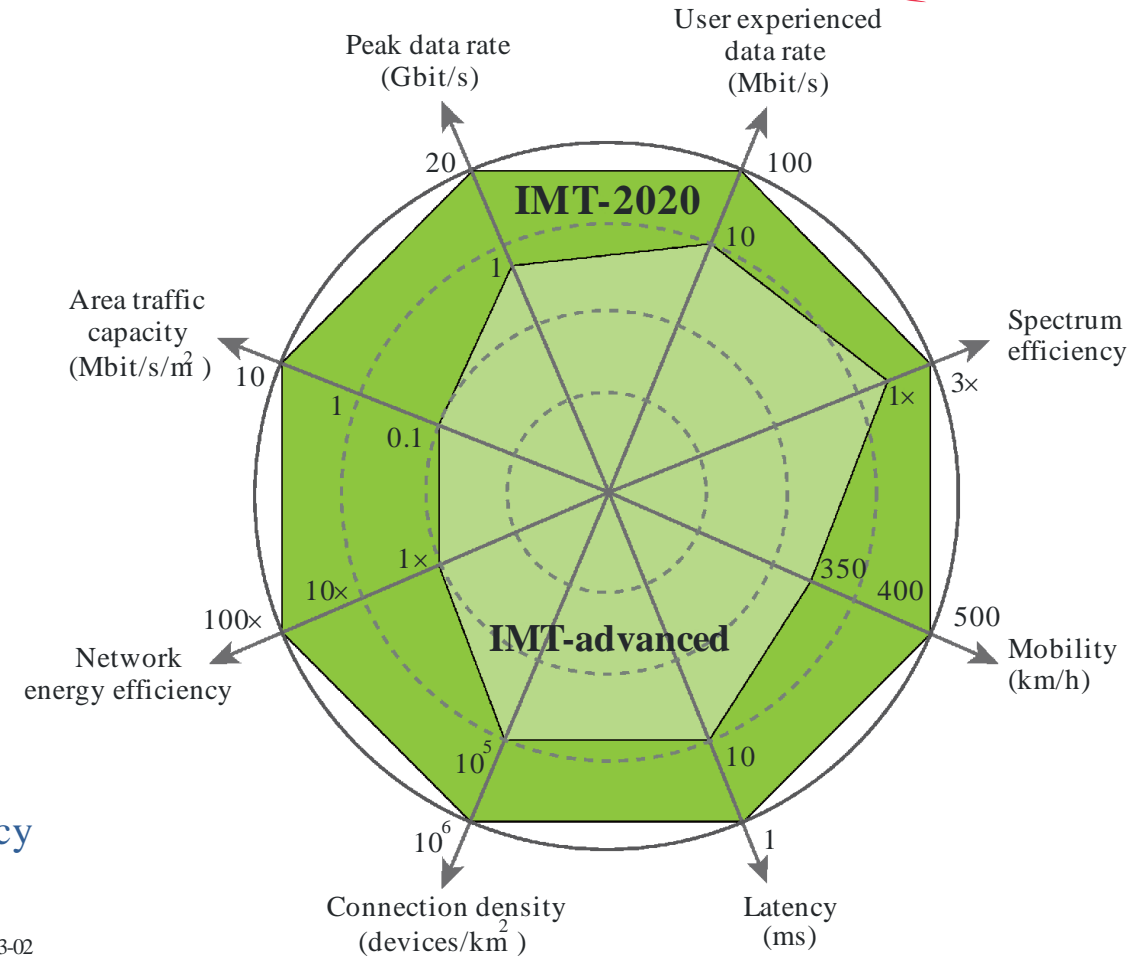


**ITU's Standardization Sector (ITU-T)** is playing a similar convening role for the technologies and architectures of **non-radio elements of 5G systems**

# IMT-2020/5G



M.2083-02



M.2083-03

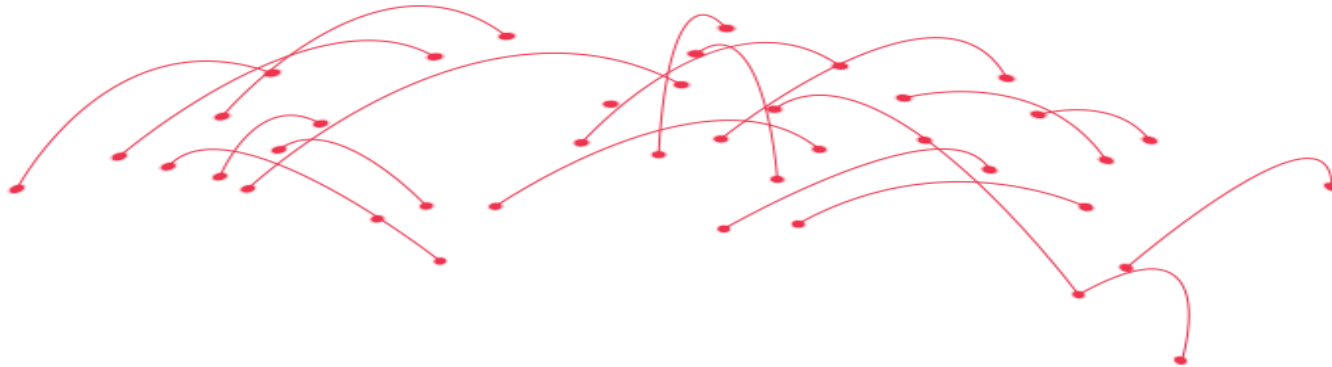
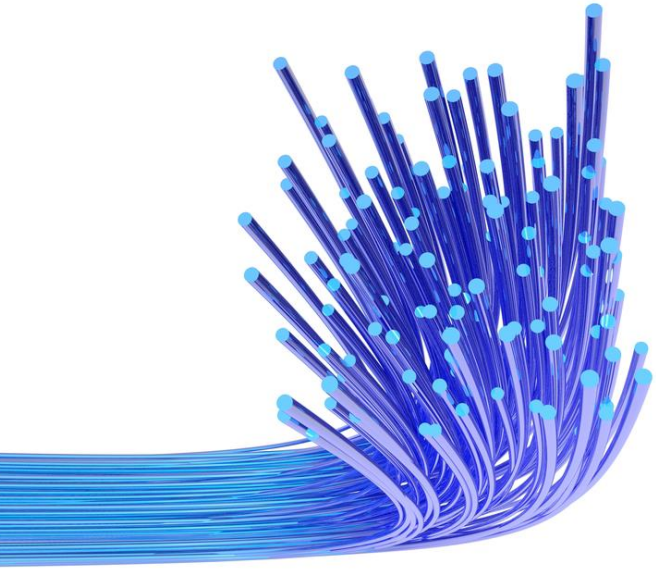


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# IMT-2020/5G



- Transport network support
- Machine learning
- Network management and orchestration
- Fixed-mobile convergence
- Environmental requirements

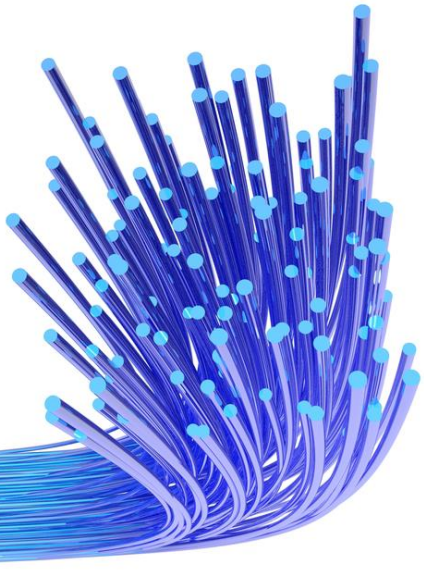




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# Ultra-high speed broadband



# 95%

International traffic  
carried over fibre  
networks built on  
ITU standards

Networks, technologies and  
infrastructures for **Transport,**  
**Access and Home**

- i Backbone optical transport
- i PON: Cost-efficient FTTH
- i DSL & G.fast; PLC & G.hn & VLC

**Rural broadband: ITU-standard lightweight optical fibre for installation in remote areas**

Used by Nepal to connect Mount Everest Base Camp and Annapurna Trekking Trail



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# 80%

of all Internet traffic  
will be video by 2020



**x2 Primetime Emmy Awards**  
H.264 AVC | H.265 HEVC



**Beyond HEVC:**  
**Strong progress in *Versatile Video Coding* project**





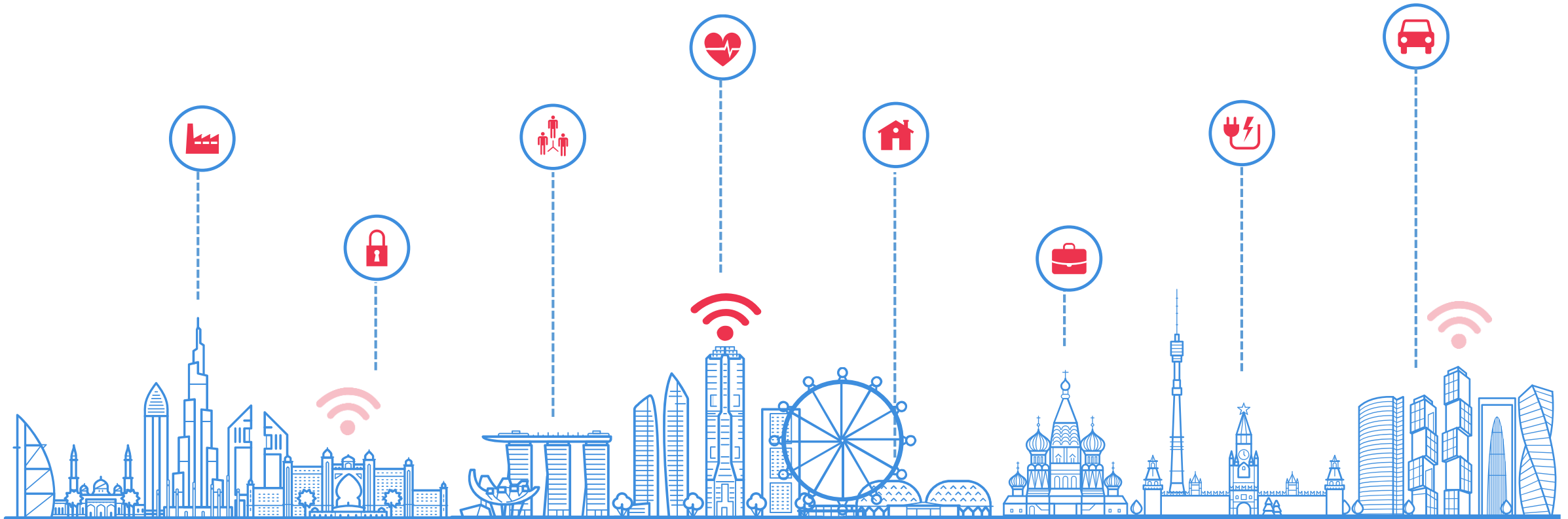


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# IoT, Smart Cities & Communities



-  100+ cities worldwide implementing **KPIs for Smart Sustainable Cities** based on ITU standards
-  ITU case studies on **Dubai, Singapore** and **Moscow**





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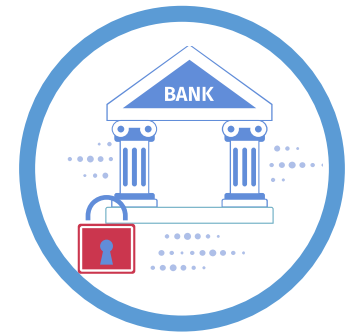
# Digital Financial Inclusion

- i Financial Inclusion Global Initiative (FIGI) - led by ITU, World Bank, and CPMI, with support from Bill & Melinda Gates Foundation



BILL & MELINDA  
GATES foundation

- i + investigating Digital Currency, focusing on Central Bank issued Digital Currency





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# Environment and circular economy



Ongoing studies investigating **environmental requirements of IMT-2020/5G**

## **New ITU standards address:**

- Assessment of environmental impact of the ICT sector
- Sustainable and intelligent buildings
- Reduction of e-waste
- Environmental impact of mobile phones





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# Multimedia & health



New ITU standard on the **safe listening** of music players and associated ITU-WHO toolkit support the **WHO 'Make Listening Safe'** initiative

**Medical-grade e-health devices:** New and updated conformance test specs for ITU H.810 Continua Design Guidelines





# Performance, QoS & QoE



## New ITU standards address:

- VoLTE, ViLTE, video streaming, video gaming
- Comms involving vehicles
- ICT services at major sporting and entertainment events
- Considerations for virtual measurement systems
- Practices & policies on service quality, including measurement of IP performance



# Testing



## **New ITU standards for VoLTE interconnection**

- Interconnection of VoLTE/ViLTE-based networks
- VoLTE/ViLTE interconnection testing for interworking and roaming scenarios

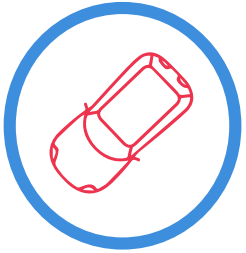
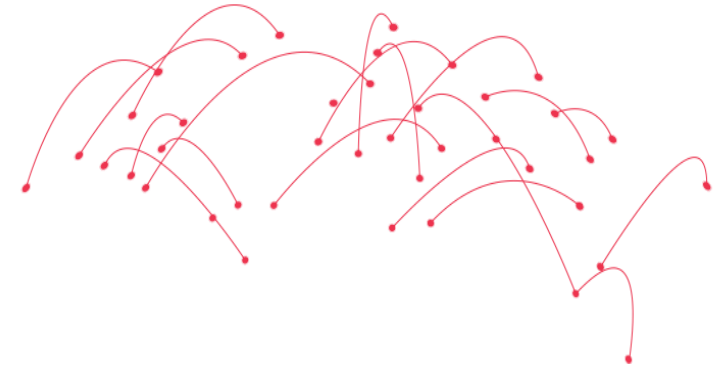
## **Combating ICT counterfeiting and theft**

- New ITU standard: Framework for solution to combat counterfeit ICT devices
- Renewed emphasis on combating tampering with or cloning of ICT device identifiers



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# Security



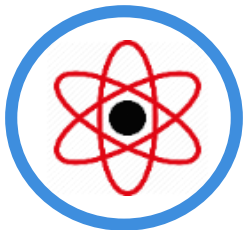
## **New ITU work streams established**

- Security aspects of intelligent transport systems
- Security aspects of distributed ledger technologies



## **Examples of New ITU security standards:**

- Personal data protection
- Secure software updates to connected cars
- Strong authentication for digital financial services

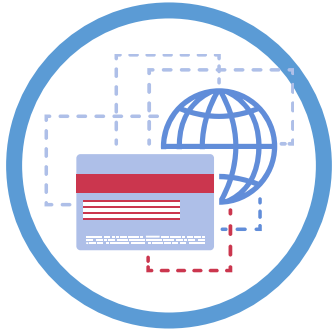


## **Accelerating ITU work on network and security aspects of quantum information technologies**



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# Economic and policy issues



## **New ITU standards:**

- Relationship between OTTs and network operators
- Competition in mobile financial services
- Principles for a unified format of price/tariffs/rates-lists used for exchanging telephone traffic

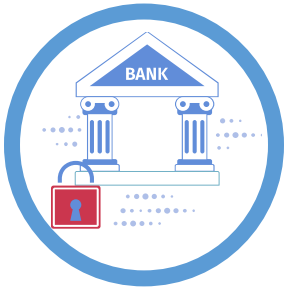
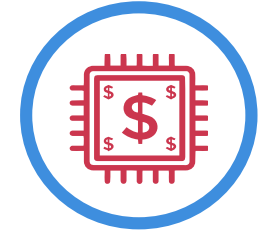






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# Digital fiat currency



New partnership between **ITU and Stanford University** to support **pilot implementations of Digital Fiat Currency**

- Technical assistance to Central Banks
- Open forum to share lessons learnt
- Platform to continue the work of FG DFC



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# AI for Good



**3<sup>rd</sup> AI for Good Global Summit** gave rise to **'AI Commons'**

- Framework for collaboration to achieve global impact
- Shared datasets, testing and simulation environments, AI models and associated software, and storage and computing resources

**To build on the state of the art and enable AI solutions to scale**

<https://ai-commons.org/>



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# Bridging the standardization gap

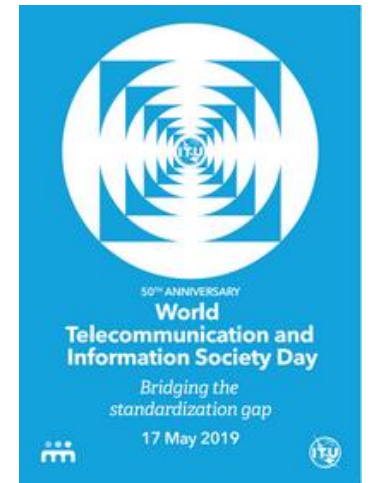


## **New guidelines for National Standardization Secretariats**

- Options for the development of national mechanisms to support effective participation in ITU standardization

**17 May 2019 marked the 50<sup>th</sup> anniversary of WTISD**

- Six award winners honoured for significant contributions to ITU's work to bridge the standardization gap





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# Open-to-all ITU-T Focus Groups



# Data processing and management\*

i Data management, interoperability and security for IoT and Smart Cities



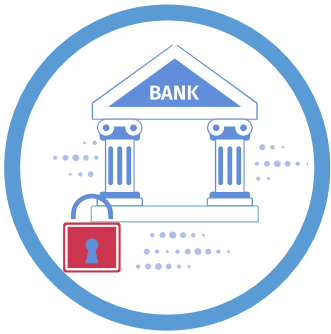
i 15 deliverables, on topics including:

- Vocabulary
- Requirements & use cases
- Data modelling
- Data interoperability
- Blockchain
- Security, privacy & trust
- Data quality management
- Data economy

\*Concluded activities in July 2019

# Digital fiat currency\*

- i Requirements of DFC as they relate to regulation, technical and business dynamics, and security



- i Seven deliverables:

- Repository of information on governance aspects of DFC
- Digital currency implementation checklist for Central Banks
- Regulatory challenges and risks for Central Bank digital currency
- Protection assurance for digital currencies
- Protection assurance use case for a payment transaction
- Taxonomy and definition of terms for DFC
- Reference architecture and use cases

\*Concluded activities in June 2019



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# Blockchain\*

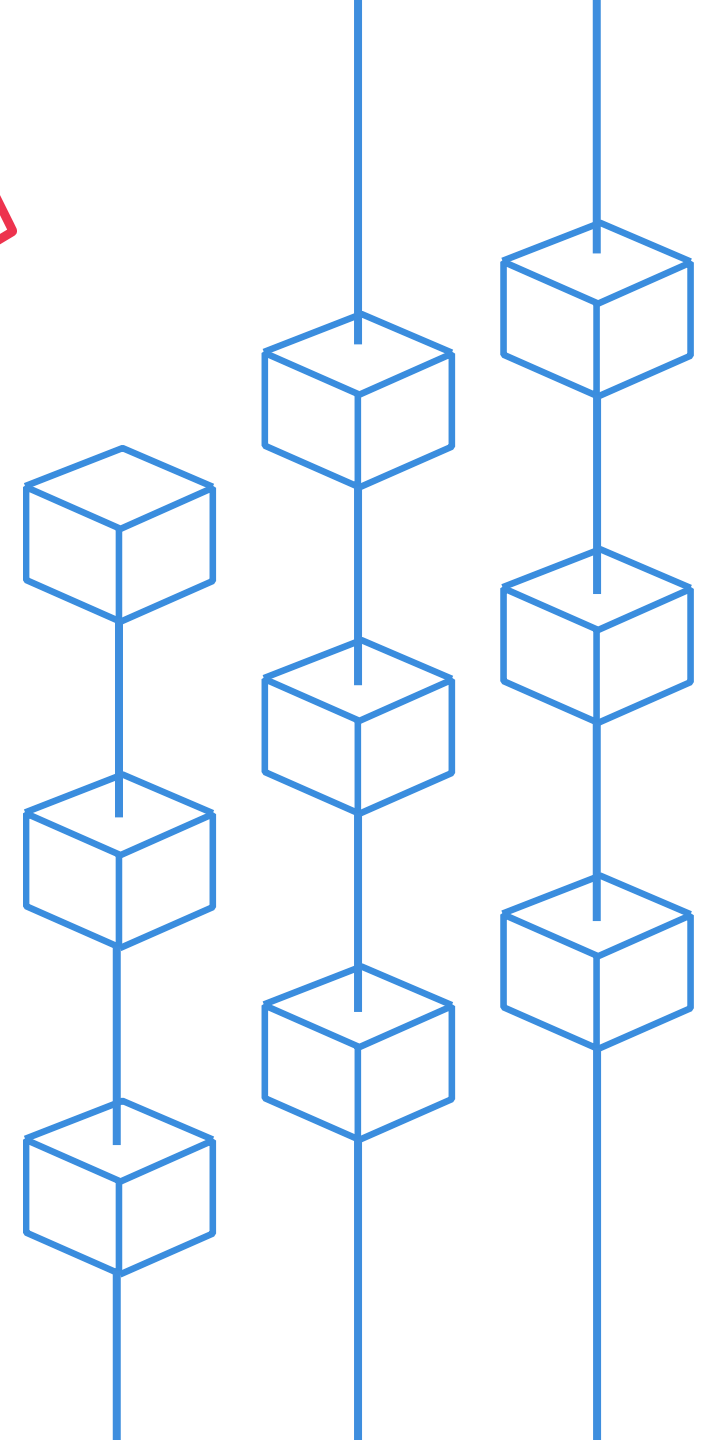


## i Guidance to potential adopters of Distributed Ledger Technologies

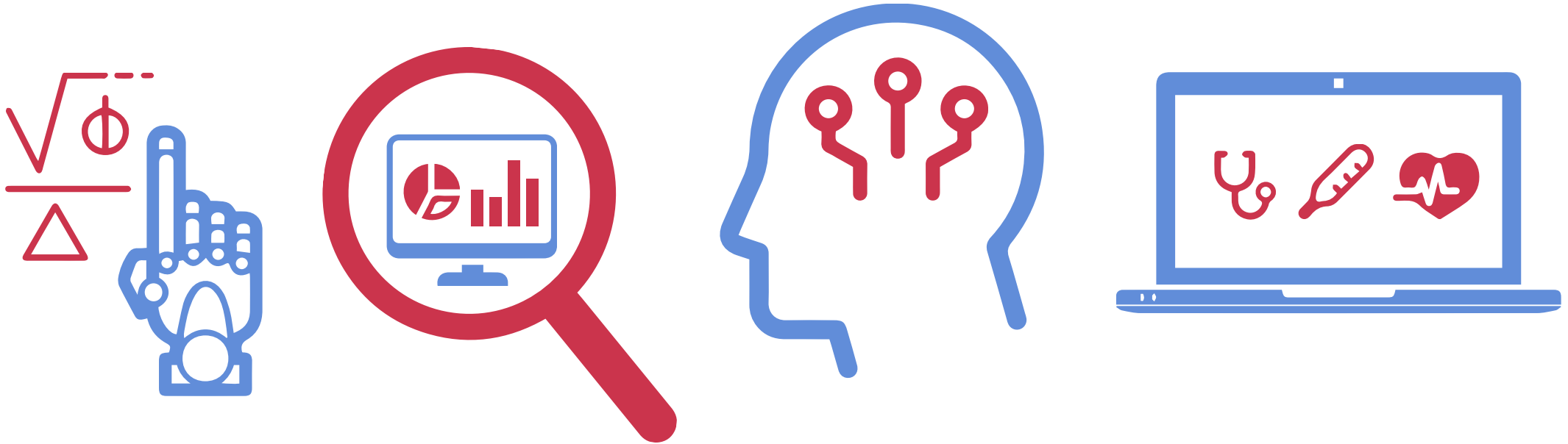
### i Eight deliverables:

- Terms and definitions
- Overview, concepts, ecosystem
- Standardization landscape
- Use cases
- Reference architecture
- Assessment criteria for DLT platforms
- Regulatory framework
- Outlook on DLTs

\*Concluded activities in August 2019



# Artificial Intelligence and Machine Learning



- i Focus Group (ITU & WHO) to deliver framework for the performance benchmarking of '**AI for Health**' algorithms
- i Focus Group developing specifications for Machine Learning to support **IMT-2020/5G** systems





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# Network 2030 beyond 5G

- i Novel scenarios such as hologram communications
- i Extremely high throughput and low latency
- i High-precision communications for tactile & haptic applications





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# Vehicular multimedia



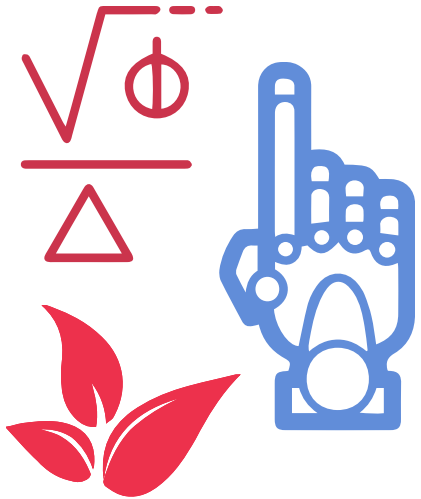
- i Focus Group identifying use cases and requirements of vehicular multimedia enabled by converged networks
- i Aiming to propose a standardization roadmap for vehicular multimedia





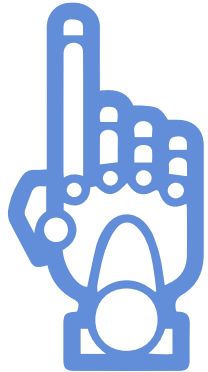
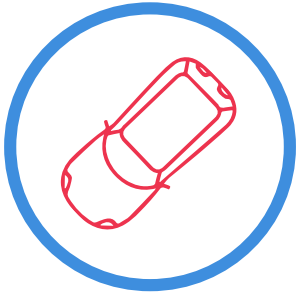
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# Environmental efficiency of AI and other emerging technologies



- ① Focus Group working towards a standardized assessment of the environmental efficiency of technologies such as AI and blockchain
- ① Aims to benchmark best practices, develop technical frameworks and propose standardization strategies to support environmentally responsible adoption of emerging tech
- ① First meeting: 12 December 2019, Vienna, Austria

# AI for autonomous and assisted driving

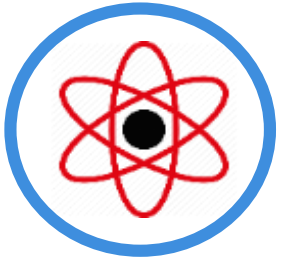


- ① Focus Group devising 'Driving Test' for the AI 'Drivers' in control of automated vehicles
- ① Its ultimate aim is to meet the public expectation that:
  - AI never engages in careless, dangerous or reckless driving behaviour
  - AI remains aware, willing and able to avoid collisions at all times
  - AI meets or exceeds the performance of a competent, careful human driver
- ① First meeting: 21-22 January 2020, U.K.



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# Quantum IT for Networks



- i Focus Group studying the evolution of quantum information technologies in view of their foreseen applications in ICT networks
- i Analyzing high-potential use cases and the harmonization of associated terminology
- i Supporting the coordination of ongoing and future standardization projects across a range of standards bodies
- i First meeting: 9-10 December 2019, Jinan, China