



IEEE 5G Standardization

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Industry and Standards Activities

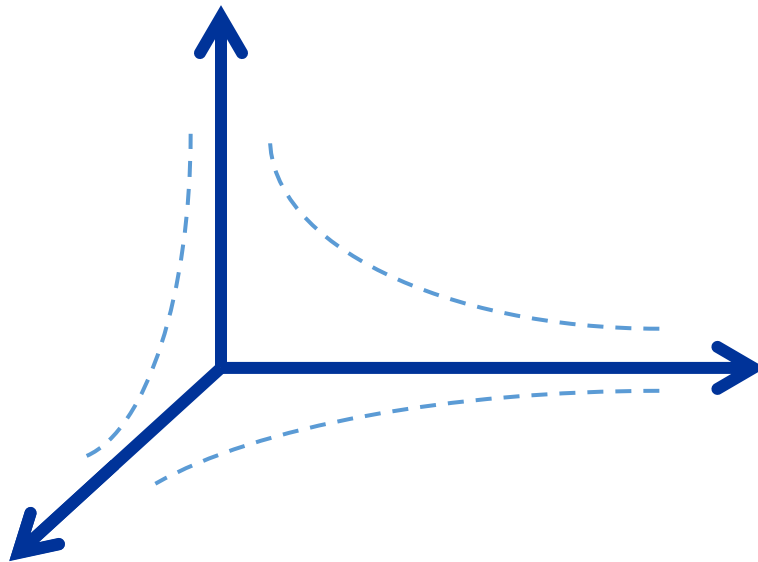
IEEE ≥5G Vision

- IEEE, like many other organizations, believes that 5G ecosystem is rather large and will cover many different areas:
 - Not only an evolution of LTE
 - New services, new technologies, new spectrum (>6 GHz), new industries, new business models
 - Multi connectivity across bands & technologies (carrier aggregation with integrated MAC across sub- 6GHz & above 6GHz, 802.X and macro cells (legacy)
 - “Rethinking” of fundamental areas used in previous ‘Gs’ (cell architectures, antennas, core networks, etc) (Is it appropriate to continue to use the word “generation” ?)

The IEEE $\geq 5G$ Hyperplane

Speed: >10 Gb/s \rightarrow Tb/s

Massive Content



Massive Sensing
1b/s over 10 years
using an AAA battery

Massive Control

Response: 1 ms

IEEE Standards Development

Process encompasses from early technology research stage to final published standard

Research Group (RG)

- Identifies and addresses research issues that need to be solved on the way to standardization of technology
 - Output - vision documents, research reports, white papers, proposal for SG

Study Group (SG)

- Outlines the scope of a standards development activity in a 3-6 month project
 - Output – Project Authorization Request (PAR) for WG

Working Group (WG)

- Solicits technical contributions and writes a standards document
 - Output – IEEE Standard!



Two Types of Standards Participation

Individual method

- Participants are “individuals”: i.e., people
- Individuals represent themselves
- Each individual participant has one vote
- Ballot groups are made up of a minimum of 10 individuals
- Ballot group participants must be IEEE-SA individual members

Entity (Corporate) method

- Participants are “entities,” i.e., companies, universities, government bodies, etc.
- Designated representative and alternate represent the entity
- Each entity has one vote
- Standards project initiation requires 3 entities to commit to membership and payment of appropriate dues
- Entity sends representatives to participate in standards development meetings

IEEE: Standards and Global Collaboration for 5G

IEEE provides a complete, end-to-end, collaborative framework today for accelerating the realization of 5G and its revolutionary use cases tomorrow.

Mobile Edge Cloud brings SDN/NFV frameworks and data path programmability to the proximity of end users as key enablers for service differentiation

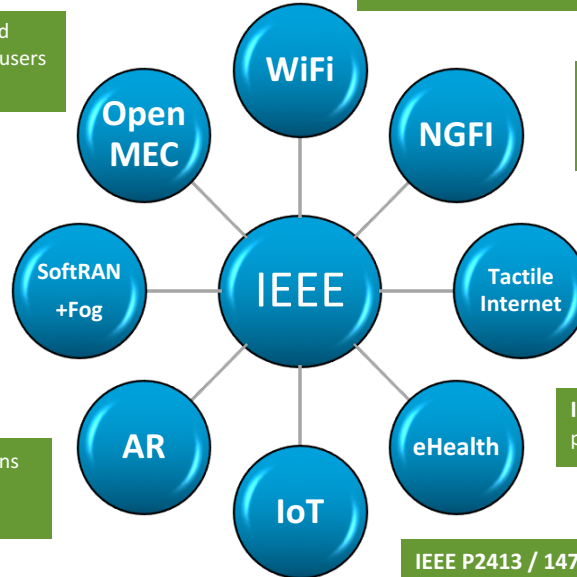
IEEE 802.11
standard supported by almost any mobile device in the market today

SoftRAN is to create a SD RAN flexible enough to control applications with the wireline centric concepts of “fog” in a SD-controller

IEEE 1914/1904
flexible, efficient and scalable packet-based fronthaul transport networks

IEEE P1589/P1587.6/P1857.9/P3333.2.4 Industry Connections
the integration of computer-generated sensory content with the physical world

IEEE 1918
non/mission-critical applications (e.g. manufacturing, transportation, healthcare, mobility, edutainment, events)



IEEE 11073
provides a global platform for eHealth stakeholders

IEEE P2413 / 1471 / 42010

IEEE ≥5G Standards Track

- Track Leaders are Alex Gelman and Paul Nikolich
Managing portfolio of activities including:
 - New projects
 - Workshops for needs definition and connection with technology developers
 - Roundtable program for industry leaders
 - Engagement with SDOs and other external organizations

Call to Action

- Solicit Ideas for Standards Activities
- Call for Participation by all Societies
- Call for Collaboration

