

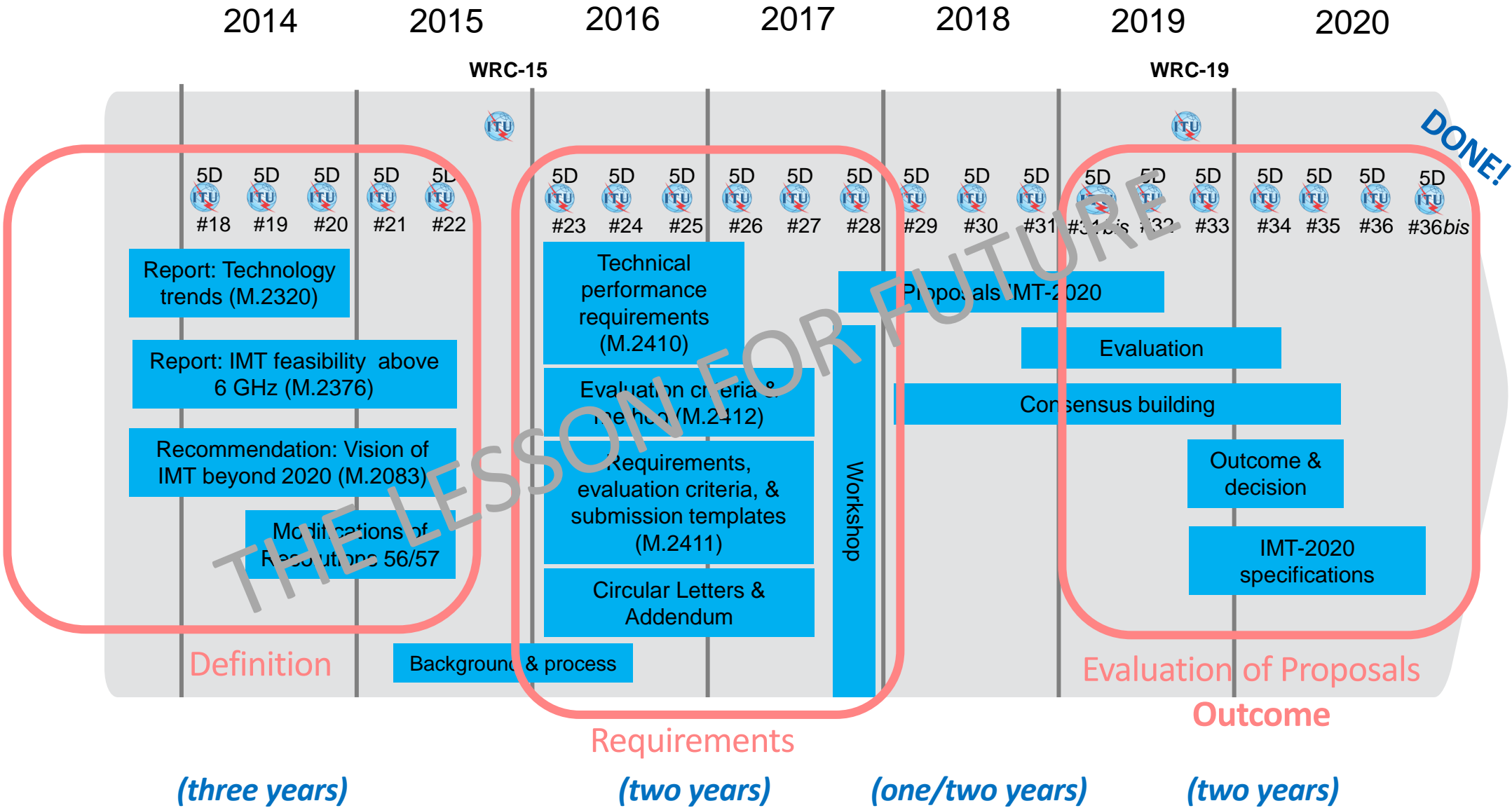
A woman wearing a white lab coat, safety glasses, and a blue hairnet is examining a petri dish in a laboratory. The background shows shelves with various petri dishes and laboratory equipment. The text is overlaid on the image.

ITU-R WP5D New Vision and Process

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Ericsson Group Function Technology
Vice-Chair ITU-R WP5D

WP 5D timeline for IMT-2020

Detailed specifications for the terrestrial radio interfaces



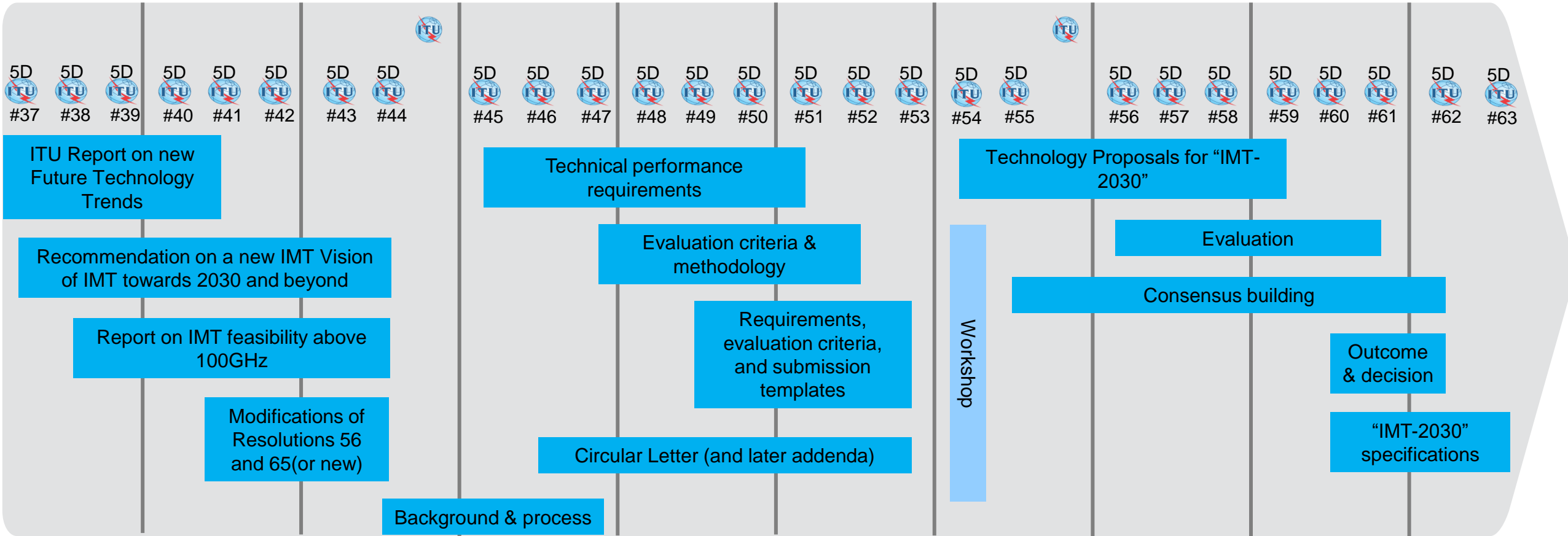
WP 5D timeline for “IMT-2030”



2021 2022 2023 2024 2025 2026 2027 2028 2029 2030

WRC-23

WRC-27



Note 1: Meeting 5D#59 will additionally organize a workshop involving the Proponents and registered IEGs to support the evaluation process
Note 2: While not expected to change, details may be adjusted if warranted. Content of deliverables to be defined by responsible WP 5D groups

ITU RECOMMENDATIONS ON IMT

Basis for Licensing to IMT – WP5D is Focal Point



“Detailed Radio Interface Specifications on International Mobile Telecommunications”



WCDMA/HSPA/LTE
Cdma-2000
TD-SCDMA
EDGE/UWC-136
DECT
WiMAX



LTE-Advanced
WiMAX



3GPP 5G-SRIT
3GPP 5G-RIT
5Gi (TSDSI)
DECT-2020



?



History of the ITU Vision Recommendations



- **Vision for IMT-2000 (developed from late 80's until 1997): M.687 and M.816**
 - FPLMTS/IMT-2000, provides overall concept, worldwide roaming and compatibility, framework of services and two key targets, **144kbps**(Vehicular) and **2Mbps**(Indoor)

- **Vision for IMT-Advanced (developed during 2000 – 2003): M.1645**
 - **Van diagram (Mobility and data rate)** was developed and “Research Targets” (**100 Mbps** and **1 Gbps**) is proposed.

- **Vision for IMT-2020 (developed during 2012 – 2015): M.2083**
 - **Three Usage scenarios**(eMBB, uRLLC and mMTC) from various User and Technology trends
 - **Spider web diagram**(8 key capabilities); Peak data rates and user experience (**20 Gbps** and **100 Mbps**)

- **Vision for “IMT-2030” (developing during 2021 – 2023) : M.TBD**
 - More than 30 vision papers from Industries, Research Institutes and Forums in advance after two decades of ITU Visions
 - Many inputs **indicate extended role of IMT**, beyond telecommunications

Status of work on VISION after WP5D #42



WP5D continued with the new ITU Vision Recommendation:

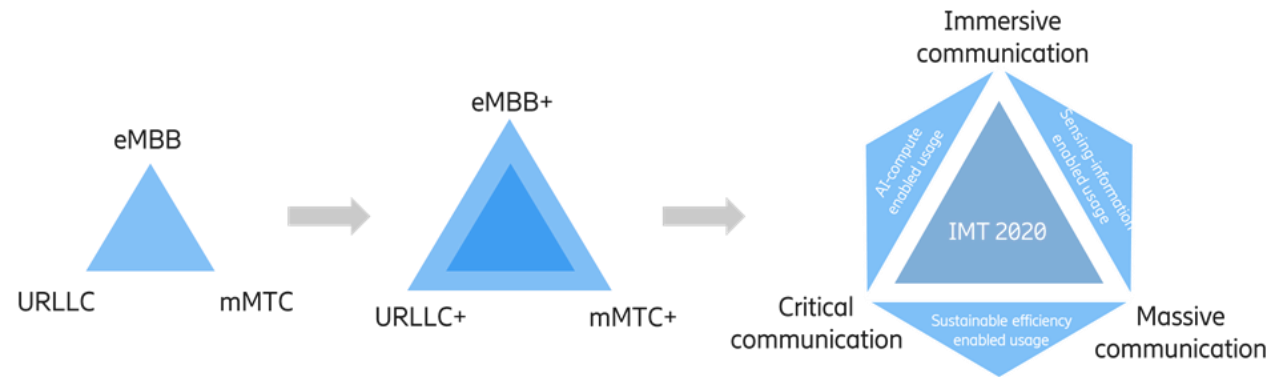
- **New inputs from;** China, Ericsson, ETRI, Finland, GSA, India, Intel, KT, NGMN, Japan, Korea, Nokia, NGMN, Qualcomm, Russia, Singapore, T-mobile, UK, 5GPPP
- **Progress on Use cases & Usage scenarios (2.2 and 3):**
 - Use cases descriptions cleaned-up in 7-9 groups
 - Still 6 Usage scenarios A to F be identified
 - “Communication” and “Beyond communication”
 - 18 proposals for figures ... not discussed.
- **Some progress on capabilities (4)**
 - 8 “legacy” capabilities, with numbers
 - 6 “new” capabilities, issues remain + 2 contentious ones
 - Division into Representative / Quantitative + Native / Overarching / Generic / Qualitative ?

OVERVIEW OF CONTENT AFTER WP5D#42

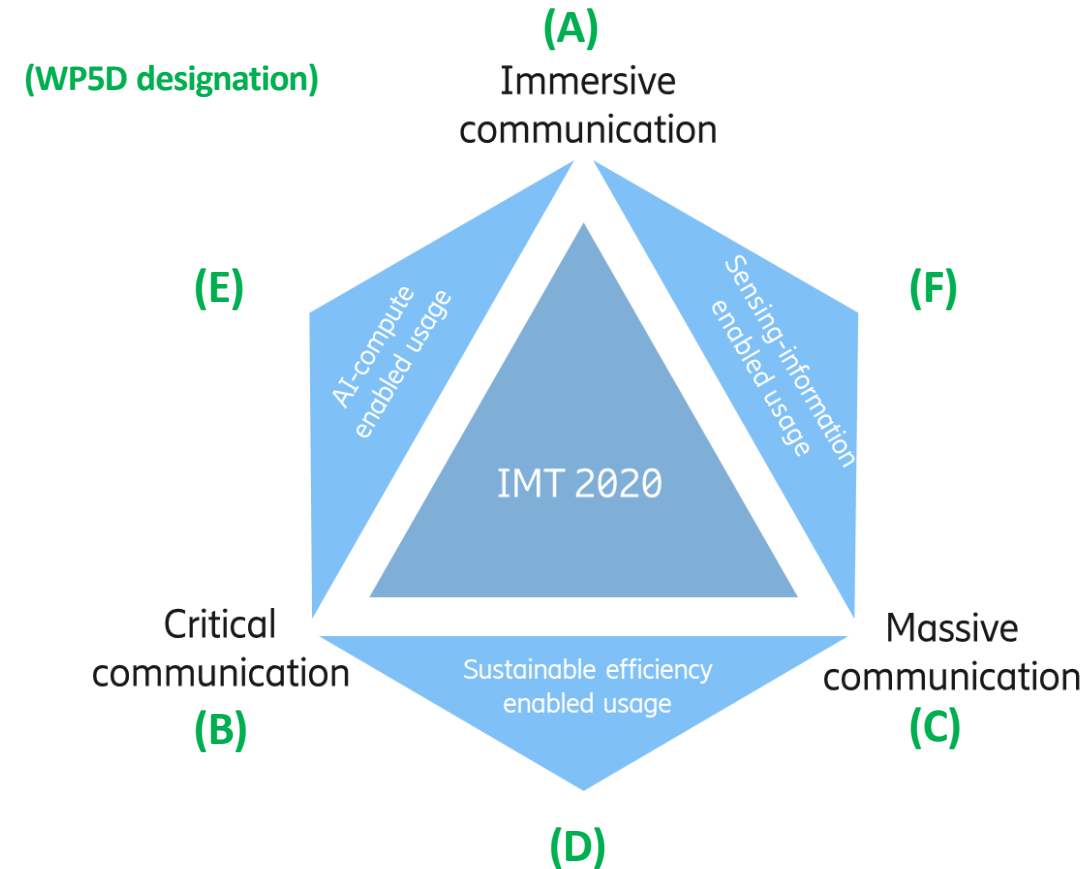
Summary, Scope, ... <i>considering</i> , ... <i>recommends</i> .	3p
1: Introduction	1p
2: Trends of IMT for 2030 and beyond	1p
2.1: Motivation and societal consideration	1p
2.2: User & application trends	5p
2.3-2.5: Technology trends, >100GHz, Spectrum	5p
3: Usage scenarios	15p
3.1: Communication-based usage scenarios	
3.2: Beyond communication usage scenarios	
4: Capabilities of IMT	9p
5: Additional framework and objectives	<u>3p</u>
	45p

Usage scenarios

Evolved, Expanded and New

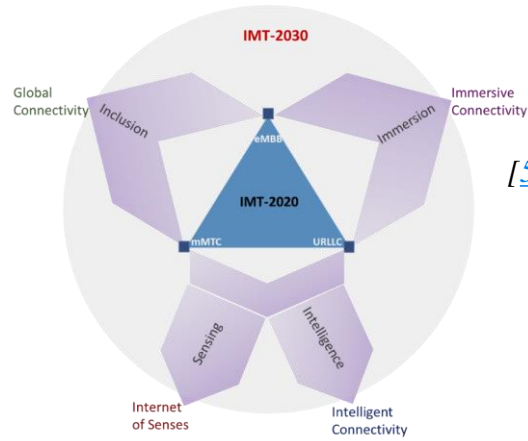


- The 5G usage scenarios expand into usage scenarios for Immersive, Critical, and Massive communications
- New capabilities beyond communications related to AI-compute and Sensing/Information will be added
- Sustainability, efficiency and extended coverage will be essential
- These new dimensions will enable new usages of radio networks, extending into novel applications in IMT-2030.

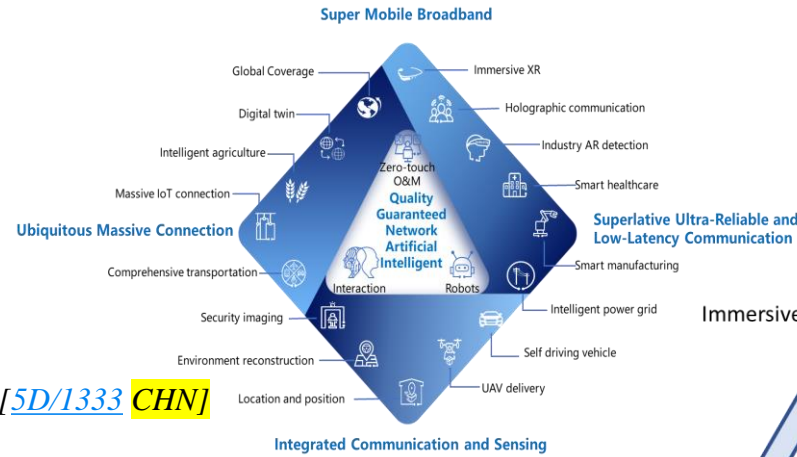


[5D/1479 Ericsson]

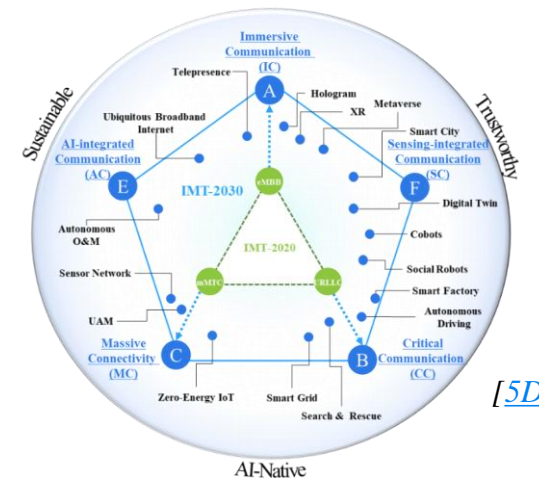
Section 3 – Usage Scenarios figures



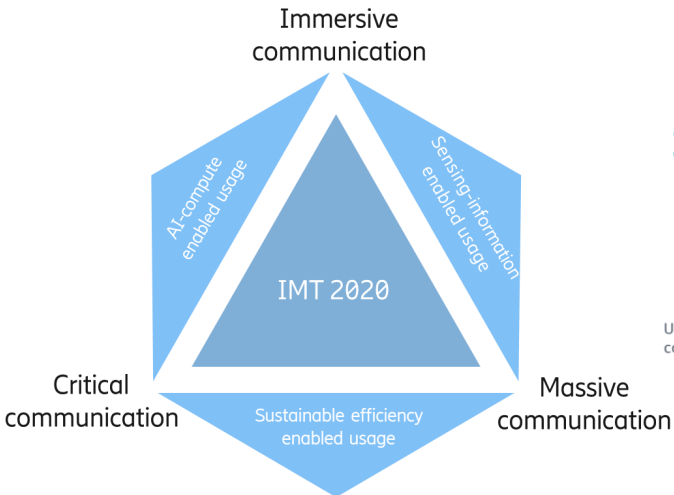
[5D/822 WWRF]



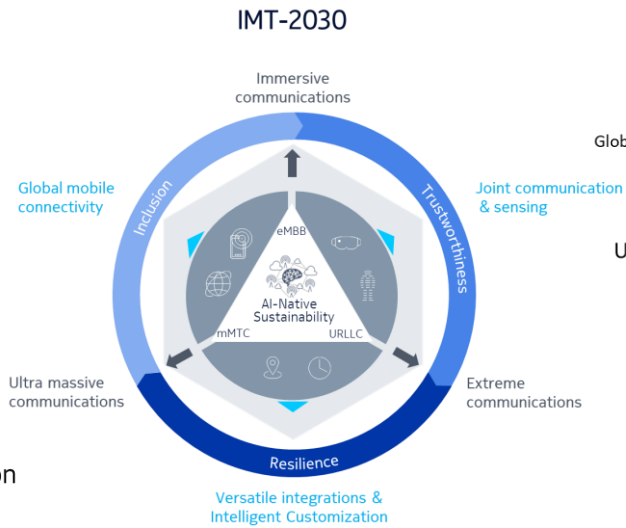
[5D/1333 CHN]



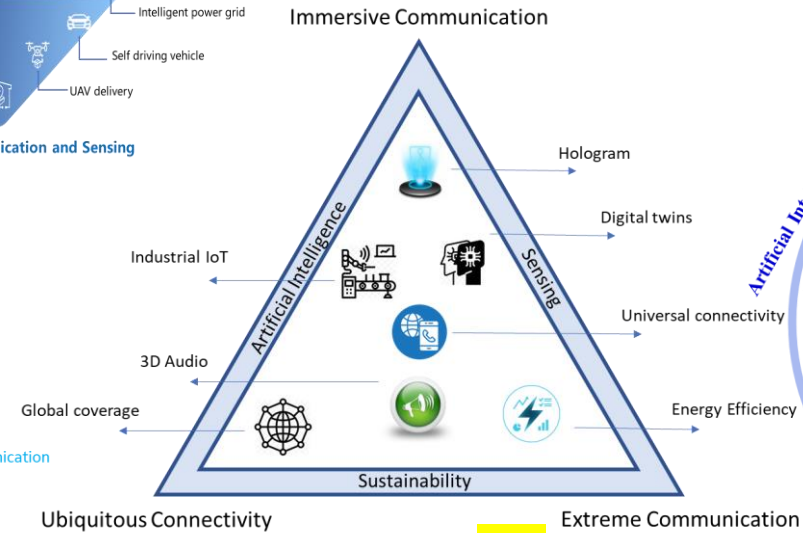
[5D/1209 KOR]



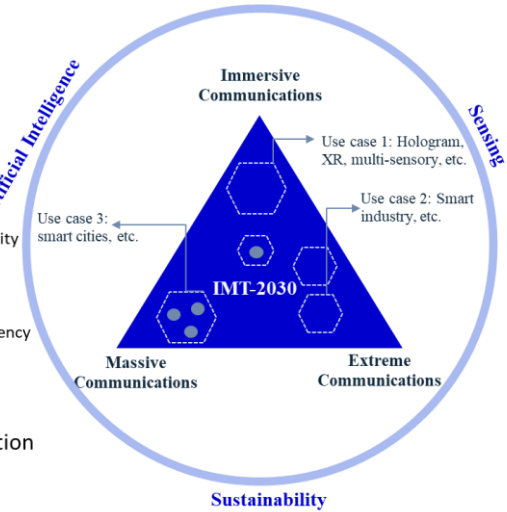
[5D/1479 Ericsson]



[5D/1516 Nokia]

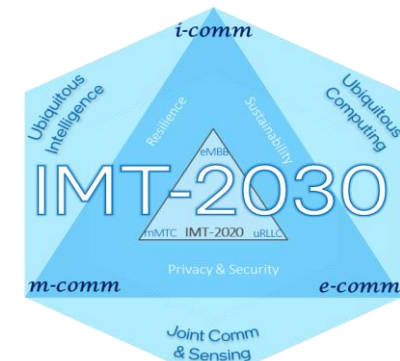


[5D/1506 IND]



[5D/1459 Qualcomm]

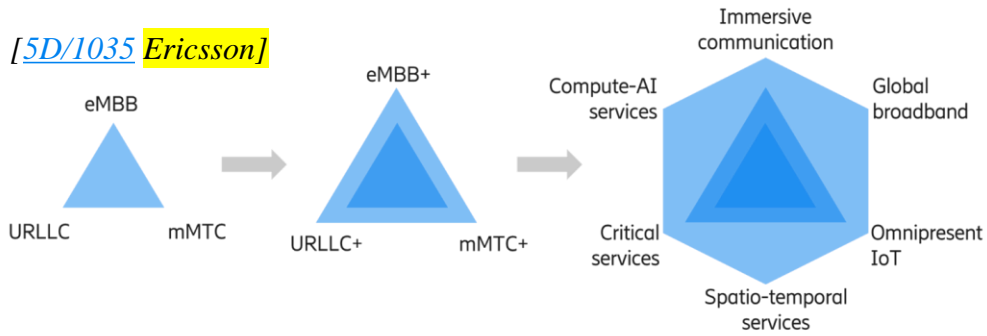
[5D/1495 Intel]



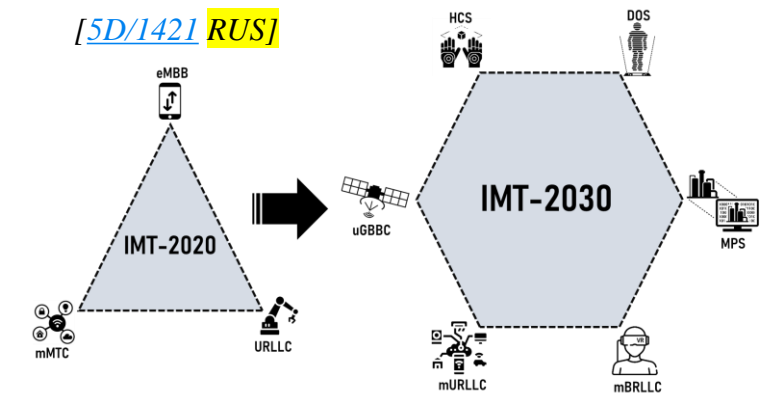
Usage scenarios – Evolution figures



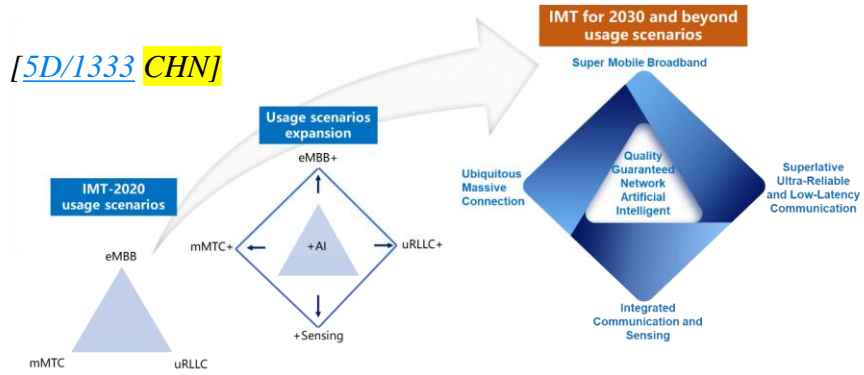
[5D/1035 Ericsson]



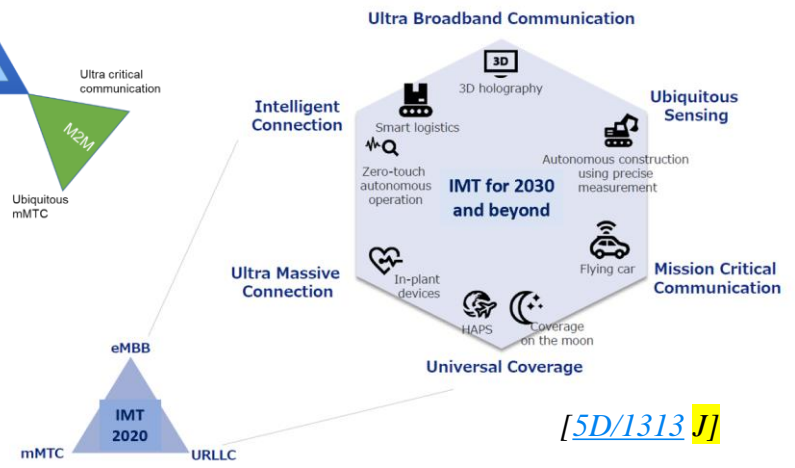
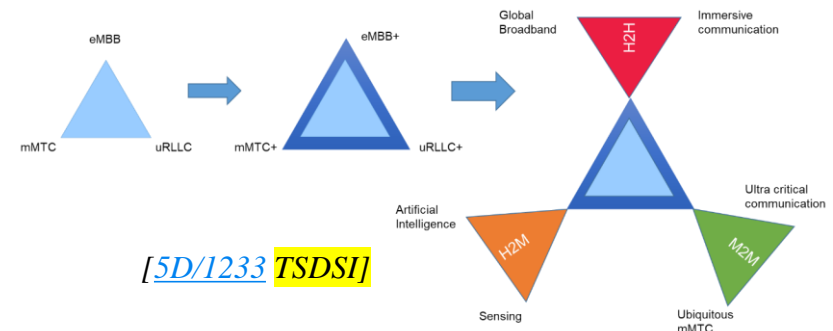
[5D/1421 RUS]



[5D/1333 CHN]



[5D/1233 TSDSI]



[5D/1313 J]

ITU-R status on Capabilities



Legacy capabilities:

- | | <u>To become "Target for research"</u> |
|-------------------------------|---|
| 1) Peak data rate | [>100, 100, 200, 100s, 1000] Gbps |
| 2) User experienced data rate | [>1] Gbps |
| 3) Spectrum efficiency | [N x IMT-2020, N>1] |
| 4) Area traffic capacity | [100 x IMT-2020], [0.1 – 10] Gbit/s/ m ² |
| 5) Connection density | [10 ⁶ - 10 ⁷] / [10 ⁷] / [10 ⁷ -10 ⁸] dev/km ² |
| 6) Mobility | [1000 km/h], [N x INMT-2020] |
| 7) Latency | [0.1] / [0.1~1] / [0.02~1] ms |
| 8) Reliability | [1-10 ⁻⁶ ~1-10 ⁻⁷] / [1-10 ⁻⁷] / [1-10 ⁻⁷ ~1-10 ⁻⁹] |

→ Mostly agreed descriptions, multiple number ranges

Additional* capabilities:

- 9) [Coverage/Reachability]
- 10) Positioning
- 11) Sensing[-related] capabilities
- 12) AI[-related] capabilities / Support of AI functionalities / AI/compute capabilities
- 13) Security, privacy and resilience(trustworthiness)
- 14) Sustainability

[X] Open and interoperable networks]

[Y] Continuous development]

→ More difficult to agree on descriptions

* Additional / Native / Overarching / Generic / Qualitative...?

Enabling the IMT-2030/6G Vision

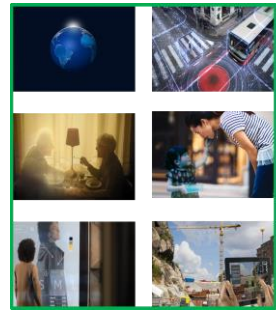


Maintain and improve the **5G capabilities**



Existing spectrum is crucial, gradual move to 6G

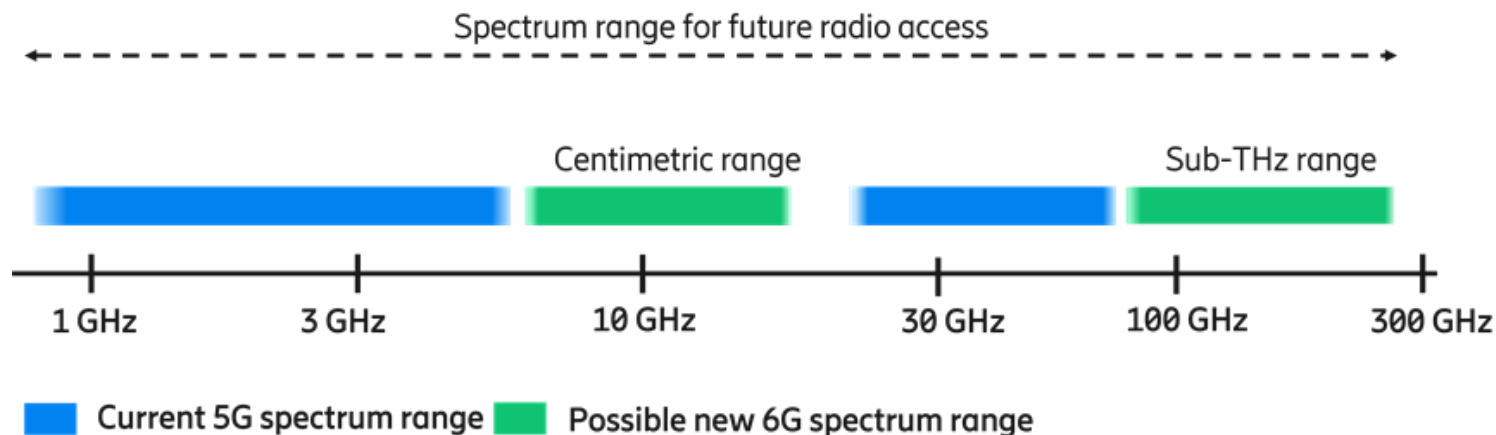
Enable the **new 6G use cases** and enhance **5G/5G-Advanced services**



Spectrum from within the **centimetric range 7-24 GHz** is essential for **6G/IMT-2030**, with a focus on the lower parts of this range. Support on IMT for AI10 needed from the regional organizations (APT, ATU, ASMG, CEPT, CITEEL, RCC)



Sub-THz frequencies offer the Tbps possibility for **niche scenarios**, thus should only be seen as **complementary**



An Agenda Item on IMT that is established in WRC-23 towards WRC-27 is a first step towards creating a global ecosystem for 6G/IMT-2030

APT for IMT Agenda Item at WRC-27

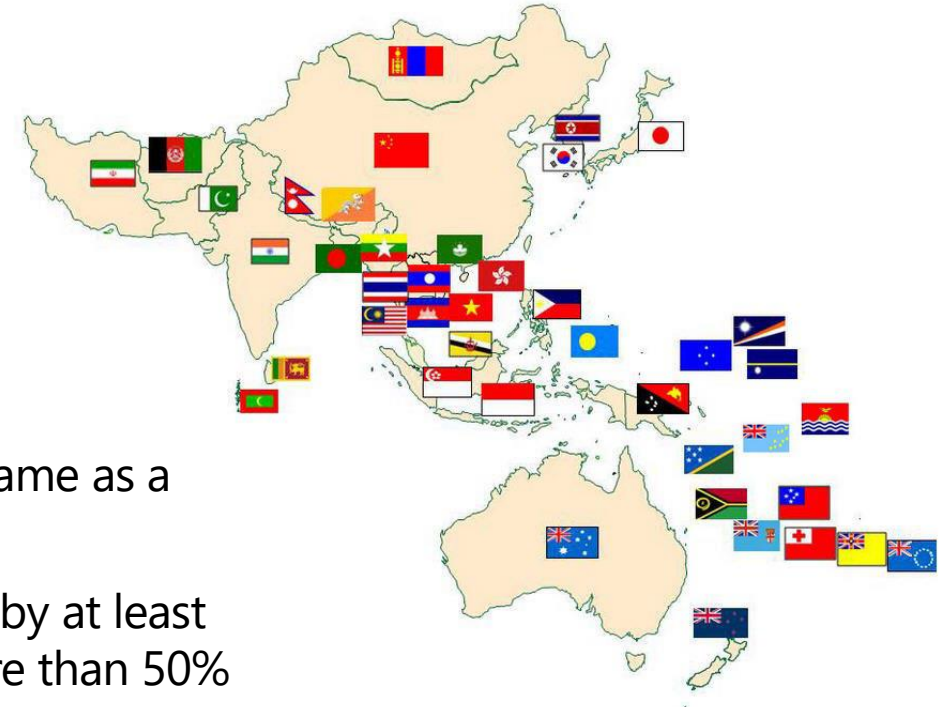


APT is one of the Regional Telecommunication Organizations, as defined in the ITU Convention No. 269B

APT has been the focal and only organization for APT Members for the preparation of major ITU conferences such as the World Radiocommunication Conferences (WRC) and the Radiocommunication Assembly (RA)

All APT Members will be asked to consider inclusion of their country name as a signatory to each "Preliminary APT Common Proposal (**PACP**)"

A **PACP** becomes an "APT Common Proposal" (**ACP**) if it is Supported by at least 25% of the APT Members (Administrations), AND not opposed by more than 50% of the number of Members who support it



APT have 38 Member countries =>

- **To have an ACP on IMT for WRC-27 there is a need for minimum of 10 countries support!**
- **AND not opposed by more than 5 countries!**

Summary

- Current innovation on 5G for enterprise and consumers to continue into 6G
- The [IMT-2030 schedule](#) agreed in ITU-R WP5D#41 June meeting towards year 2030
- The new [ITU Vision Recommendation](#) is a key document for the continued work on IMT-2030 to follow after RA/WRC-23
- [Correspondence Group established](#) towards WP5D#43 in February – need to elevate the WD to a PDNR
- Use of [existing frequency bands](#) for migration to 6G/IMT-2030 and [new bands at WRC-27](#) important to secure future mobile growth in society and industries
- An [Agenda Item on IMT at WRC-27](#) is key step to secure future IMT developments – need 10 countries for an ACP

