

# ACTIONS TO ENABLE THE IOT ECOSYSTEM IN A NETWORKED SOCIETY

National Telecommunication Agency - ANATEL  
Planning and Regulation Superintendence

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## International Discussions – ITU – IoT and IMT 2020

- **WTSA-16: World Telecommunication Standardization Assembly 2016:** Defined the key topics to be studied at ITU-T on the 2017-2020 study period. Both IoT and IMT-2020 (5G) deployment are the “hot topic” to be address on the following years.
  - **ITU-T SG20:** Lead Study group responsible for the studies related to Internet of things (IoT) and its applications, including smart cities and communities (SC&C).
  - **ITU-T SG13:** Lead Study group responsible for the studies related to the IMT-2020 standards (non-radio part).
- **World Radiocommunication Conference 2019:** Agenda Item 9.1.8 - Resolution 958 (WRC-15) - Narrowband and broadband machine-type communication infrastructures

“Studies on the technical and operational aspects of radio networks and systems, as well as spectrum needed, including possible harmonized use of spectrum to support the implementation of narrowband and broadband machine-type communication infrastructures, in order to develop Recommendations, Reports and/or Handbooks, as appropriate, and to take appropriate actions within the ITU Radiocommunication Sector (ITU-R) scope of work.”

- **ITU-R SG5 – Working Party 5D:** Studies related to comprising the IMT-2000, IoT and M2M:
  - *Doc 5D/374 Chapter 3 (Annex 3.11, 3.12 e 3.13): Technical and operational aspects of IoT, including possible spectrum need.*



## International Discussions – ITU

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- **ITU-T Y.4000/Y.2060 (06/2012) – Overview of Internet of Things**
  - General Vision, concepts and definitions
  - Key Requirements and characteristics, reference models and scenarios.
  - References models and possible Scenarios

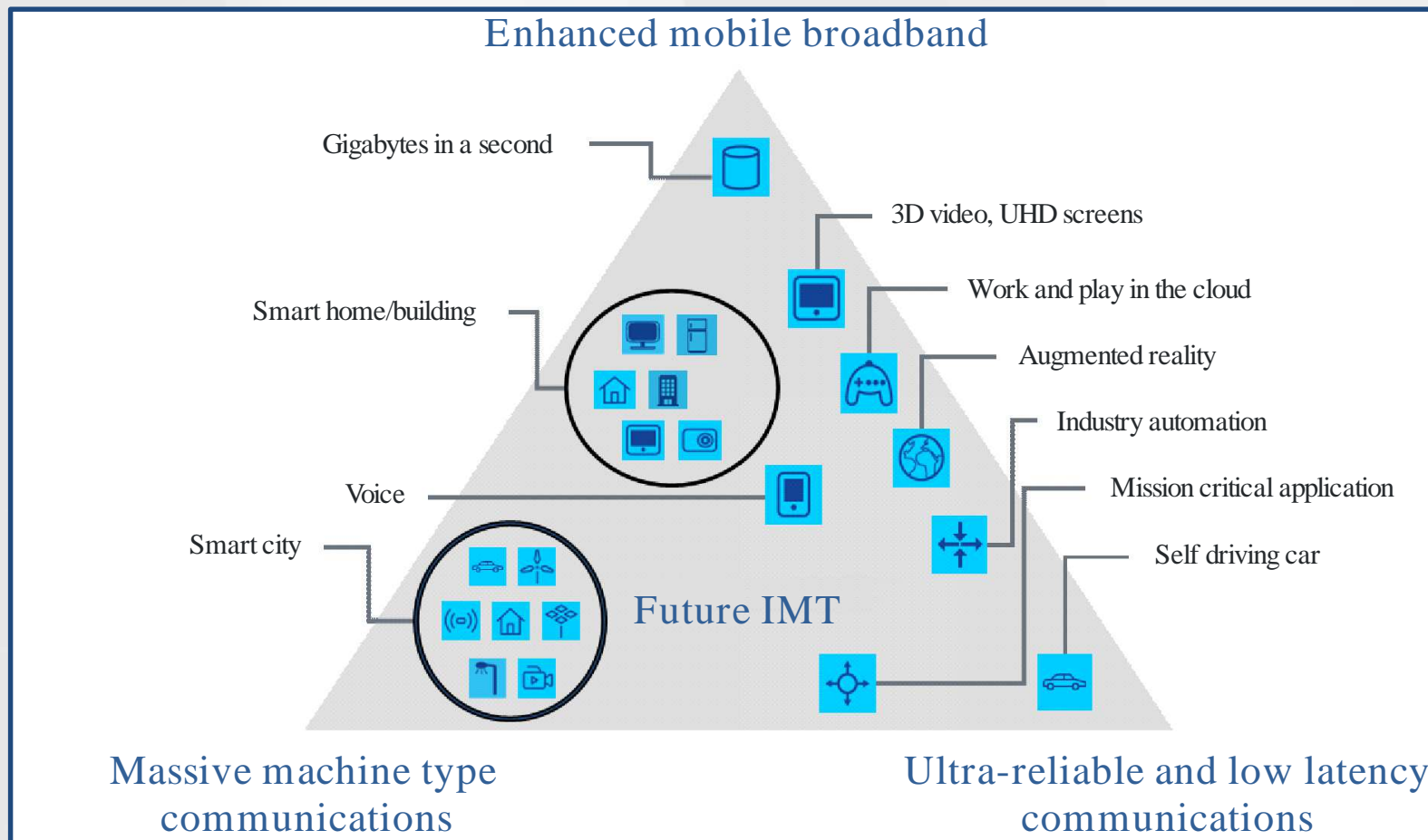
**“Internet of things (IoT): A global infrastructure for the information society, enabling advanced services by interconnecting (physical and virtual) things based on existing and evolving interoperable information and communication technologies.”**

**IMT-2020 (5G) is one of the key enablers, and sometimes a requirement, for a successful deployment on IoT solutions on today's networked society.**



## International Discussions – ITU

- **ITU-R M.2083 – Framework and overall objectives of the future development of IMT for 2020 and beyond:**
  - Defines the framework and overall objectives of IMT-2020
  - Defines the roles that IMT could play in our networked society

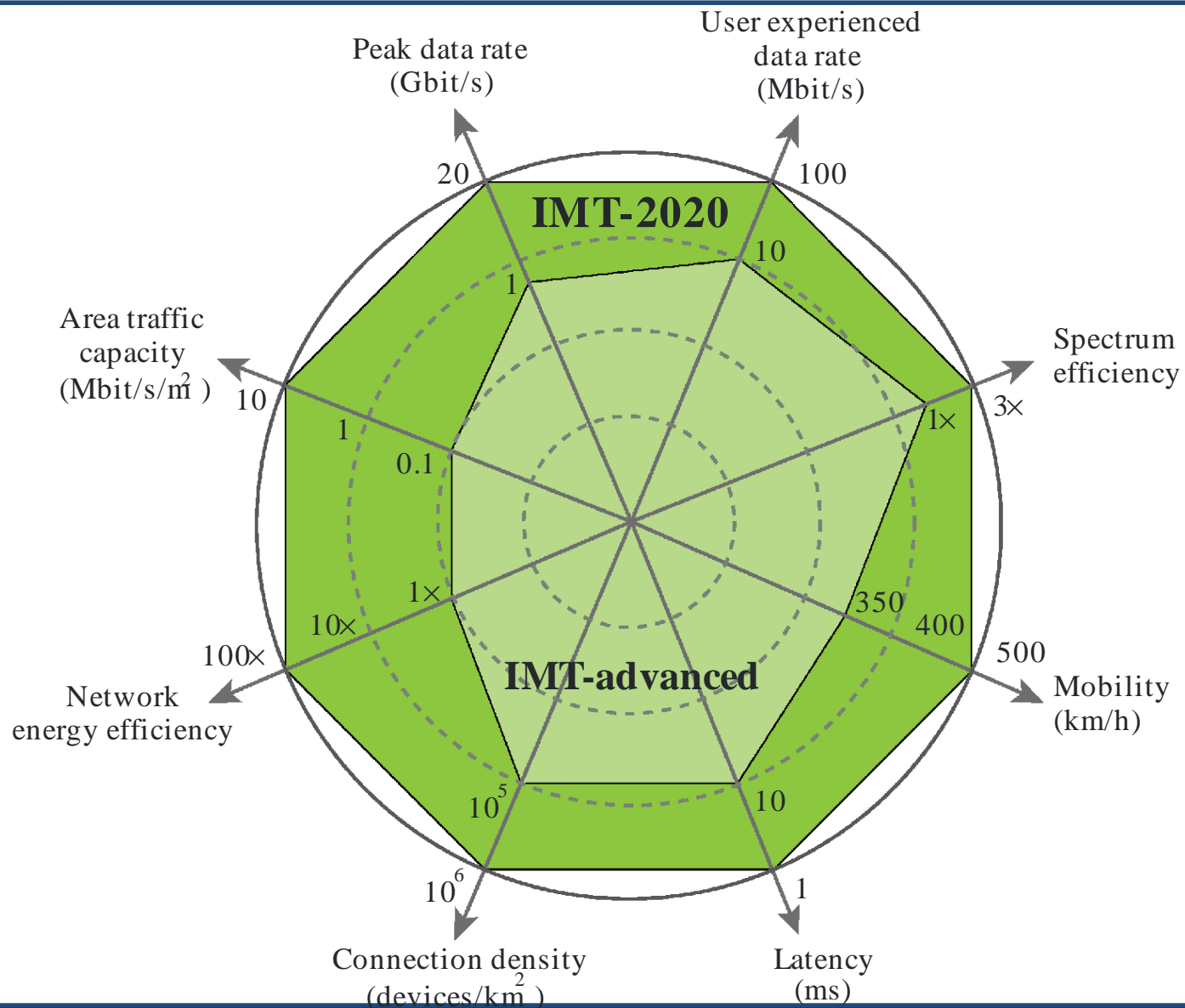


## International Discussions – ITU - Capabilities of IMT-2020

- **ITU-R M.2083 – Capabilities of IMT-2020:**
  - **Peak data rate:** Maximum achievable data rate under ideal conditions per user/device (in Gbit/s).
  - **User experienced data rate:** Achievable data rate that is available ubiquitously across the coverage area to a mobile user/device (in Mbit/s or Gbit/s).
  - **Latency:** The contribution by the radio network to the time from when the source sends a packet to when the destination receives it (in ms).
  - **Mobility:** Maximum speed at which a defined QoS and seamless transfer between radio nodes which may belong to different layers and/or radio access technologies (multi-layer/-RAT) can be achieved (in km/h).
  - **Connection density:** Total number of connected and/or accessible devices per unit area (per km<sup>2</sup>).
  - **Energy efficiency:** on the network side and on the device side (in bit/Joule).
  - **Spectrum efficiency:** Average data throughput per unit of spectrum resource and per cell (bit/s/Hz).
  - **Area traffic capacity:** Total traffic throughput served per geographic area (in Mbit/s/m<sup>2</sup>).



# International Discussions – ITU-R M.2083 – Capabilities of IMT-2020



## Regulatory Agenda 2017-2018

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- **Regulatory Agenda 2017-2018:** The Agency is meeting with various stakeholders to collect feedback on possible regulatory improvements to facilitate the IoT ecosystem in the country, such as:
  - Mobile Virtual Network Operators - MVNO Regulation (RRV-SMP).
  - Numbering Regulations (including discussions regarding use of international numbering resources and Permanent Roaming)
  - Simplification of the Quality and Consumer regulatory framework for IoT scenarios.
  - Taxes exceptions for IoT/M2M Scenarios.
  - Radiofrequencies discussions.
  - Technological neutrality is important (Sigfox, LoRa, NB-IoT, LP-WAN...);
- **As listed on item 35 of the Agenda:** Anatel should Re-evaluate it's regulations with the scope to reduce barriers to the expansion of Internet of Things – IoT applications and Machine-to-Machine communications.

**Deadline for delivering the Regulatory Impact Assessment: 2º Semester of 2018.**



## Main Challenges

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- **Mobile Virtual Network Operators - MVNO Regulation (RRV-SMP):**
  - Improvements to the Accredited model?
  - Obligation exceptions to the Authorized Model?
  - Creation of a new MVNO IoT model?
- **Simplification of the Quality and Consumer regulatory framework for IoT scenarios:**
  - Which obligations make sense to be applied to the IoT/M2M scenarios?
- **Numbering Regulations (including discussions regarding use of international numbering resources and Permanent Roaming):**
  - Roaming as a possible connectivity solutions for IoT/M2M?
  - International Numbering x use of other Countries Numbering Resources?
  - Over-the-air reconfiguration of embedded simcard?
- **Taxes exceptions for IoT/M2M Scenarios:**
  - High access volume **x** Low income per item **x** Actual TFF/TFI taxes?
  - How to classify terminals as M2M/IoT to receive the taxes exceptions?
  - Taxation based on device numbers **x** Revenue percentage?





**THANK YOU**

