

# IEEE 802 EC 5G standing committee

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## Agenda for March meeting

#### Monday

- Introduction (17-02) Glenn Parsons
  - Role of this standing committee
- 802 5G Project analysis (36)
- ITU-R IMT-2020 (10, 34) Roger Marks
- □ ITU-T IMT-2020 (37) Glenn Parsons
- IEEE 5G (35-01) Patrik Slaats

#### Tuesday

- Contributions
  - 802.1CM (38-01) Janos Farkas
  - 802.1CF (39) Max Riegel
  - · 802.3 (40-01) Marek Hajduczenia
  - 802.11 (41) Joseph Levy
  - 802.15 (42) Bob Heile
  - 3GPP RAN 2 (43) Richard Burbidge
- Next Steps

#### Wednesday

Scope revision

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# Role of the 5G standing committee

### Background

- January IEEE 802 EC workshop discussion
  - 5G standardization landscape
  - □ IMT process (<u>EC-16-10</u>) Roger Marks
- Scope developed for a 5G EC standing committee
  - create a report for the EC to guide IEEE 802
  - Formalize SC as a type 2 EC subgroup
- Motion approved by EC Feb 8, 2016
  - Chair appointed

#### Approved Scope

- To provide a report on the following items to the EC:
  - Costs and benefits of creating an IEEE 5G specification
  - Costs and benefits of providing a proposal for IMT-2020, considering possible models of a proposal:
    - as a single technology,
    - as a set of technologies,
    - or as one or more technologies within a proposal from external bodies (e.g., 3GPP)
- During its lifetime, to act as the communication point with other IEEE organizations on this topic.

#### Organization

- The committee is chartered for 6 months (i.e., due July 2016 at the 802 plenary) as an EC SC (type 2).
  - LMSC P&P section 5.6, item #2
    - The subgroup is responsible for assisting the Sponsor (e.g., drafting all or a portion of a document, drafting responses to comments, drafting public statements on standards, or other purely advisory functions).
- Any 802 WG voting member may participate as a voting member of the committee.

### Operating practice

- Leadership
  - Chair Glenn Parsons
  - Secretary (for this plenary) Max Riegel
- Consensus
  - Any voting, approvals will be done by the EC
- Attendance credit for 802 WGs
  - policy is per home WG
- Meetings
  - Face-to-face monthly
  - Conference calls weekly, as necessary
- Documents on <u>Mentor</u>
  - Post on EC mentor under "EC 5G SC"
- Mailing list on <u>IEEE Listserv</u>
  - STDS-802-5G@listserv.ieee.org

#### Meetings

- Face-to-Face Meetings proposal
  - March 14 & 15 IEEE 802 plenary, Macau, CN
  - April 22 IEEE SA CAG, 5G workshop, Tokyo, JP
  - May 20 IEEE 802 wireless interim, Waikoloa, HI
  - May 25 IEEE 802.1 interim, Budapest, HU
  - June 15 Ottawa, CA
  - July 25 & 26 IEEE 802 plenary, San Diego, US
- Conference calls
  - Schedule weekly
    - Cancel if no agenda items
- Details
  - To be announced

#### Weekly Conference call times

- Starting March 30<sup>th</sup> for 1 hour
  - Alternating between 10am and 6pm each week
- Wednesday 10am Ottawa (ET)
  - 9am Dallas (CT)
  - 7am San Jose (PT)
  - 5pm Helsinki
  - 11pm Tokyo
  - 1am Wednesday, Sydney
- Wednesday 6pm Ottawa (ET)
  - 5pm Dallas (CT)
  - 3pm San Jose (PT)
  - 1am Helsinki
  - 7am Wednesday, Tokyo
  - 9am Wednesday, Sydney

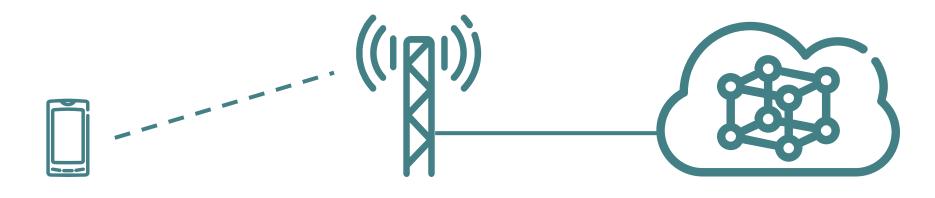
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## What is 5G?

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#### 5G architecture



... simplified

#### Will the SC define 5G?

- No
- But there will be two contexts
  - IEEE 5G
    - Some sort of description will be required
    - This may include use cases and requirements
  - □ IMT-2020
    - This is (or will be) defined by ITU-R

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# What are the options we have been asked to consider?

#### What are "costs and benefits"?

- This is a cost-benefit analysis
  - But without monetary cost, only relative costs
  - A quantitative pros vs cons
  - Strengths, Weaknesses, Opportunities and Threats
- Brainstorm all costs and benefits
  - E.g., resource cost, installation cost, operational cost, energy cost, etc.
  - Are the unexpected costs?
  - Are there unanticipated benefits?
- Estimate value relative to a baseline

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#### 1. IEEE 5G

- Description
  - Not related to IMT-2020
  - At least simplified architecture, but likely more
  - A combination of multiple IEEE standard technologies, profiled in a single standard
- Benefits

•••

Costs

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### 2. IMT-2020 - single technology

- Description
  - Just radio interface of simplified architecture
    - E.g., 802.11, 802.15.4, ...
  - IMT-2020 proposal by IEEE
- Benefits

•••

Costs

...

#### 3. IMT-2020 - set of technologies

#### Description

- At least radio interface of simplified architecture, but likely more
  - Single or multiple radio interfaces
  - Management and Control
  - Backhaul/fronthaul
- A combination of multiple IEEE 802 standard technologies, profiled in a single standard
- IMT-2020 proposal by IEEE
- Benefits

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Costs

· . . .

#### 4. IMT-2020 - external proposal

- Description
  - Part of a complete architecture
    - multiple radio interfaces
    - Management and Control
    - Backhaul/fronthaul
  - A combination of IEEE 802 standard technologies with other technologies (e.g., 3GPP)
  - IMT-2020 proposal by external party (e.g., 3GPP)
- Benefits
  - ...
- Costs
  - **-**

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# 5G SC report

## Philosophy

- Include and describe all options
  - That are derivatives of the four requested cases
- Expand cost/benefit for each
- SC conclusion recommended
  - Consensus preferred on preference
    - not required
    - Worst case straw poll preference
  - Recommend way forward for preference (s)

#### **Proposed** Table of Contents

- Introduction
- Options Considered
  - 1. IEEE 5G
    - Description
    - Benefits
    - Costs
  - 2. IMT-2020 single technology
    - Description
    - Benefits
    - Costs
  - 3. IMT-2020 set of technologies
    - Description
    - Benefits
    - Costs
  - 4. IMT-2020 external proposal
    - Description
    - Benefits
    - Costs
- Conclusion

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# 802 Project analysis

#### Initial potential 5G related projects

- **802.1** 
  - P802.1CF OmniRAN architecture
  - P802.1CM TSN for Fronthaul
- **802.3**
- **802.11** 
  - P802.11ax high aggregate throughput. High density of users.
  - IEEE Std 802.11ad high individual throughput, short range.
  - P802.11ay next generation of 802.11ad.
  - P802.11ah <1 GHz for IoT requirements</li>
- 802.15
  - P802.15.3d
  - 100Gb/s THz project
  - P802.15.7 REVa, Optical Wireless Communications,
  - P802.15.4 family.
- **802.16** 
  - · 802.16.1
- **802.21** 
  - P802.21.1

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## All project spreadsheet

WG	Project/Std #	Root Project	Type of Project	PAR App Date	PAR Expr Date	Expected Date of	Ballot Status	RevCom Target Date	Pub Date	Title	Scope
						Ballot					
802	802-2001	802-1990	Revision	6/26/1997	6/26/2001		Complete	Published	2001	Standard for LAN/MAN (Local Area Network/Metropolitan Area Network): Overview and Architecture	An overview and the architecture of the IEEE 802 suite of standards.
802	802-2014	802-2001	Revision	2/27/2007	12/31/2014	2012	Complete	Published	2014	Standard for Local and Metropolitan Area Networks: Overview and Architecture	This standard contains descriptions of the IEEE 802 Standards published by IEEE for Local Area Networks (LANs), Metropolitan Area Networks (MANS), and Personal Area Networks (PANs)networks considered as well as a reference model (RM)
802	802b-2004	802-2001	Amendment	2/13/2003	12/31/2007	12/1/2003	Complete	Published	2004	Standard for Local and Metropolitan Area Networks - Overview and Architecture - Amendment 2: Registration of Object Identifiers	The scope of this amendment is to define an Object Identifier hierarchy used within IEEE 802 for uniform allocation of Object Identifiers used in 802 standards.
802	P802c	802-2014	Amendment	6/11/2015	12/31/2017	1/1/2017		10/1/2017		Standard for Local and Metropolitan Area Networks Bridges and Bridged Networks Amendment: Automatic Attachment to Provider Backbone Bridging (PBB) services	This standard specifies the protocols, procedures and management objects for auto-attachment of network devices to Provider Backbone service instances by using Type, Length, Value (TLVs) within the Link Layer Discovery Protocol (LLDP)
802	P802d	802-2014	Amendment	12/5/2015	12/31/2019	8/1/2017				Standard for Local and Metropolitan Area Networks: Overview and Architecture Amendment: Uniform Resource Names (URN) Namespace	This amendment specifies a Uniform Resource Names (URN) namespace for IEEE 802 networks. This URN is used as the root identifier for YAMG data models that allow configuration and status reporting for 802 network elements.
802	P802E	P802E	New	9/3/2015	12/31/2019	7/1/2017		10/1/2018		Recommended Practice for Privacy Considerations for IEEE 802 Technologies	This recommended practice specifies a privacy threat model for IEEE 802 technologies and provides recommendations on how to protect against privacy threats.

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# Next Steps

#### Contributions requested

- 802 projects
  - Indicate relationship to 5G
  - Indicate which options are applicable
- Report content
  - Indicate which option
  - Expand costs and benefits

#### Straw Polls

- Should we meet again this week to discuss scope?
  - □ Yes 14, No 11
- Will you participate in conference calls?
  - □ Yes 34, No 2
- Will you participate in face-to-face meetings?
  - Tokyo 3 , Waikoloa 31, Budapest 14,
    Ottawa 12
- Will you make future contributions?
  - Yes -6

#### Approved Revised Scope A

- To provide a report on the following items to the EC:
  - Costs and benefits of creating an IEEE 5G specification, using unlicensed spectrum
  - Costs and benefits of providing a proposal for IMT-2020, considering possible models of a proposal:
    - as a single technology,
    - as a set of technologies,
    - or as one or more technologies within a proposal from external bodies (e.g., 3GPP)
- During its lifetime, to act as the communication point with other IEEE organizations on this topic.

#### Approved Revised Scope B

- Consider mechanisms to ensure that IEEE 802 technologies have access to sufficient spectrum to allow these technologies to be used as part of the NGN
- To provide a report on the following items to the EC:
  - Costs and benefits of creating an IEEE 5G specification, identifying appropriate spectrum needs
  - Costs and benefits of providing a proposal for IMT-2020, considering possible models of a proposal:
    - as a single technology,
    - as a set of technologies,
    - or as one or more technologies within a proposal from external bodies (e.g., 3GPP)
- During its lifetime, to act as the communication point with other IEEE organizations on this topic.

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# Meeting Summary

#### Summary

- Vibrant discussion
  - level set on ITU IMT-2020, IEEE 5G and 3GPP 5G
  - assessment of 802 projects
    there are multiple projects that are related to 5G
- Consensus on
  - Report framework
  - Meeting schedule and conference calls
- Additional meeting scope revision
  - Initiated based on view that some points were missing
    - Spectrum and IMT-Advanced
  - No consensus on revised scope...