

Overview of the draft new Report ITU-R M.[**IMT.FUTURE TECHNOLOGY TRENDS TOWARDS 2030 AND BEYOND**]

a precursor to a “beyond IMT-2020” vision document for IMT

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Background: ITU-R WP5D

ITU-R Working Party 5D is responsible for the overall radio system aspects of **International Mobile Telecommunications (IMT)** systems, comprising the **IMT-2000**, **IMT-Advanced** and IMT for 2020 and beyond (incl. **IMT-2020**)

Working Party 5D is engaged in a wide range of activities for IMT. These activities include new information and deliverables to guide the continuing evolution of terrestrial IMT. At a high level the work is organized in these broad categories:

VISION & TECHNOLOGY TRENDS

PERFORMANCE REQUIREMENTS, SUBMISSION
DETAILS, EVALUATION GUIDELINES

MARKET, TRAFFIC, AND FUTURE SPECTRUM
REQUIREMENTS

FREQUENCY BAND CHANNELING ARRANGEMENTS &
SPECTRUM SHARING AND COMPATIBILITY STUDIES

IMT SPECIFICATIONS AND OTHER
TECHNOLOGY RELATED WORK

SUPPORT FOR IMT APPLICATIONS &
DEPLOYMENTS

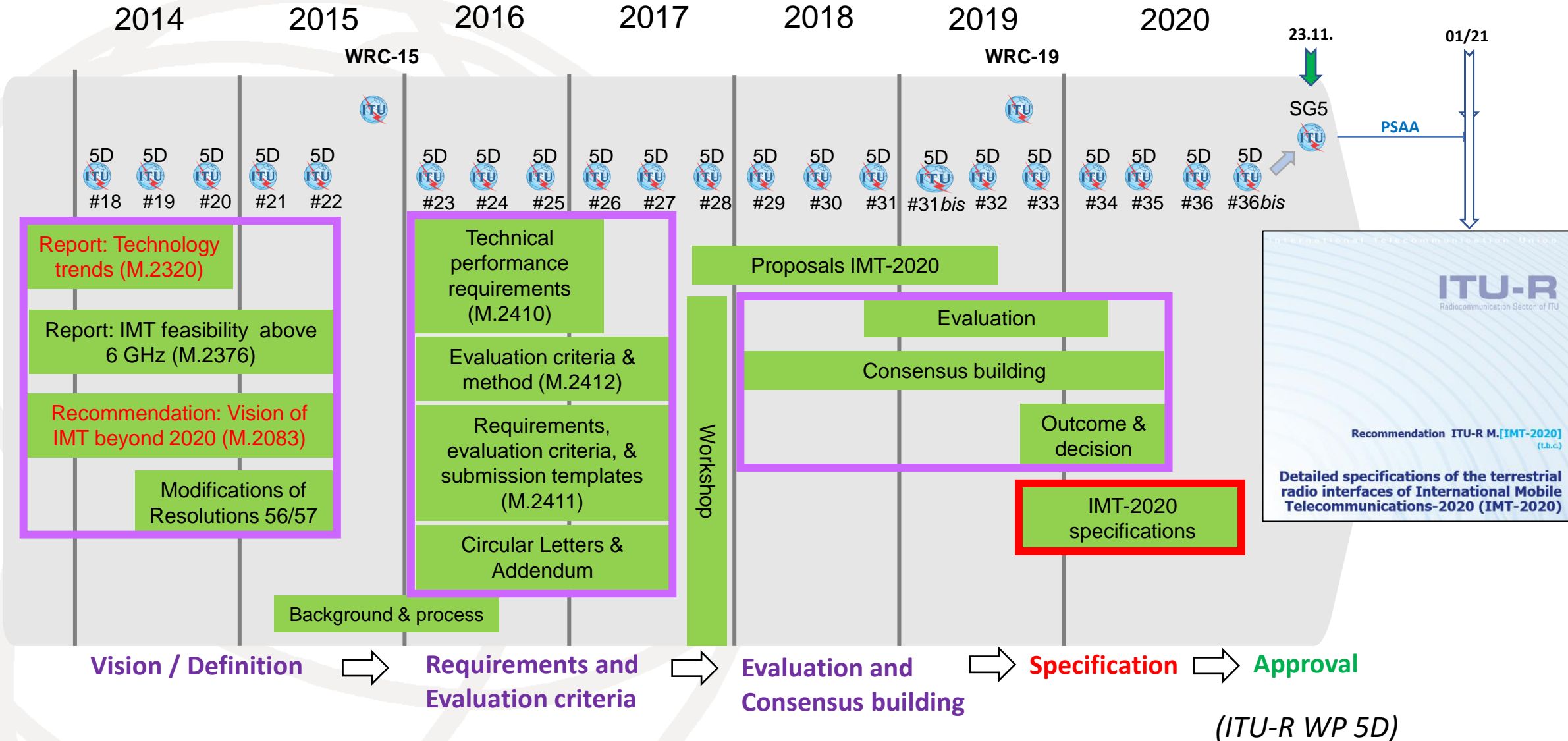
WORKSHOPS & SEMINARS

Background

- For each generation of terrestrial wireless technology*, ITU-R WP 5D (and its predecessor ITU-R WP 8F) has published a “Technology Trends Report”
 - This report focuses on **future technology trends**
 - Attempts to project important technical advancements for the next generation of terrestrial wireless technology
- The latest released report is [ITU-R M.2320](#), “Future technology trends of terrestrial IMT systems” (11/2014)
 - Provides a broad view of future technical aspects of terrestrial IMT systems considering the time-frame **2015-2020 and beyond** and includes information on technical and operational characteristics of IMT systems, including the evolution of IMT through advances in technology and spectrally-efficient techniques, and their deployment.

* So far: IMT-2000 / IMT-Advanced / IMT-2020

Timeline for IMT-2020



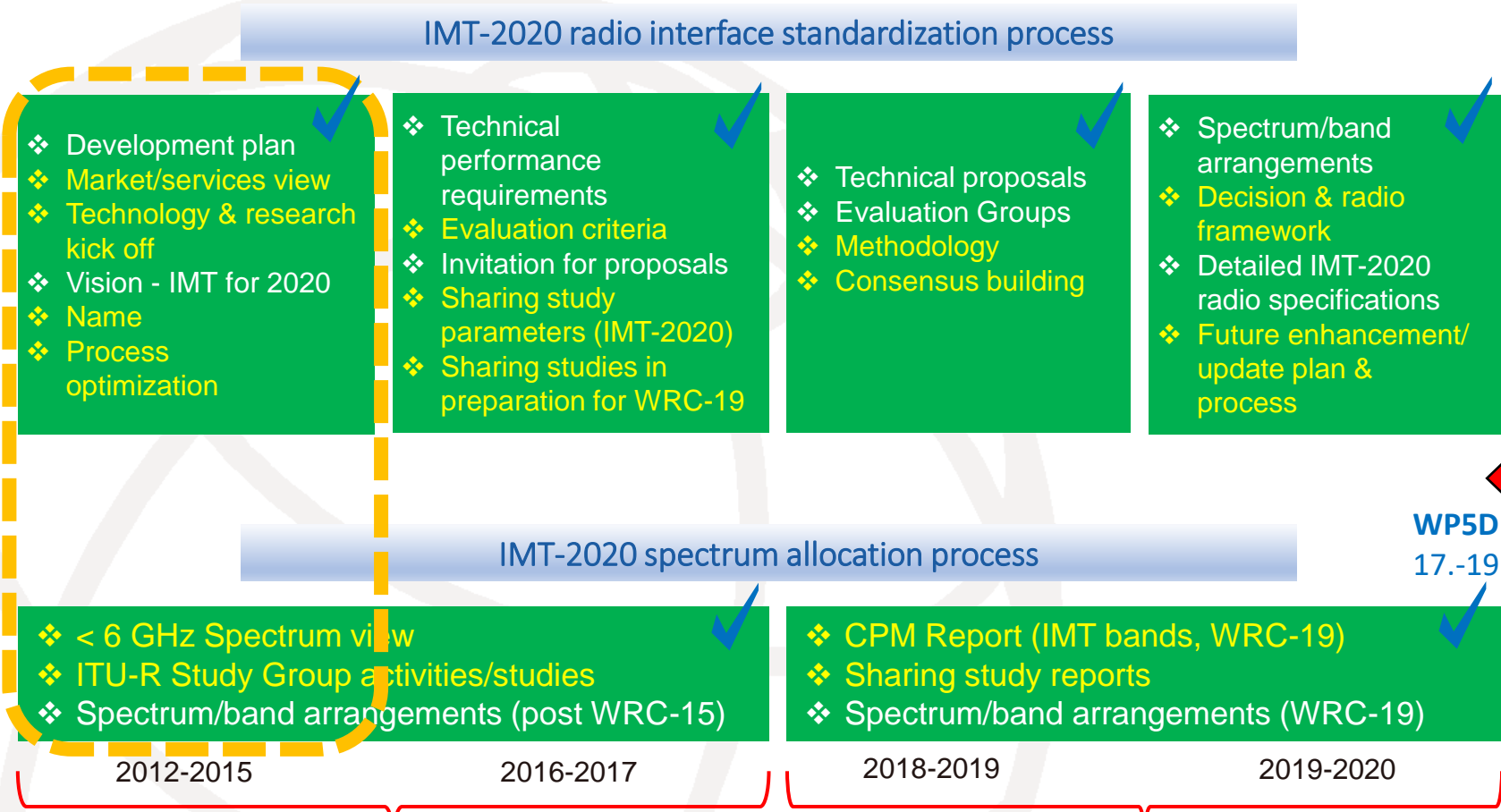
18th January 2021

Note: Meeting #36bis was a focused meeting (technology) for finalization of Step 8 of the IMT-2020 process and completing draft new Recommendation ITU-R M.[IMT-2020.SPECS]

(ITU-R WP 5D)

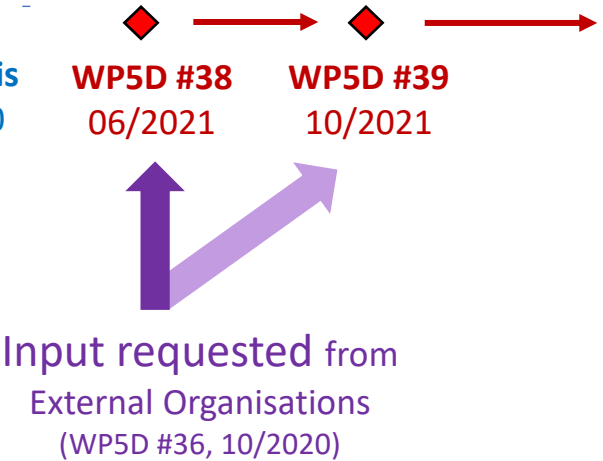


IMT-2020 / 5G Process



New Report
 ITU-R M.[**IMT.FUTURE TECHNOLOGY TRENDS TOWARDS 2030 AND BEYOND**]

- future technical aspects of terrestrial IMT systems considering the time frame up to 2030 and beyond.



(ITU-R WP 5D)

Setting the stage for the future: vision, spectrum, and technology views

Defining the technology, Allocate the spectrum

Draft New Report - Overview

“WORKING DOCUMENT TOWARDS PRELIMINARY DRAFT NEW REPORT ITU-R M.[[IMT.FUTURE TECHNOLOGY TRENDS TOWARDS 2030 AND BEYOND](#)]”

- The **Technology Trends report** focuses on the *Technical aspects* of future technologies, while the **Vision** document considers the *overall capabilities and possible usage scenarios*. The Technical report is closely tied in with the Vision.
- Recommendation [ITU-R M.2083-0](#), “IMT Vision – Framework and overall objectives of the future development of IMT for 2020 and beyond” (09/2015)

Scope of the Vision document:

“..defines the framework and overall objectives of the future development of International Mobile Telecommunications (IMT) for 2020 and beyond **in light of the roles that IMT could play to better serve the needs of the networked society**, for both developed and developing countries, in the future. In this Recommendation, the framework of the future development of IMT for 2020 and beyond, **including a broad variety of capabilities associated with envisaged usage scenarios**, is described in detail. Furthermore, this Recommendation addresses the objectives of the future development of IMT for 2020 and beyond, which includes further enhancement of existing IMT and the development of IMT-2020...”

Draft New Report - Driving Factors

The contents of the **Technology Trends report** is still very much under discussion, but already we are seeing some very interesting contributions for future technologies

- Current **driving factors in the design of IMT Technology:**

(Note that this is a very early draft and is subject to addition/change/modification)

- Peak Data Rate, Guaranteed Data Rate,
- Latency, Jitter,
- Sensing resolution and accuracy,
- Connection density, Energy efficiency,
- Coverage, Mobility,
- Spectrum utilization, controllable radio environment,
- User-centric networking,
- Native artificial intelligence (AI)

Current draft contents

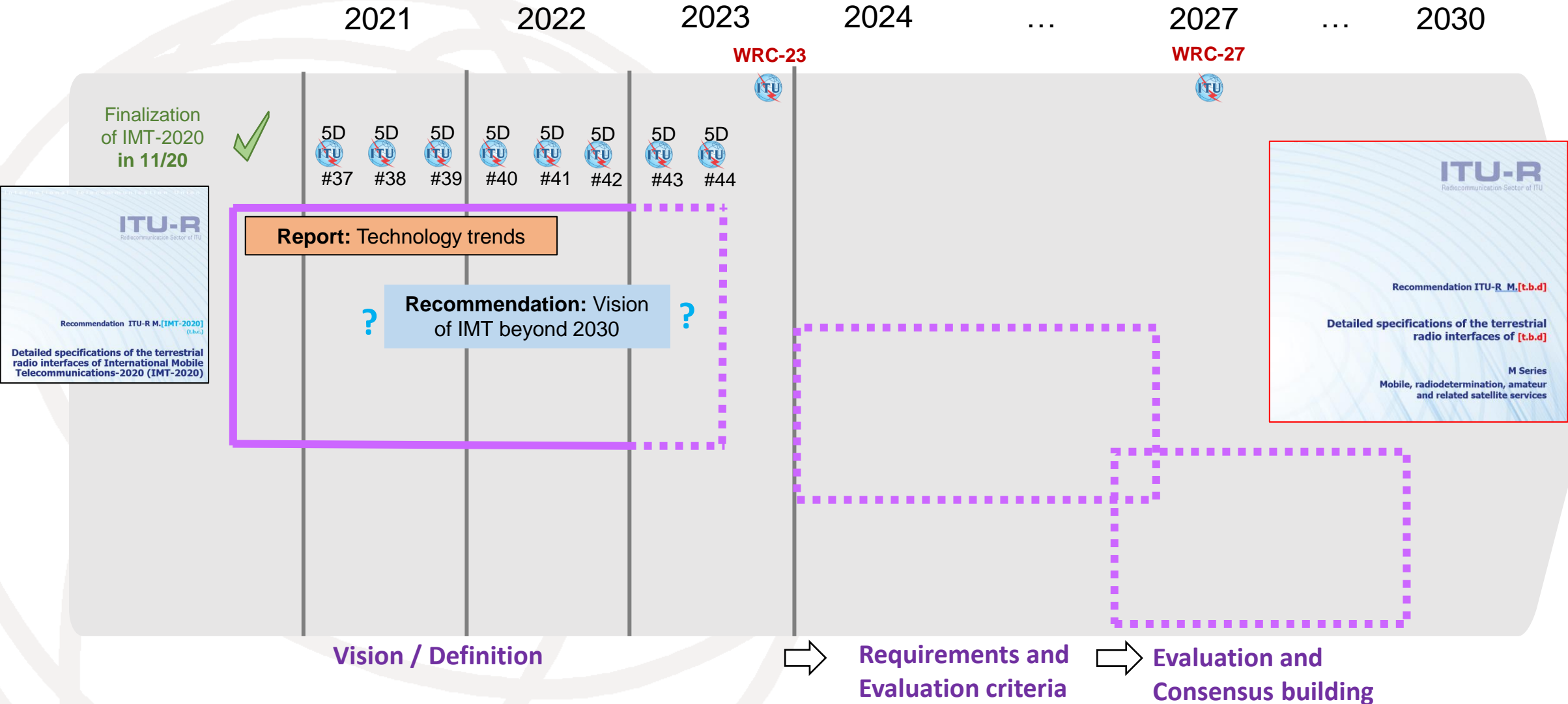
- Technologies to **enhance the radio interface**
 - Advanced modulation, coding and multiple access schemes
 - E-MIMO (extreme-MIMO)
 - Co-frequency Co-time Full Duplex (CCFD) communications
 - Multiple physical dimension transmission
 - Terahertz (THz) communications
 - Visible light communication
- Technologies to **enhance radio network performance and precision**
 - New architecture to support new operation and business models
 - Technologies to support resilient and soft network and guaranteed QoS
 - Technologies to support Digital Twin Networking (DTN)
 - Technologies to support the convergence of communication and computing enabling intelligent network and services
 - Technologies to support the integration of terrestrial and non-terrestrial networks
 - Technologies to support native security

Current draft contents (cont.)

- Technologies for native **Artificial Intelligence (AI)** based communication
 - Network for AI
 - AI-assisted new air interface (AI-AI)
 - Ethics and its supervision for wireless AI
- Technologies to enhance service coverage
- Technologies to enhance privacy and security
- Technologies for integrated sensing and communication
- Technologies for integrated terrestrial and non-terrestrial communications
- Technologies for integrated access and super sidelink communications
- Technologies to enhance adaptability and sustainability
- Technologies for efficient spectrum utilization
- Terminal technologies
- [Technologies to support a wide range of new use cases and applications] Note: This section may be moved to the new “VISION” document



Timeline for the future



Summary / How to contribute?

- The **Future Technology Trends report** does drive specification work
- It is important to receive according contributions from external organisations and in return, they can participate in ongoing discussions within ITU-R
- Report is scheduled to conclude June 2022

More information

- **ITU-R Study Group 5 (SG 5)** - Terrestrial Services
<https://www.itu.int/en/ITU-R/study-groups/rsg5/Pages/default.aspx>
- **ITU-R Working Party 5D (WP 5D)** - IMT Systems
<https://www.itu.int/en/ITU-R/study-groups/rsg5/rwp5d/Pages/default.aspx>
- **ITU-R WP 5D sent an according LS to external organisations (27.10.2020)**
→ responses to the June 2021 and October 2021 meeting of WP 5D

Chairman Report *

[5/34](#)

[5D/360](#)

The future is bright - support the ITU-R activities



ITU – Radiocommunication Bureau

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