



ITU-R Working Party 5D

Introduction to IMT-2020

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Two Key & Interrelated Focus Areas for IMT-2020 & 5G Success

Spectrum

Both require global collaboration to be globally harmonized

Standards

- ITU WRC Process
 - Mobile spectrum allocations and IMT identifications
 - ITU membership, ITU-R Study Groups, Regional Groups, International organisations
 - Member States driven
- ITU-R Study Group 5 Process
 - IMT-2020 Vision, overall requirements, radio interface specifications
 - ITU membership, other standard making bodies
 - Industry driven
 - Reports & Recommendations approved by Member States



IMT-2020 radio interface standardization process

- ❖ Development plan
- ❖ Market/services view
- ❖ Technology/ research kick off
- ❖ Vision - IMT for 2020
- ❖ Name
- ❖ Process optimization

- ❖ Technical performance requirements
- ❖ Evaluation criteria
- ❖ Invitation for proposals
- ❖ Sharing study parameters (IMT-2020)
- ❖ Sharing studies in preparation for WRC-19

- ❖ Technical proposals
- ❖ Evaluation Groups
- ❖ Methodology
- ❖ Consensus building

- ❖ Spectrum/band arrangements
- ❖ Decision & radio framework
- ❖ Detailed IMT-2020 radio specifications
- ❖ Future enhancement/ update plan & process

IMT-2020 spectrum allocation process

- ❖ < 6 GHz Spectrum view
- ❖ ITU-R Study Group activities/studies
- ❖ Spectrum/band arrangements (post WRC-15)

- ❖ CPM Report (IMT- WRC-19)
- ❖ Sharing study reports
- ❖ Spectrum/band arrangements (WRC-19)

2012-2015

2016-2017

2018-2019

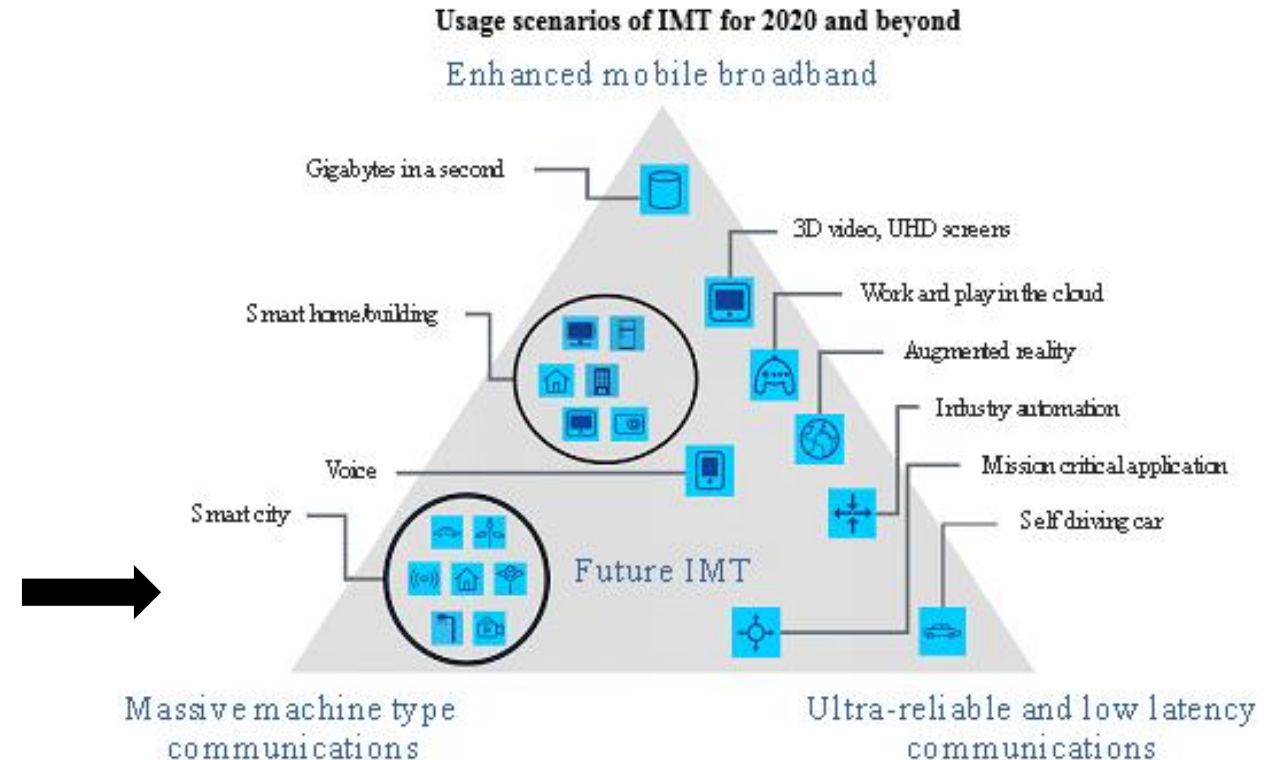
2019-2020

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

Defining the technology
Allocate the spectrum

ITU Perspective – IMT 2020 (International Mobile Telecommunication)

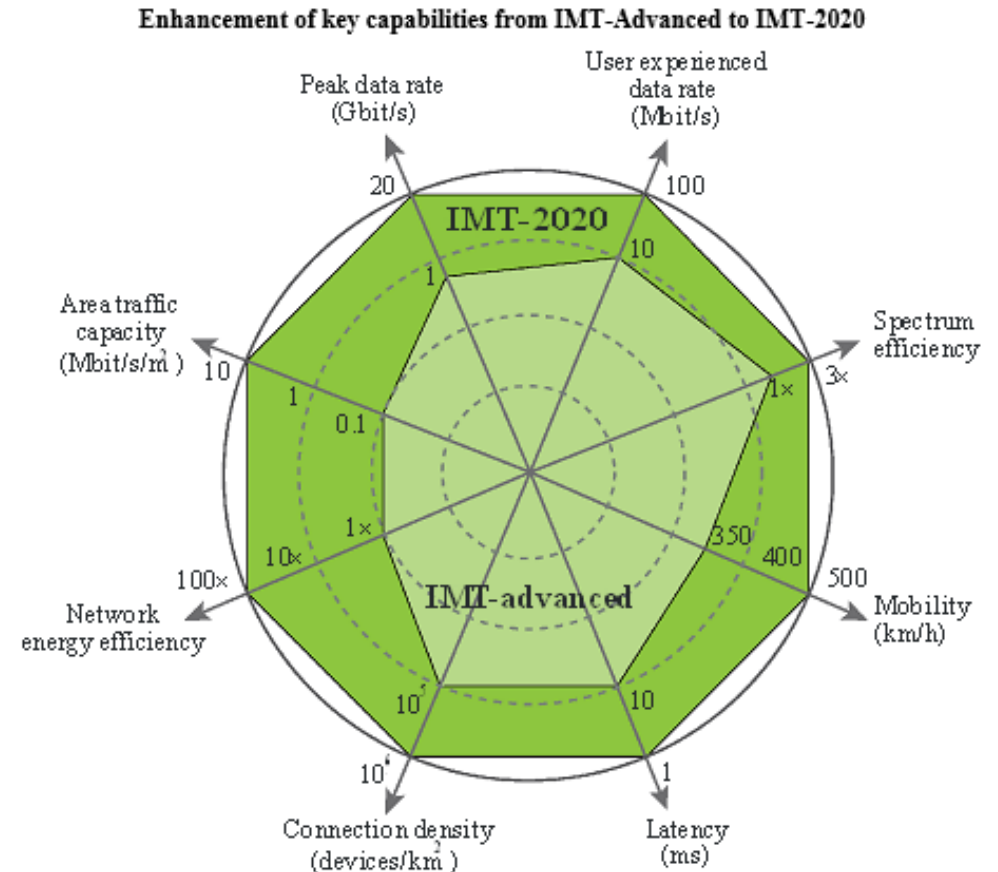
- Early 2012, ITU-R embarked on a global program to develop “IMT for 2020 and beyond”
 - Setting the stage for 5G research activities that are emerging around the world
 - [Report ITU-R M.2320](#) – “Future technology trends of terrestrial IMT systems” (Nov 2014)
- September 2015, ITU-R finalized “Vision” of the 5G mobile broadband connected society
- [Recommendation ITU-R M.2083](#) – “Framework and overall objectives of the future development of IMT for 2020 and beyond” (Sep 2015)
 - Defined the “usage scenarios” for IMT 2020 and beyond
 - Instrumental in setting the agenda for the World Radiocommunication Conference 2019



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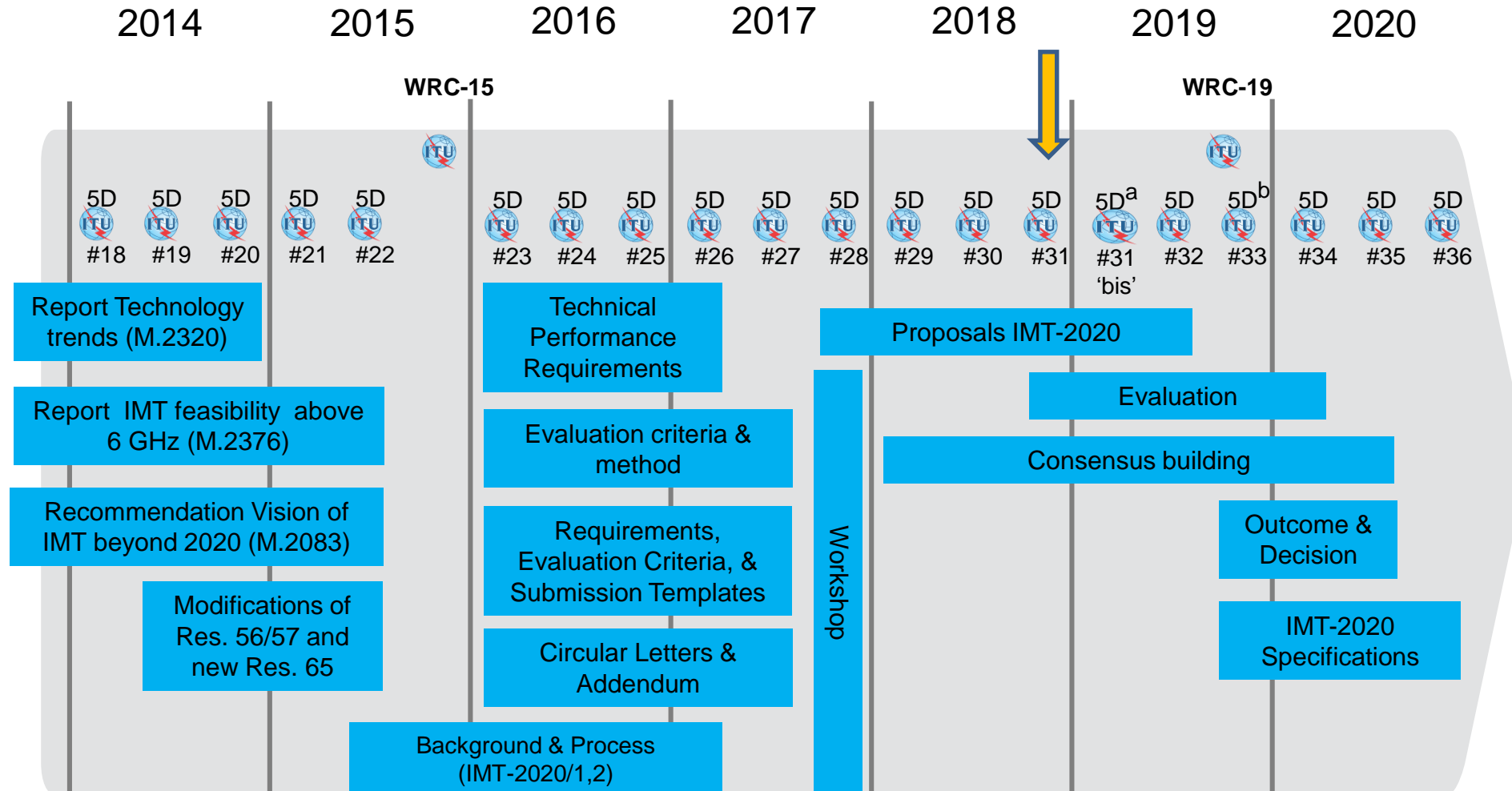
ITU Perspective – IMT 2020 (continued)

- February 2017 – ITU completed a cycle of studies on the key performance requirements of 5G technologies for IMT-2020
- November 2017 – adopted Report [ITU-R M.2410](#), “Minimum requirements related to technical performance for IMT-2020 radio interface(s)”
 - describes those key requirements for the minimum technical performance of IMT-2020 candidate *radio interface technologies*
- Candidate radio technologies – including 3GPP NR and a combination of LTE +NR - *will be evaluated* against these performance requirements utilizing [Report ITU-R M.2412](#), (Nov 2017) “Guidelines for evaluation of radio interface technologies for IMT-2020”, which establishes defined evaluation criteria & scenarios
 - See next slides for timelines
- **Those meeting the requirements and the evaluation guidelines will be an “IMT-2020” technology.**



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Detailed Timeline & Process For IMT-2020 in ITU-R




(a) – five day meeting, (b) – focus meeting on Evaluation (Technology)

KEY ITU-R IMT-2020 Documents for the Evaluation (Technology Submission Focus)

(Source WP 5D)

- [Document IMT-2020/2 Rev1](#) – “Submission, evaluation process and consensus building for IMT-2020”
- [Report ITU-R M.2410](#) – “Minimum requirements related to technical performance for IMT-2020 radio interface(s)”
- [Report ITU-R M.2411](#) – “Requirements, evaluation criteria and submission templates for the development of IMT-2020”
- [Report ITU-R M.2412](#) – “Guidelines for evaluation of radio interface technologies for IMT-2020”

Comparison of IMT Technology Developments in ITU-R

ITEM		IMT-2000	IMT-Advanced	IMT-2020
VISION		M.687 & M.816	M.1645	M.2083
Year		1992	2003	2015
Pages		29	24	19
REQUIREMENTS		M.1034	M.2134	M.2410
Year		1997	2008	2017
Pages		28	8	9
SUBMISSION		8/LCCE/47 + Add	M.2133	M.2411
Year		1998	2008	2017
Pages		10	29	28
EVALUATION		M.1225	M.2135	M.2412
Year		1997	2009	2017
Pages		61	70	137
SPECIFICATIONS		<i>M.1457-0</i>	<i>M.2012-0</i>	<i>M.[IMT-2020.SPECS]</i>
Year		2000	2012	Anticipated published 2020
Current Version		<i>M.1457-13</i>	<i>M.2012-3</i>	-
Year		2017	Published early 2018	

Future Planned Meeting Dates for Working Party 5D Following WRC-15.

Please check the ITU website in case meeting details have changed (<http://www.itu.int/events/monthlyagenda.asp?lang=en>).

GROUP	No.	FROM	TO	PLACE
WP 5D	23	23 February 16	2 March 16	China
WP 5D	24	14 June 16	22 June 16	Geneva
WP 5D	25	5 October 16	13 October 16	Geneva
WP 5D	26	14 February 17	22 February 17	Geneva
WP 5D	27	13 June 17	21 June 17	Canada
WP 5D	28	3 October 17	11 October 17	Germany
WP 5D	29	31 January 18	7 February 18	Korea
WP 5D	30	13 June 18	20 June 18	Mexico
WP 5D	31	9 October 18	16 October 18	Japan
WP 5D	31bis	11 February 19	15 February 19	Geneva
CPM19-2	—	18 February 19	28 February 19	Geneva
WP 5D	32	9 July 19	17 July 19	[Geneva]
SG 5		2 September 19	3 September 19	Geneva
RA-19	—	21 October 19	25 October 19	Egypt
WRC-19	—	28 October 19	22 November 19	Egypt
WP 5D	33	[9 December] 19	[13 December] 19	[Geneva]
WP 5D	34	19 February 20	26 February 20	[TBD]
WP 5D	35	24 June 20	1 July 20	[TBD]
WP 5D	36	7 October 20	14 October 20	[TBD]
SG 5		23 November 20	24 November 20	Geneva

WP 5D Workshop on IMT-2020 Terrestrial Radio Interfaces Evaluation

- WP 5D intends to have a workshop for IMT-2020 focusing on the evaluation of the candidate terrestrial radio interfaces in conjunction with its 32nd meeting in July 2019, **with presentations from the proponents**, IEGs, and the WP 5D experts. This will facilitate the IEGs to understand the details of the proposed candidate technologies, and to interact with WP 5D and others participating in the ITU-R evaluation process on IMT-2020.
- Information about the workshop will be appropriately communicated and/or updated on the WP 5D webpage <https://www.itu.int/en/ITU-R/study-groups/rsg5/rwp5d/Pages/default.aspx>

IMT-2020 'In-Progress' Candidate Radio Interface Technology "Initial Submissions" to WP 5D as of Meeting #31 October 2018

SUBMITTED PROPOSALS FOR IMT-2020

'3GPP'
IMT-2020/3
(Rev. 2)
SRIT: LTE+NR
RIT: NR

'KOREA'
IMT-2020/4
(Rev. 2)
RIT: NR

'CHINA'
IMT-2020/5
(Rev. 2)
SRIT: LTE+NR
RIT: NR

**'DECT Forum &
ETSI'**
IMT-2020/5
(Rev. 1)
RIT: DECT-2020

'TSDSI'
IMT-2020/7
(Rev. 1)
SRIT: LTE+NR
RIT: NR

"RIT/SRIT Proponent":

Collectively 3GPP OPs
(ARIB, ATIS, CCSA, ETSI,
TTA, TTC, TSDSI)

Korea

China

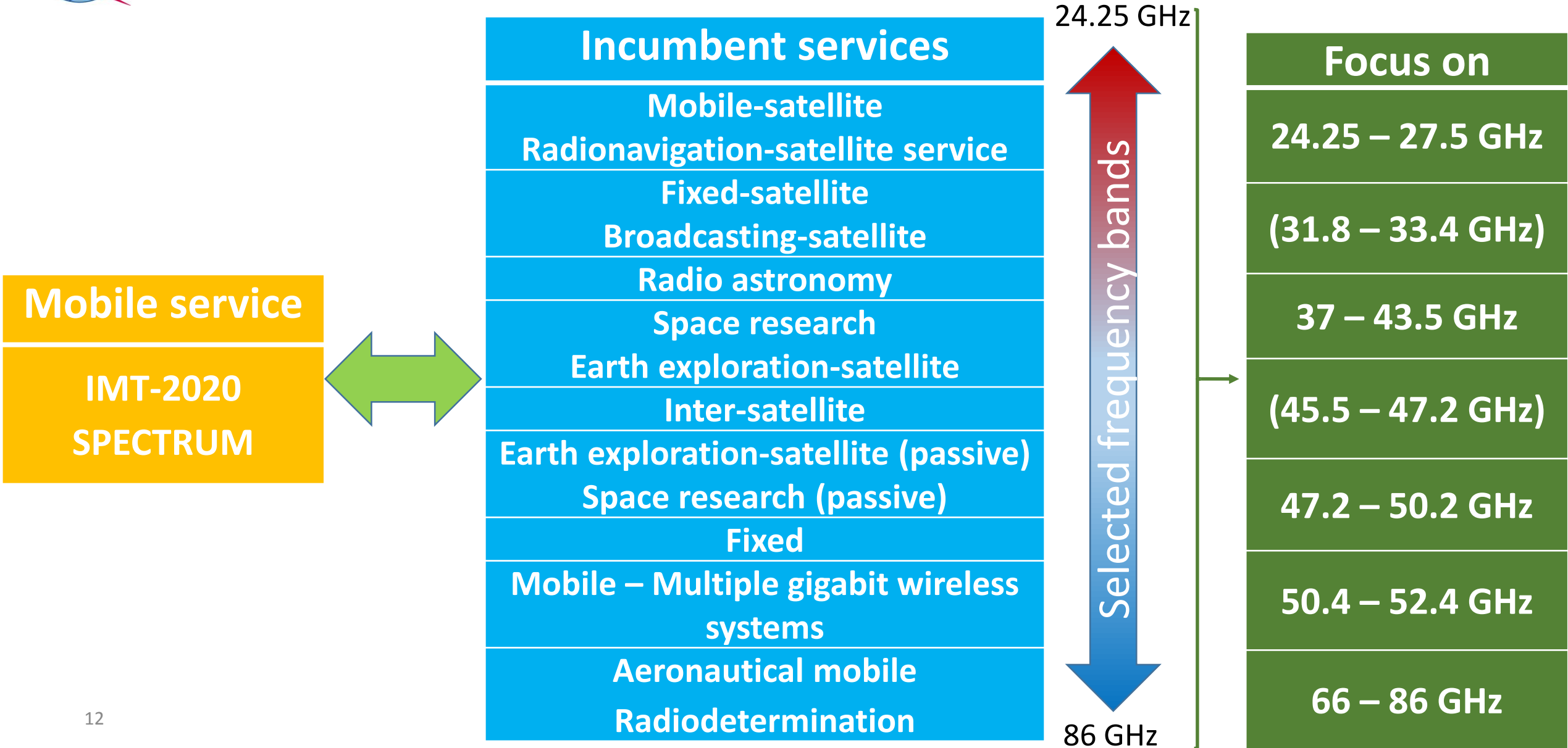
DECT Forum & ETSI

TSDSI

To be available on the ITU website shortly



WRC-19 AI 1.13 sharing & compatibility studies





Conclusions

- **Global collaboration** and joint effort leads to success for IMT-2020 and 5G.
- **ITU-R and industry partnerships** remain strong and well aligned for IMT-2020 and 5G.
- **Engagement by Administrations** is high - both on spectrum and technology.
- **ITU-R IMT-2020 vision** continues as the global target in support of 5G.
- **Initial IMT-2020 candidate radio interface technology submissions** already being received – final submissions due July 2019.
- **The Evaluation process has started!** - advance activities already underway by independent evaluation groups.
- **ITU-R Recommendation on detailed radio interface technology specifications** for IMT-2020 on track for year-end 2020 release.
- ITU-R is well on schedule to implement all necessary procedures to **identify the important future 'mm wave' spectrum (WRC-19)** within the IMT overall spectrum portfolio.

Thank You!