



National Workshop for Montenegro

ITU activities - IPv6 Enabler

Industry 4.0, IoTs; OTTs

&

Smart Cities – KPIs

Montenegro, 20-21 April 2021

By Desire Karyabwite, Senior IP Coordinator, ITU

➤ ITU INTERNET ACTIVITIES: RESOLUTIONS 101, 102, 133, 180 and 206

ITU Plenipotentiary Conference (PP)

Resolution 101 (Rev. Dubai, 2018), *“Internet Protocol-based networks”*;

Resolution 102 (Rev. Dubai, 2018), *“ITU’s role with regard to international public policy issues pertaining to the Internet and the management of Internet resources, including domain names and addresses”*;

Resolution 133 (Rev. Dubai, 2018), *“Roles of administrations of Member States in the management of Internationalized (multilingual) domain names”*;

Resolution 180 (Rev. Dubai, 2018), *“Facilitating the transition from IPv4 to IPv6”*

Resolution 206 (Dubai, 2018), *“OTTs”*

Etc...



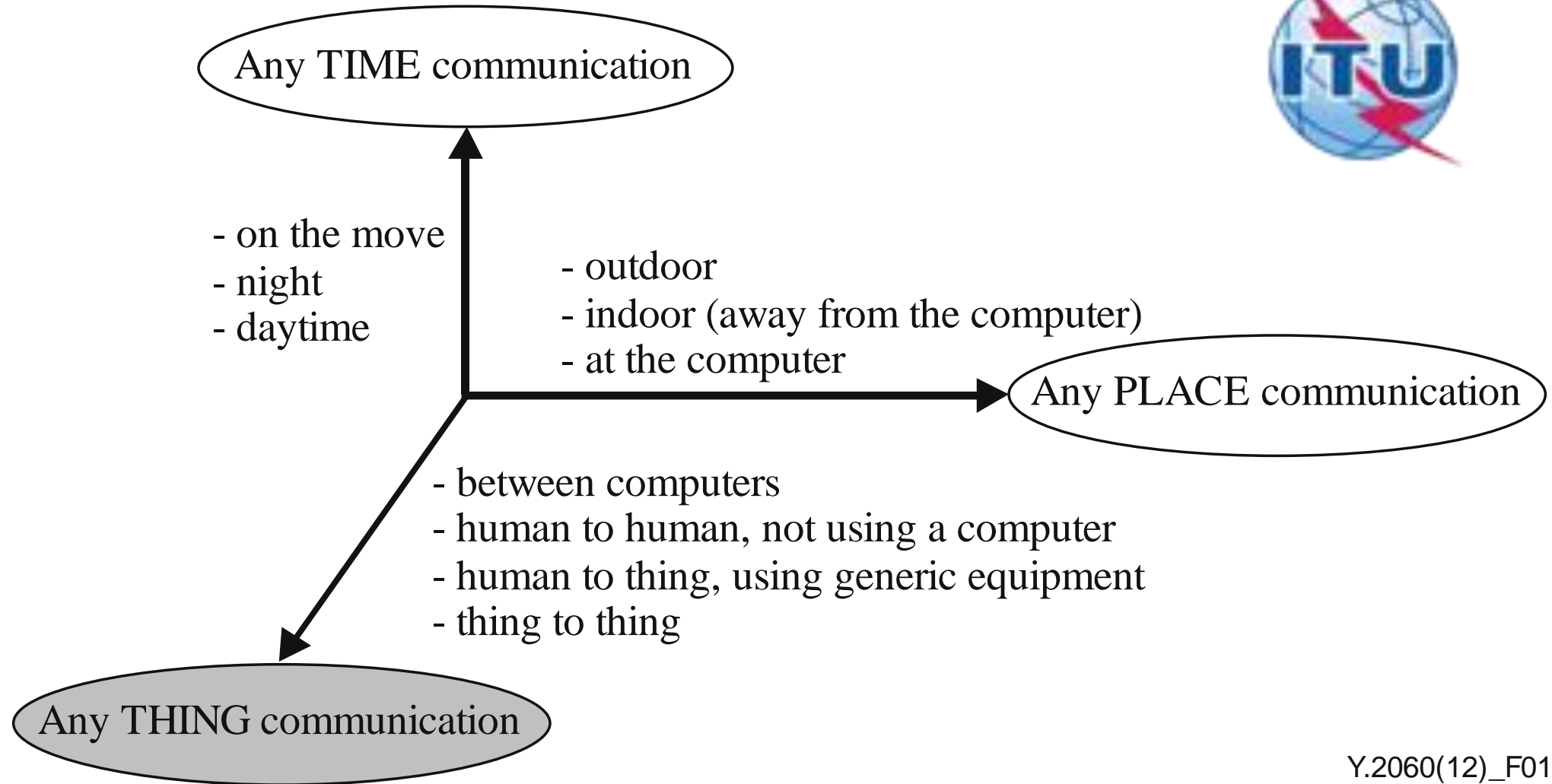
ITU-T

Y.2060

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

(06/2012)

Internet of things (IoT): 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

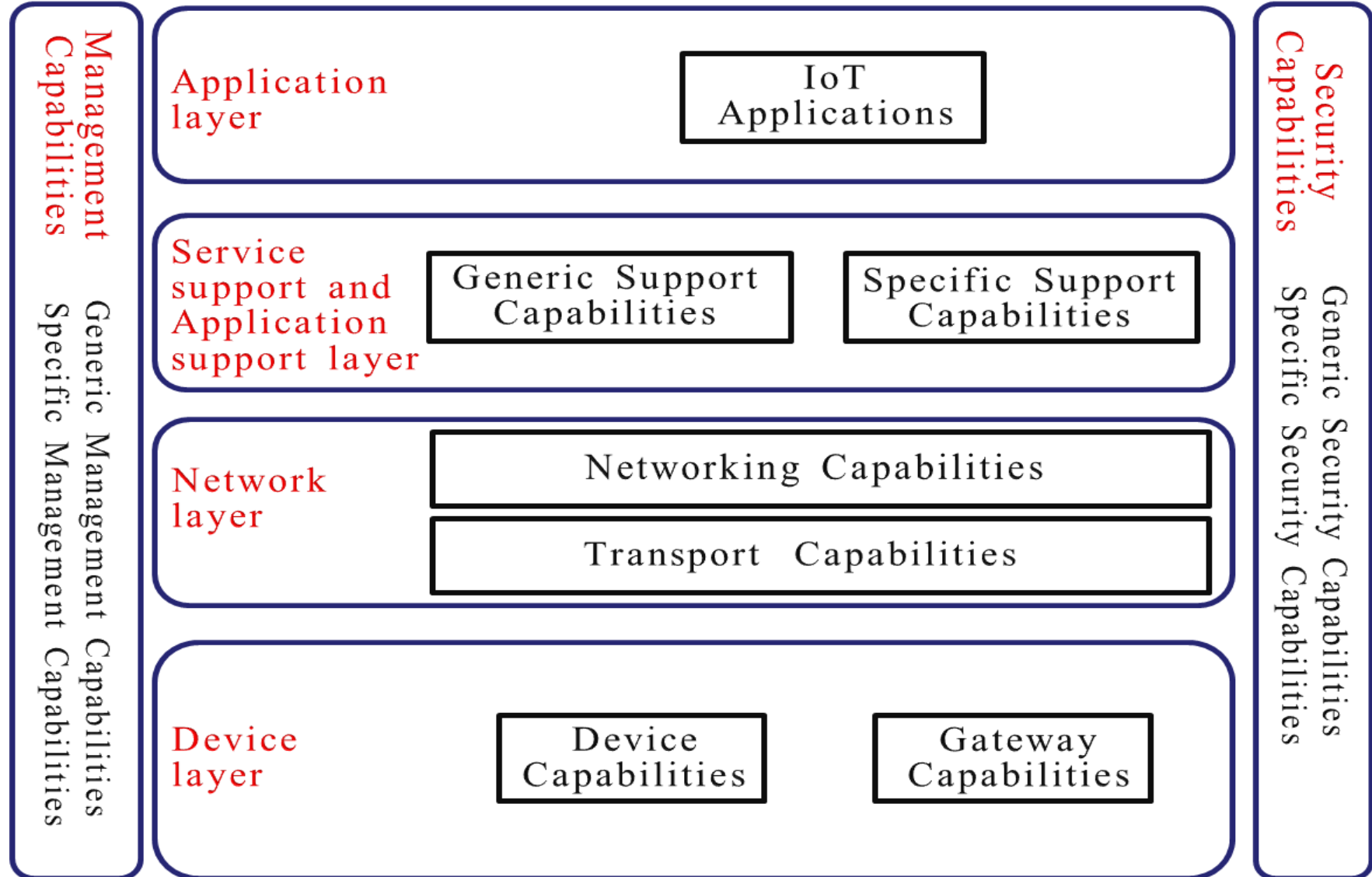


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The new dimension introduced in the Internet of things



IoT reference model



ITU-T

Y.4416

TELECOMMUNICATION
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(06/2018)

Architecture of the Internet of things based on next generation network evolution

ITU-T

Y.4806

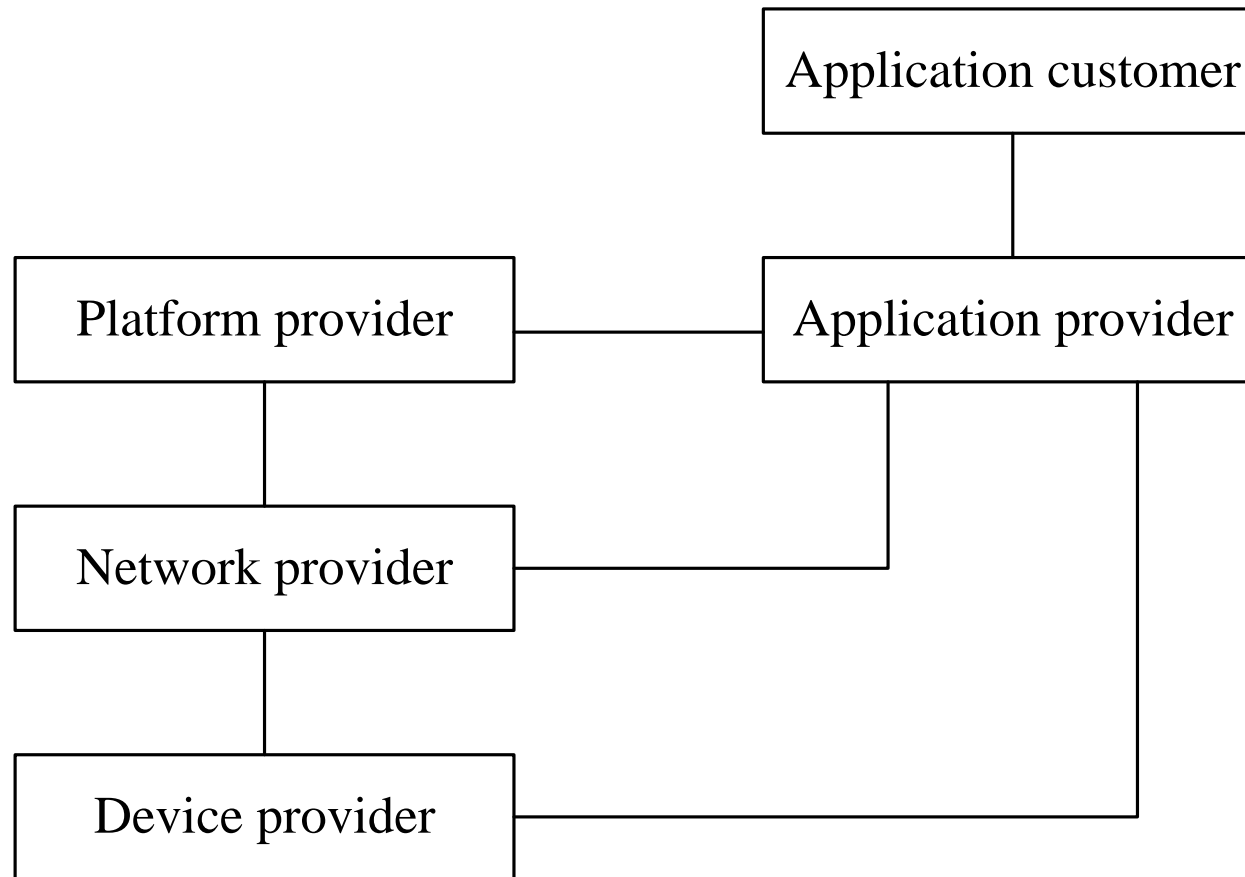
TELECOMMUNICATION
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(11/2017)

Recommendation ITU-T Y.4806 provides a classification of the security issues for the Internet of things (IoT) and examines how the security threats may affect safety, in order to determine which security capabilities specified in Recommendation ITU-T Y.4401/Y.2068 support safe execution of the Internet of things.

The appendices of this Recommendation consider how the joint analysis of threats and security capabilities mentioned herein may be used to establish security requirements for the different applications of the Internet of things

IoT ecosystem and business models

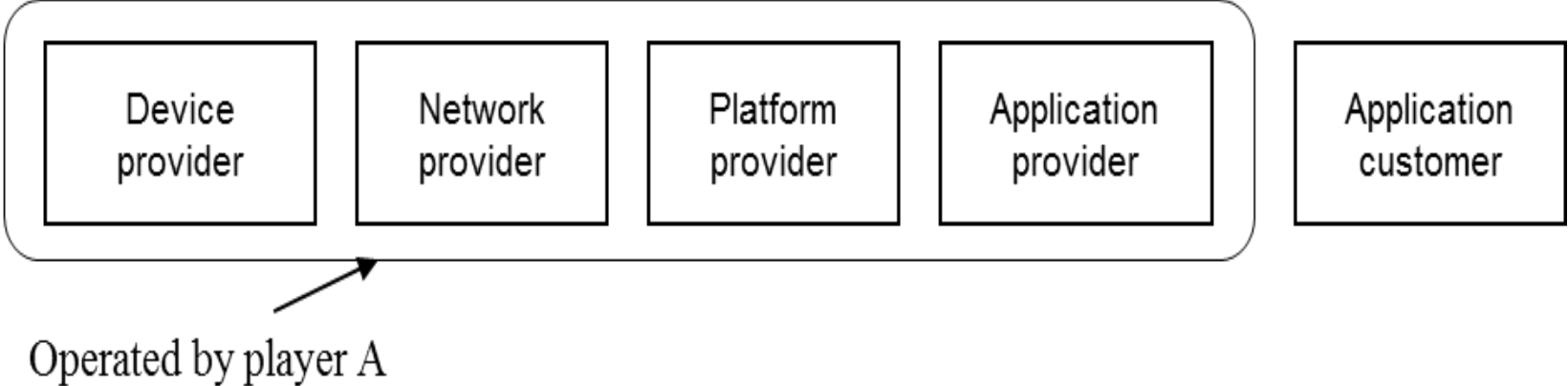


IoT ecosystem



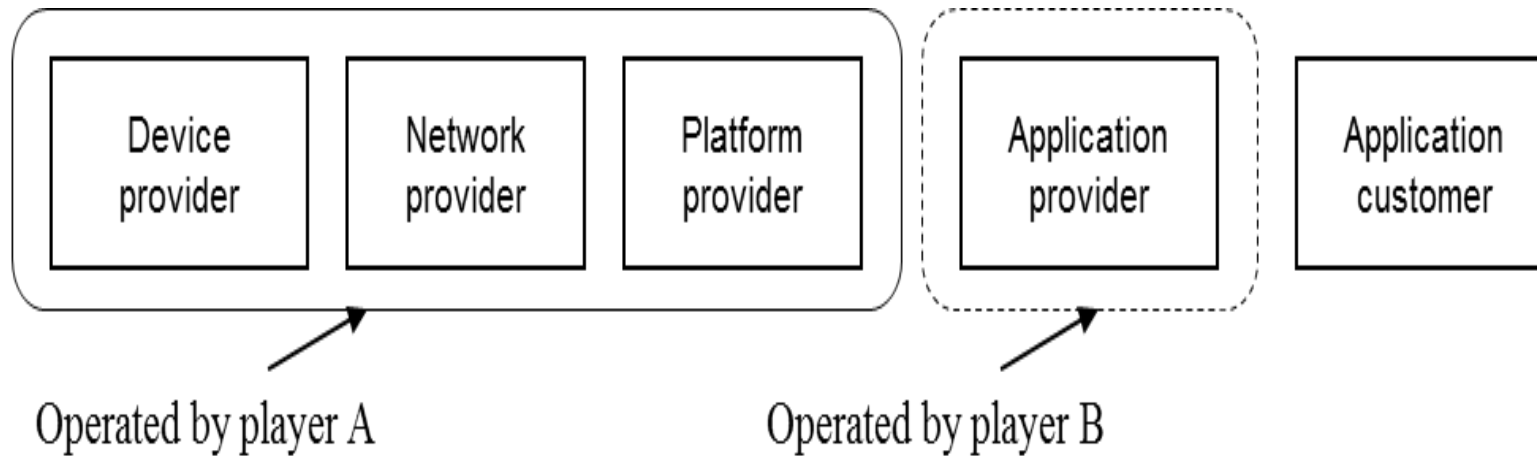
IoT Business models

IoT Business Model 1



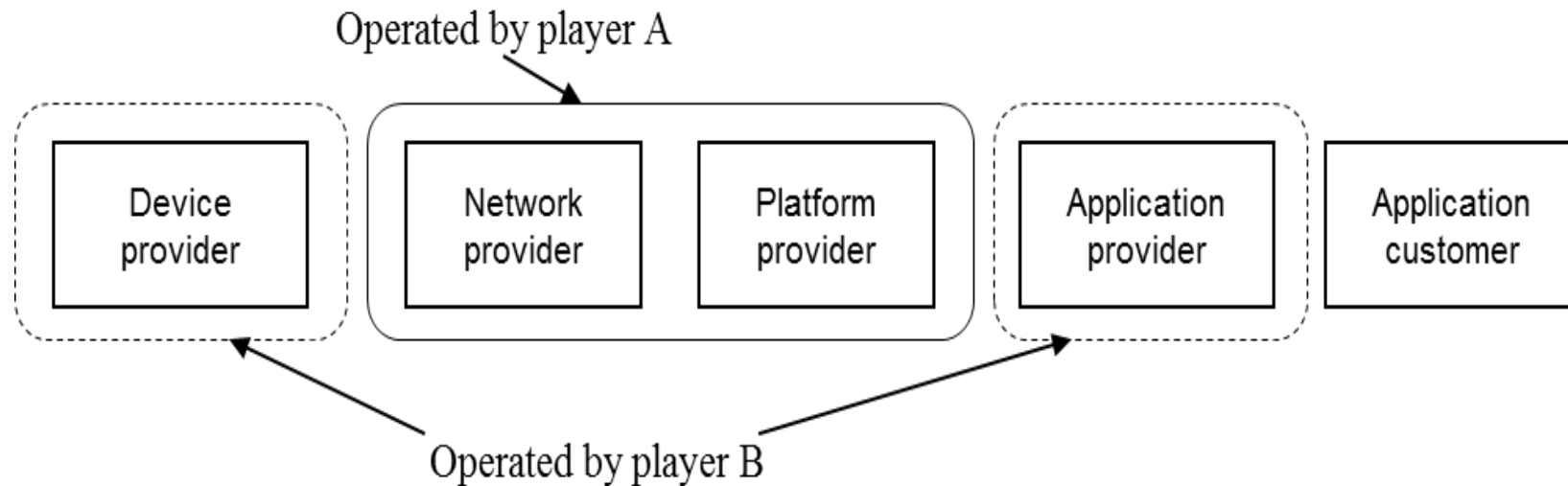
Telecom operators and some vertically integrated businesses (such as smart grid and intelligent transport systems (ITS) businesses) act as player A in model 1.

IoT Business Model 2



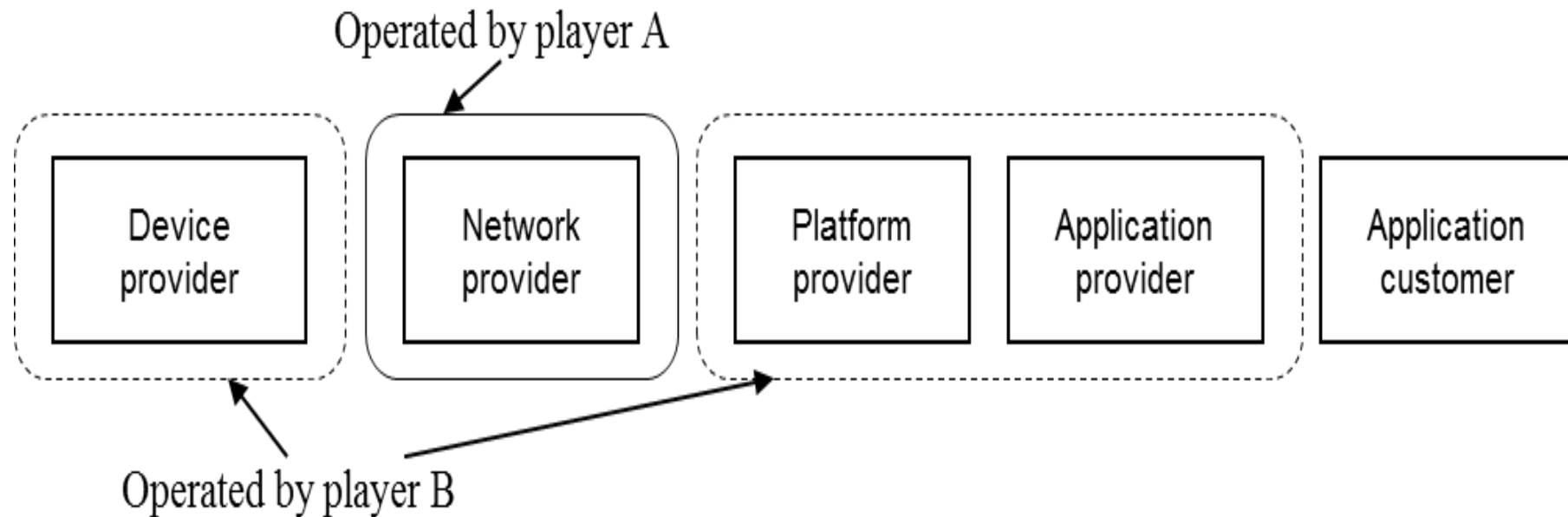
Telecom operators act as player A, other service providers as player B in model 2.

IoT Business Model 3



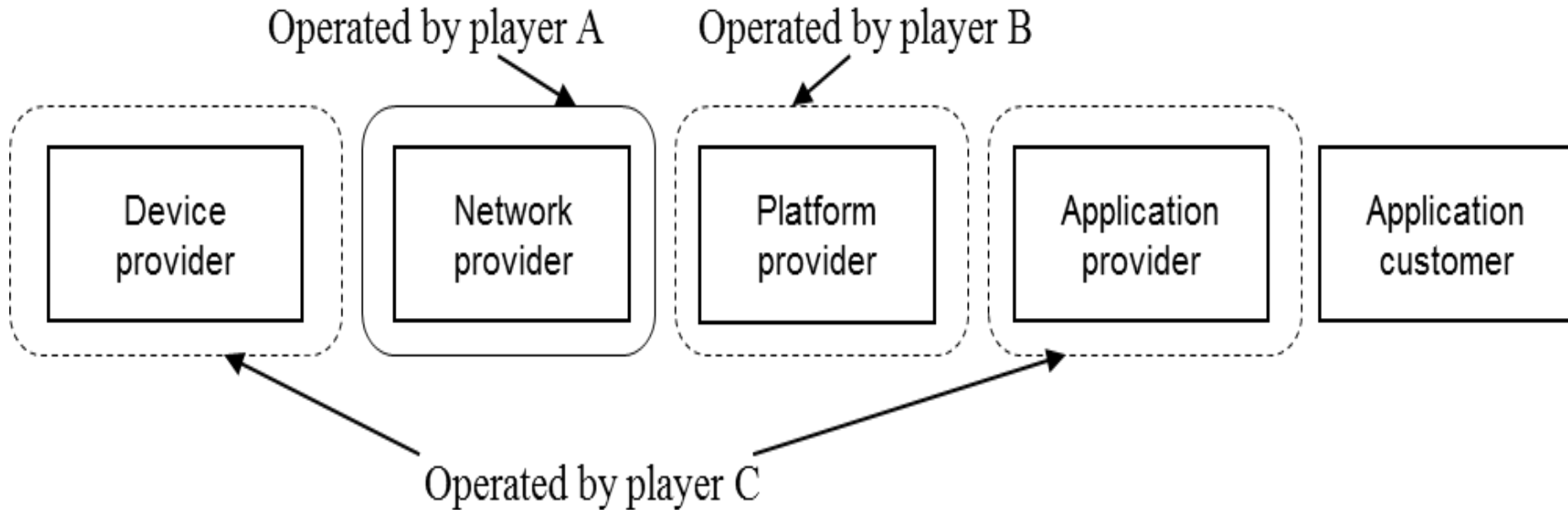
Telecom operators act as player A and other service providers act as player B

IoT Business Model 4



Telecom operators act as player A, other service providers and vertically integrated businesses act as player B in model 4.

IoT Business Model 5



Telecom operators act as player A, other service providers act as player B, and vertically integrated businesses act as player C in model 5.

Telecommunication Networks

Our work is carried out by various means, including symposia, workshops, conferences, seminars and expert advice as well as information sharing, creation of tools and training material, direct assistance, partnership, publications and events. Our priority areas are as follows:



- **Next-Generation Networks:** assistance on planning, deployment, migration, interoperability, digitization and evolution of networks, network elements and applications
- **Broadband Networks (wired and wireless technologies):** assistance with planning, implementation and development of national ICT broadband networks, including promoting IXPs
- **Rural communications:** provision of information on access and backhaul technologies and source of power supply, latest technologies and best practice, implementation of projects on public community broadband access points
- **Conformance and interoperability (C&I):** assistance on the establishment of national, regional or subregional C&I programmes, assessment and feasibility studies, providing information and training to technicians, policy-makers and businesses on C&I, providing guidelines on C&I
- **ITU Broadband, IPv6 and Internet Exchange Implementations:** to provide broadband connectivity free or low cost digital access for schools, hospitals, underserved populations; IXPs to reduce transmission costs, optimize Internet traffic, improve QoS
- **ITU Interactive Transmission Maps:** cutting-edge ICT-data mapping platform to take stock of national backbone connectivity and other key ICT metrics.
- **Bridging the Standardization Gap:** Increasing the knowledge and capacity of developing countries for the effective application/implementation of standards
- **WSIS ALC2 (Infrastructure)**

For more information please visit: <http://www.itu.int/en/ITU-D/Technology/Pages/default.aspx>

Telecommunication Networks



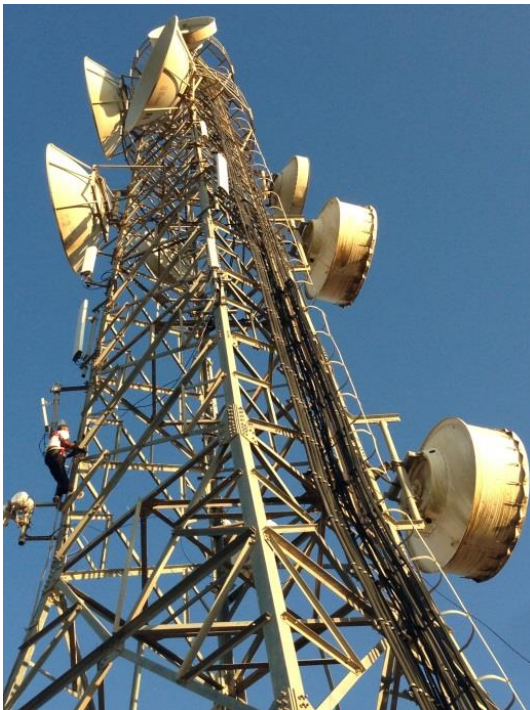
ITU Broadband, IPv6 and Internet Exchange Implementations

➤ **Broadband Wireless Networks Implementation:** To provide broadband connectivity free or low cost digital access for schools and hospitals, and for underserved populations in rural and remote areas in selected countries.

➤ **Internet Exchange Development:**

To bring the value of IXPs in leveraging the benefits of connectivity through potentially reduced transmission costs, optimized Internet traffic, improved Quality of Service.

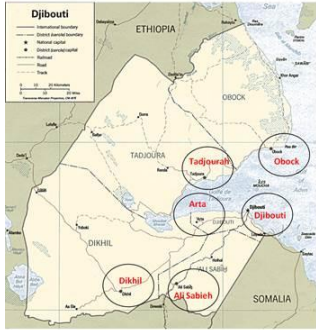
Widely accepted best practices for the design, installation and operation of IXPs. peering as an effective way for Internet Service Providers (ISPs) to improve the efficiency of operations and interconnection business relationships



Broadband Wireless Projects



Djibouti - Mobile WiMax standard IEEE802.16e



Burundi Training & Network Installation



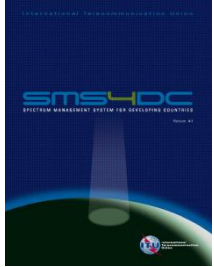
Swaziland Project Implementation - field Missions



Burundi - Connecting Hospitals for E-Health

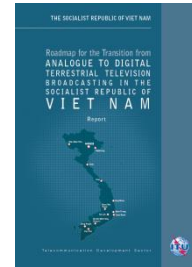


Spectrum Management and Broadcasting



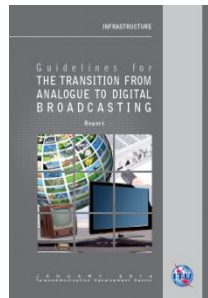
Spectrum Management Tool (SMS4DC)

- A computer program to assist the administrations of developing countries
- On technical and regulatory procedures for managing spectrum
- around 50 subscribers



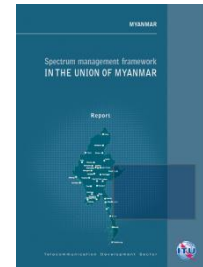
National Roadmaps for Digital Broadcasting Transition

- ITU has helped over 30 countries around the world since 2009 for establishing national goals, strategies, key activities and so forth



The Guidelines for DTTB Transition

- for the smooth transition to Digital Terrestrial Television Broadcasting (DTTB)
- On policy, technologies, network planning, customer awareness and business planning
- Worldwide revision published in 2014



Direct assistance in spectrum management

- Assistance in Cross Border Frequency Coordination (HCM4A in Africa)
- Spectrum management assessment
- Establishment of spectrum master plans
- Spectrum monitoring
- Consulting to specific issues (e.g. spectrum fee, NTFA)



Other Activities

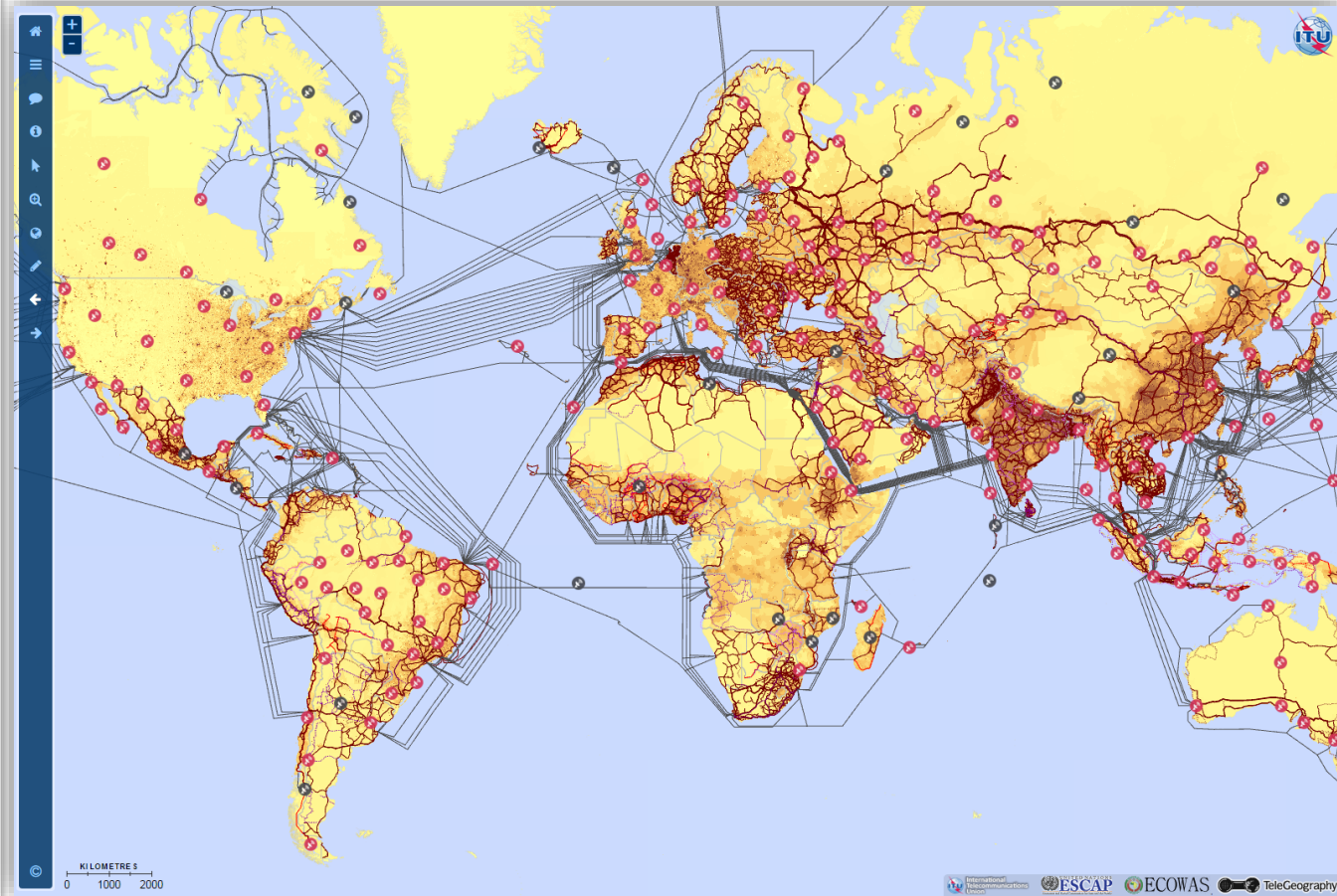
- [DSO database](#) on status of the transition to Digital Terrestrial TV Broadcasting
- Spectrum Management Training Program (SMTP)
- ITU-D Study Group Questions (Q8/1, Resolution 9, Q7/2)
- WSIS Action Lines (C3, C7 e-science, C9)

ITU Interactive Transmission Maps



The Interactive Transmission Maps are a cutting-edge ICT-data mapping platform to take stock of national backbone connectivity (Optical Fibres, Microwaves and Satellite Earth Stations) as well as of other key metrics of the ICT sector. Data concerning submarine cables are also included as provided by TeleGeography

- **The Scope** of this ITU project is to research, process and create maps of core transmission networks worldwide
- **The Objectives** of this ITU project are:
 - to assess the status of national connectivity and to identify gaps enabling the design of targeted strategies and implementation programs for increasing the use of broadband.
 - to assess market opportunities, thus serving as a management tool for making investment decisions, promoting broadband and achieving universal connectivity.
 - to be used as a source of abundant and current data on global ICT connectivity.



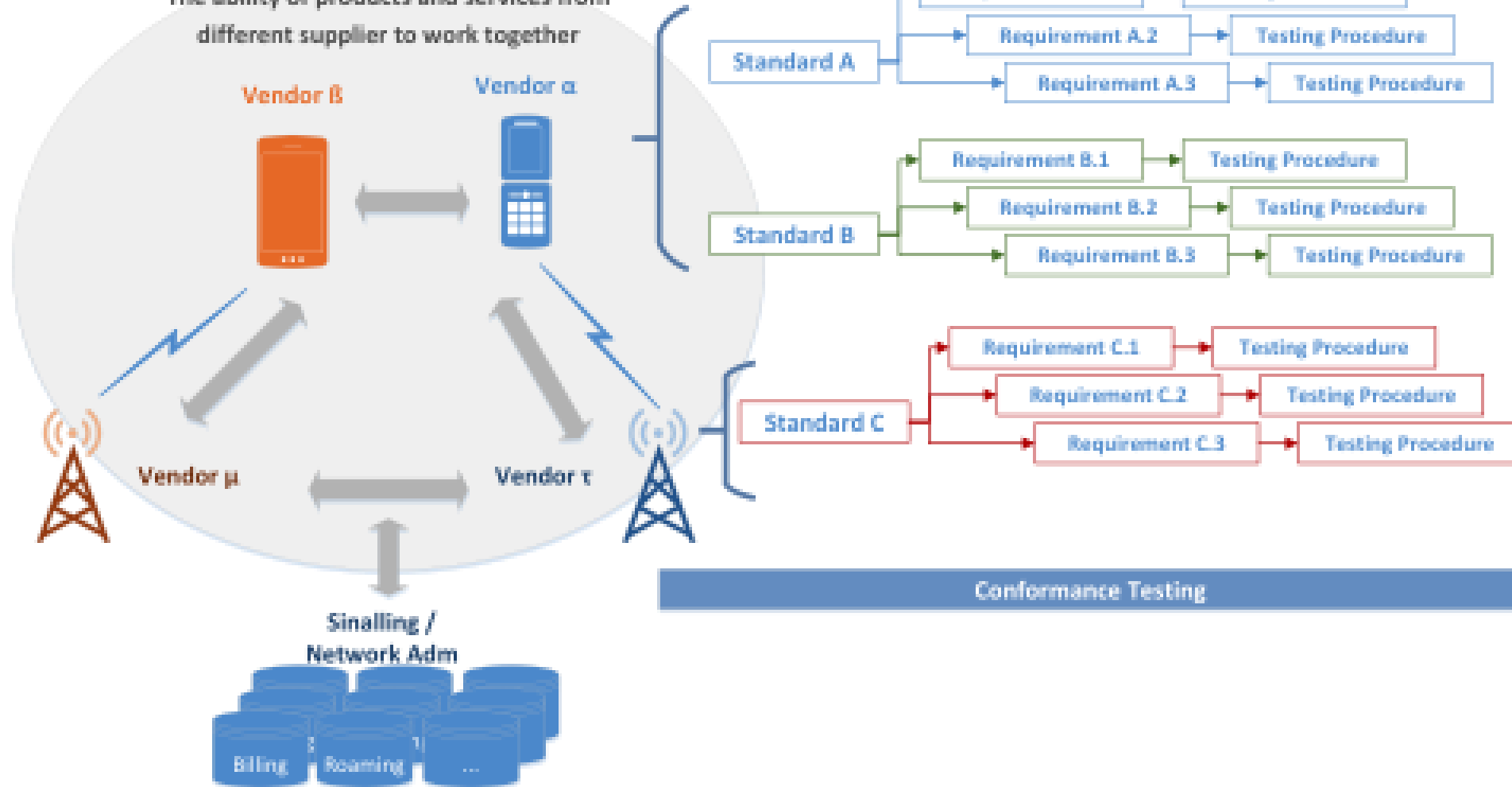
<http://itu.int/go/Maps>

Conformity and Interoperability



Interoperability

The ability of products and services from different supplier to work together



Conformity Assessment

Demonstration that specified requirements relating to a product, process or system are fulfilled

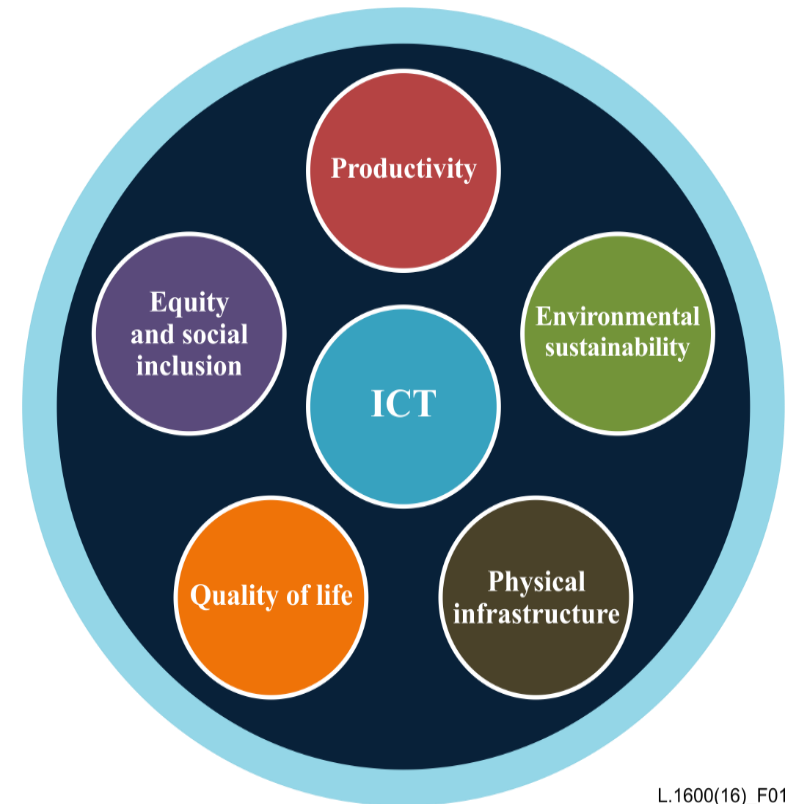
Key Performance Indicators in smart sustainable Environment



KPIs focuses specifically on a set of ICT-related indicators for smart sustainable Environment/Cities

The dimensions of KPIs can be categorized as shown :

- Information and communication technology
 - Environmental sustainability
 - Productivity
 - Quality of life
 - Equity and social inclusion
 - Physical infrastructure
- In the UN-Habitat prosperity index, ICT forms part of the general 'Infrastructure' category. ICT is defined as a separate category to highlight the focus of ITU.





Thank you

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