Summary of ITU-R WP 5D Meeting #23

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Venue:
IEEE 802 5G/IMT-2020 Steering Committee
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Purpose:
To provide a summary of ITU-R WP 5D Meeting #23 of February/March 2016, for information only.

For additional details, see the full report IEEE 802-ec-16-0026-00-5GSG.

Notice:
This document represents the views of the author and is offered as a basis for discussion.

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ITU-Working Party 5D Meeting #23

- ITU-R WP 5D is responsible for “IMT Systems,” where “IMT” represents “International Mobile Telecommunications”
- Working Party 5D (WP 5D) held its Meeting #23 in Beijing, China on 23 February – 2 March 2016
  - normally three meetings a year; 7 days per meeting
  - first meeting of the new Study Period (following WRC-15)
- Approximately 154 people on government-led delegations, 21 representing operators, 50 representing other industry, 6 from associations (including Roger Marks, IEEE), 2 from universities, and 1 staff
- 78 new input contributions; plus carried-forward documents
- for additional details, see full report IEEE 802-ec-16-0026-00-5GSG
- see background on WP 5D in IEEE 802-ec-16-0010-00-00EC (“5G and IMT-2020”, 2016-01-22)

Working Groups (WGs) and Sub-WGs (SWGs)

- WG General Aspects
  - SWG PPDR, SWG IMT-AV, SWG Circular, WG Spectrum Aspects
- WG Spectrum Aspects
  - SWG Frequency Arrangements, SWG Sharing Studies, SWG Work for TG 5/1
- WG Technology Aspects
  - SWG OOBE, SWG IMT Specifications, SWG Radio Aspects, SWG Coordination, SWG Evaluation

SWG Circular

- developing IMT-2020 Circular Letter to invite submission of IMT-2020 proposals & formation of independent evaluation groups
- initial version of Circular Letter completed
  - will be posted on the future “Web page for the IMT-2020 submission and evaluation process.” For information, see the WP 5D web page <http://www.itu.int/ITU-R/go/rwp5d>.
- work plan was agreed, to add additional addenda, specifying process, technical requirements, and evaluation criteria, in steps, by June 2017
- developed and completed document IMT-2020/001, on IMT-2020 background

SWG Work for TG 5/1

- new SWG responsible for issues regarding new Task Group 5/1 (under Study Group 5) on spectrum needs for IMT in 24.25 - 86 GHz
- WP 5D required to report its studies by 31 March 2017
  - spectrum needs
  - technical and operational characteristics, including protection criteria and deployment scenarios
- developed liaison statement for various external organizations, including IEEE, on “Characteristics of IMT systems for frequency sharing/interference analysis, 24.25-86 GHz”
  - https://mentor.ieee.org/802.16/dcn/16-16-0021.pdf
  - asks for initial system characteristics by October and final inputs by February 2017

SWG IMT Specifications

- maintenance of the existing IMT-2000 and IMT-Advanced standards
- revised in alternate years
- finishing Revision 13 of Rec. ITU-R M.1457 (IMT-2000)
- announced plan for Revision 3 of Rec. ITU-R M.2012 (IMT-Advanced)
  - schedule sent to External Organizations, including IEEE
    - https://mentor.ieee.org/802.16/dcn/16-16-0021.pdf
  - allows for the contribution of new technologies as well as the update of existing technologies
  - IEEE could contribute an update of the existing IEEE IMT-Advanced technology, including material (such as an additional radio interface) that differs substantially from the current content
    - much easier than a contribution of a new technology proposal

SWG Radio Aspects

- began developing new Report (temporarily M.[IMT-2020.TECH PERF REQ]) on IMT-2020 technical requirements
- working document was created; workplan was agreed:
  - Meeting No. 24 (June, 2016)
    - Finalize the list of technical requirements (i.e., the parameters).
    - Preliminarily agree to the detailed definition of each technical requirement.
    - Discuss the preliminary target value(s) for each technical requirement.
  - Meeting No. 25 (October, 2016, TBD)
    - Agree with the detailed definition of each technical requirement.
    - Discuss and preliminarily agree to the target value(s) for each technical requirement.
  - Meeting No. 26 (February, 2017, TBD)
    - Agree to target values for each technical requirement

SWG Radio Aspects: parameters

- Began development new Report (temporarily M.[IMT-2020.TECH PERF REQ]) on IMT-2020 technical requirements
- 27 proposed parameters (from input contributions)
- Eight “key capabilities” (per ITU-R M.2083 “IMT Vision – Framework and overall objectives of the future development of IMT for 2020 and beyond”):
  - Peak Data Rate
  - User Experienced Data Rate
  - Latency
  - Mobility
  - Connection Density
  - Energy Efficiency
  - Area Traffic Capacity
  - Spectrum Efficiency

SWG Evaluation

- began developing new Report (temporarily M.[IMT-2020.EVAL]) on IMT-2020 evaluation methodology.
- working document developed
- much discussion of test environments
- discussion of channel models

SWG Evaluation: test environments

- IMT-Advanced evaluation process specified evaluation of proposals in four "test environments," each addressing:
  - "deployment scenario" (indoor hotspot, urban micro-cell, urban micro-cell, and rural/suburban macro-cell)
  - one or more "mobility classes"
  - specified frequency range
- IMT-2020 includes three usage scenarios (per ITU-R M.2083, and WRC-15)
  - enhanced mobile broadband [eMBB], ultra-reliable and low-latency communications [URLLC], massive machine type communications [mMTC]
  - not clear how IMT-2020 test scenarios will relate to usage scenarios or frequency
- In IMT-Advanced SRIT required at least three test environments
  - not clear how this will be addressed in IMT-2020
  - critical to establishing required complexity of IMT-2020 SRIT

SWG Evaluation: channel models

- revised channel models for IMT-2020 technology evaluation may be required:
  - wider bandwidth
  - include 24-86 GHz
    - antenna complexity
- liaison to External Organizations expected following Meeting #24
- some tentative decisions regarding the channel model were carried forward in a document

Unlicensed Technology in IMT-2020

- Can/should IMT include technologies fundamentally designed for unlicensed use?:
  - Radio Regulations do not specify whether spectrum is to be licensed
  - many participants believe that IMT spectrum is implicitly for exclusive licensing
  - many participants recognize that some bands in 24-86 GHz would not rationally be licensed exclusively
- Many WP 5D participants forget that DECT is an IMT-2000 technology and is generally operated unlicensed.
- Several participants recommended that stakeholders in license-exempt technologies would be best advised to focus on the 5 GHz band, which will be subject to extensive discussions at WRC-19.

IMT-2020 Effort

- I spoke with delegates about possible IEEE proposal of IMT-2020 RIT or SRIT.
- One member encouraged such a proposal.
- Staff proactively encouraged IEEE engagement.
- Some who had participated in prior IEEE proposals toward IMT-2000 and IMT-Advanced were cautious; wanted IEEE participants to be aware of:
  - very high level work level commitments necessary to progress such a proposal
  - the need, beyond internal preparation work, to ensure participation with many active administrations to ensure that governmental representatives are well informed and advised
  - the need to involve a broad complement of participants directly in the WP 5D process, particularly participants familiar with the process

Recommendation 1

- If IEEE 802 has a potential interest in bringing new technology into IMT, it should consider whether such technologies should be brought into IMT via the IMT-2000 or IMT-Advanced procedures.
  - much easier than IMT-2020
  - earlier introduction into IMT
  - equal status under the Radio Regulations
- Next opportunity is with the development of Revision 3 of the IMT-Advanced Standards (Rec. M.2012).

Recommendation 2

- If IEEE 802 has a potential interest in bringing new technology into IMT-2020, it should consider developing contributions, to be submitted by IEEE as a Member, that will advance WP 5D's work toward drafting the critical documentation.
  - test environments
  - technical performance requirements
  - characteristics
  - channel models

Further Information

- For additional details, see full report:
  - IEEE 802-ec-16-0026-00-5GSG