ITUEGTI

ITU Expert Group on Telecommunication/ICT Indicators

13th Meeting

12-14 September 2022 | 13:00-16:00 (CET)

Report by the 5G/M2M subgroup to EGTI

1. Objectives, scope and previous work

In the last two EGTI meetings 5G network development has been incorporated with a new indicator “Active mobile broadband subscriptions to 5G / IMT-2020” and introduced as well the possibility to provide broadband service in fixed locations with 5G (fixed wireless broadband).

Given the significant deployment of 5G networks in many parts of the world:

is there any need to extend the existing **M2M indicator** in light of the new applications, uses and connectivity possibilities that 5G is bringing about?

2. The discussion

starting point for the subgroup: current ITU definition of M2M*:

"M2M mobile-network subscriptions/ connections refers to the number of mobile-cellular machine-to-machine subscriptions/ connections that are assigned for use in machines and devices (cars, smart meters, consumer electronics) for the exchange of data between networked devices, and are not part of a consumer subscription.

For instance, SIM-cards in personal navigation devices, smart meters, trains and automobiles should be included. Mobile dongles and tablet subscriptions should be excluded"

* Handbook for the collection of Administrative Data on Telecommunications/ICT, 2020
https://www.itu.int/en/ITU-D/Statistics/Pages/publications/handbook.aspx

2. The discussion (II)

But… **limitations** of this definition of M2M:

- only the “cellular” activity is captured- i.e., any connection that uses the licensed spectrum managed by registered telecom operators.

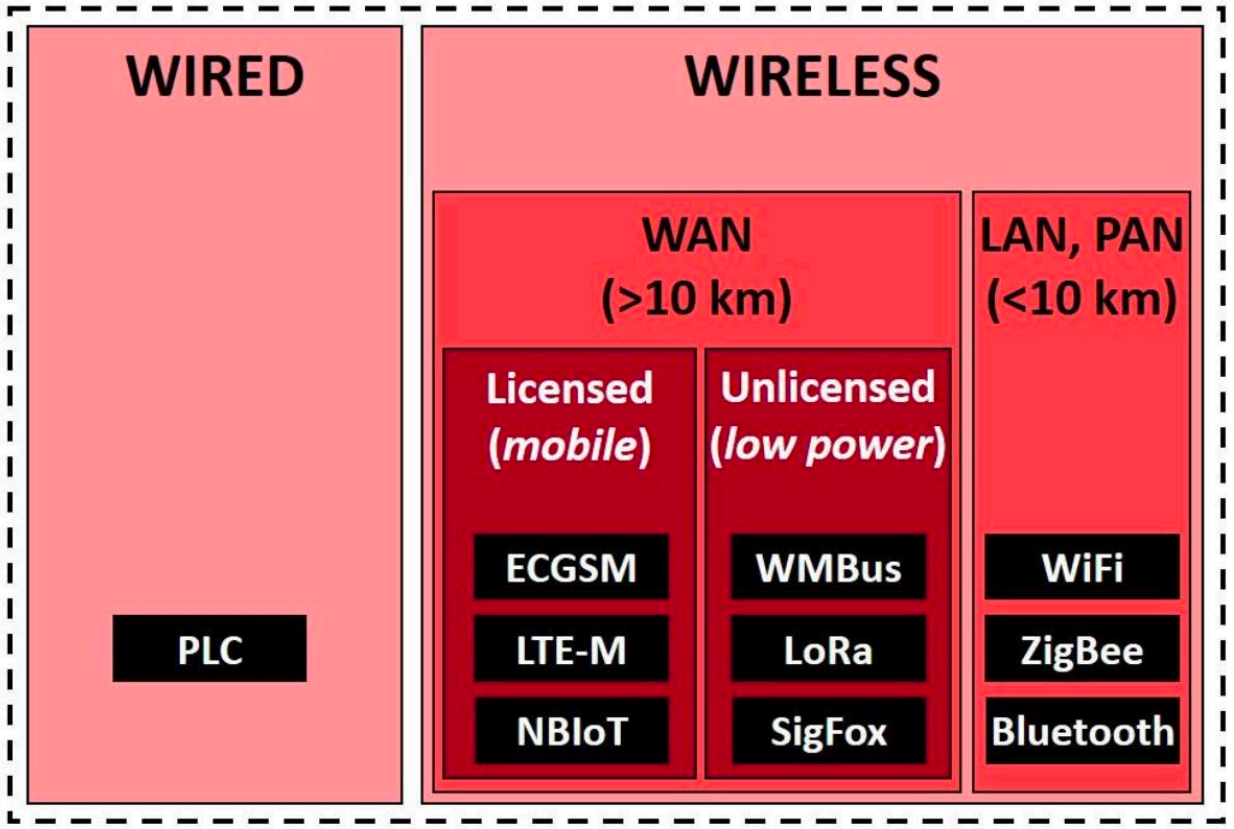
- any traffic or activity that may use non licensed spectrum, as wi-Fi, or uses local networks (as private local area networks) is not being measured with the existing M2M indicator

Is there then, any need to extend the existing M2M definition in light of the new applications, uses and connectivity possibilities that 5G is bringing about?

2. The discussion (III)

Example: Different underlying network technologies for smart metering (study by AGCOM, 2021)

Figura 12 – Classificazione delle tecnologie abilitanti lo *smart metering*

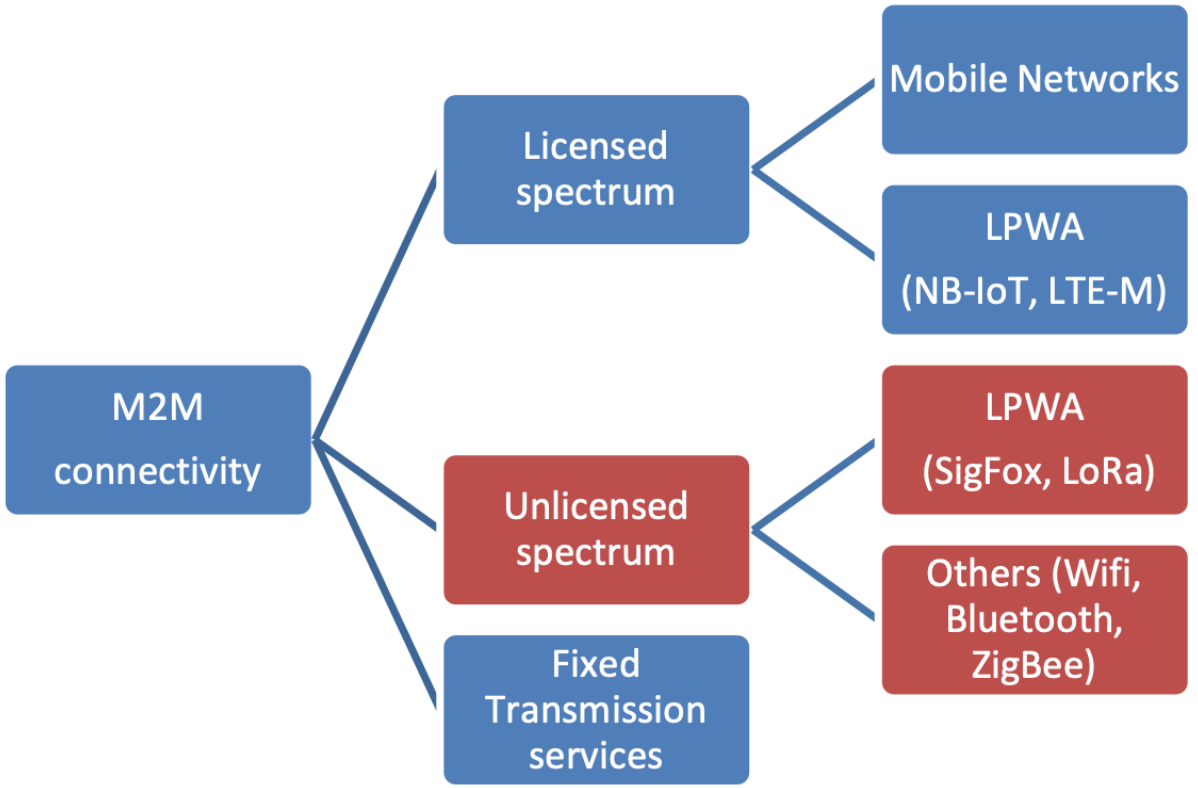


Fonte: AGCOM

2. The discussion (IV)

Different underlying network technologies for M2M (BEREC, 2019)

Figure 4 – M2M connectivity



Source: BEREC

2. The discussion (V)

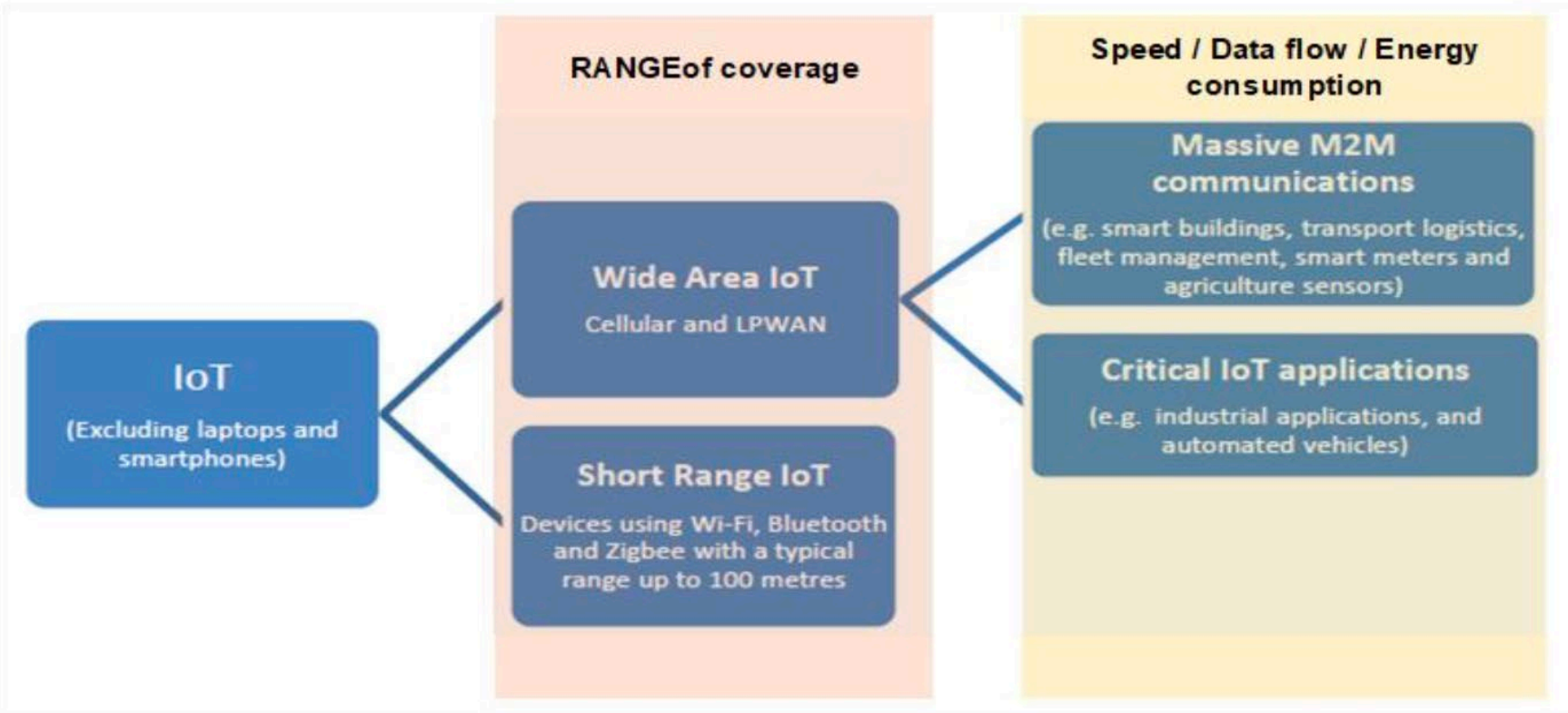
Internet of Things, IoT, by contrast, and based on OECD (2022): *"…. includes all devices and objects whose state can be altered via the Internet, with or without the active involvement of individuals".*

IoT not only refers to the connected devices (which is the focus of existing indicators), but to the entire ecosystem in which the "things" sense and communicate, which is composed of various layers:

(1) the enabling infrastructure, which includes telecommunication, cloud and data
(2) the devices embedded in "things", which contain software and APIs to connect to objects, and
(3) the operating platform and the application layer

2. The discussion (VI)

Figure 1.1. Underlying criteria of the OECD taxonomy of IoT for measurement purposes



Source: Updated from (OECD, 2018[8]).

2. The discussion (VII)

Agents involved in the IoT value chain (OECD, 2022)

Table 1.1. Major players in the IoT value chain

	Technology leaders	New entrants
Application layer	Amazon, Apple, Cisco, GE, Google, IBM, Microsoft	Alibaba, Huawei, Samsung, Schneider, Siemens, Tencent
Data layer	AWS, Google Cloud Services, Infosys, Fortinet, IBM, Microsoft, Oracle, SAS, Tableau	Alteryx, Cloudera, Hortonworks, Dataiku, RapidMiner
Connectivity layer	Nokia, Arista Networks, AT&T, Cisco, Dell, NTT, Ericsson, Orange	Citrix, Coriant, Equinix, Bharti Airtel, China Telecom, Tata Comms
Device layer	AMD, Intel, Nvidia, Apple, Fitbit, Honeywell, Sony	AAC Tech, Garmin, GoPro, LinkLabs, Ambarella, Goertek, HTC

Note: Non-exhaustive list.
Source: (IRENA, 2019[13]).

3. The proposal for EGTI consideration

Given

- the wide variety of networks employed in providing IoT services
- some spectrum bands used or potentially to be used for connecting devices are unlicensed bands
- the very broad scope of IoT- that does not limit to the “connectivity” layer
- the multitude of agents that integrate the provision of services and networks for IoT
- Regulatory Authorities´ limitations in collecting information from non-registered telecommunication operators

the collection of new indicators is a daunting task as of today

3. The proposal for EGTI consideration (II)

Hence, it is proposed:

- **keep the current definition** of the M2M indicator *2.10 Machine-to-Machine mobile network subscriptions*- M2M (i271m2m)

- to facilitate the collection of the indicator and adapt it to recent developments the subgroup recommends to **include eSIM*** in the scope of the M2M indicator

- for pre-payment M2M modality it is recommended to use the same **activity criterion** as the one used in cellular subscriptions: the SIM device has made a communication in the last 90 days to be counted as an "active M2M".

* eSIM are embedded in the final user device and allow for the controlling and switching of service provider remotely, without the need to extract and substitute one physical SIM card from the device.

3. The proposal for EGTI consideration (III)

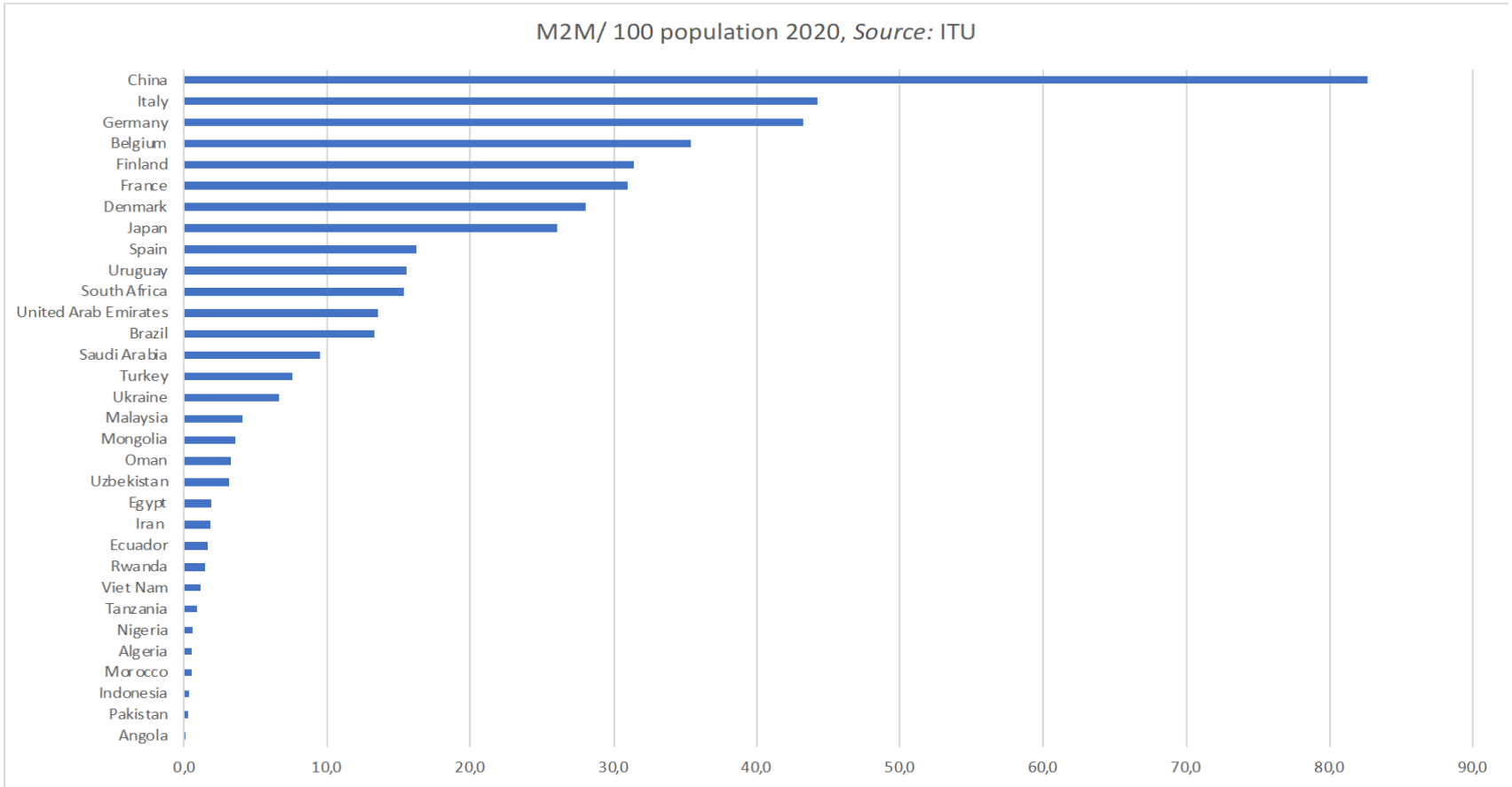
- even if the indicator refers to “subscriptions to M2M” in effect what is being measured is “number of connections” via M2M

- **limitation (big):** there are connections among devices that use other networks, i.e., non- licensed spectrum, private networks or some local area networks, among others, **that are not being captured** with the existing indicator

- the subgroup recommends to follow up the evolution of IoT in terms of networks being used, services and applications implemented, case studies of interest if necessary in joint work with the **Expert Group on Households Indicators** (EGH) in order to enrich the data sources and analysis that can be performed.

4. One last issue…….

It is of utmost importance to collect M2M all over the world, it captures only some but an important part of communications among devices, machines and development of 5G



Thank you!

and special thanks to the participants at the 5G- M2M subgroup for the illuminating discussion and evidence brought over

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