

# IEEE 5G Rapid Reaction Standardization

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# Integrating fronthaul/backhaul

- Separation of base stations in radio heads (RRH) and base band units (BBU). Requires of high capacity links connecting both.
- Operators willing to have a single transport network for fronthaul/backhaul transport. Both traffics have very disparate characteristics (packet BE vs high Bw, low delay and jitter).
- Although C-RAN architecture is mostly used in 3GPP networks, several works are exploring how to carry it to the Small Cell world.
- Desirable characteristics:
  - Unified but versatile cross-technology frame format supporting all types of fronthaul (e.g., CPRI) and backhaul and their different demands on the type of payload, but also bandwidth, latency and synchronization.
  - Support of Wireless (e.g., mmWave) and Wired (e.g., 40G-Eth, optical) underlying technologies.
- There are some activities in the IEEE tackling this issue, e.g., IEEE 802.1 TSN, IEEE 1904.3, but they are focused only in FH over Ethernet (and not clear if they tackle integration with other kind of traffics). They are not tackling wireless for example.

# New southbounds for IEEE technologies

- Southbound is the name by which we refer to the interface between an SDN controller and a specific technology.
- Currently there are no mechanisms to trigger specific IEEE-technologies mechanisms. For example, use of IEEE 802.11v frames to control user attachment.

# Flexible MAC injection

- One of the 5G characteristics will be customization.
- Different technologies are suited better for some purposes.
- One of the technologies showing high potential for 5G is the flexible MAC configuration, meaning that the network is able to inject new MAC protocols into the terminal and points of attachment.
- In this way specific MAC characteristics or customized flavors of certain protocols could be used in specific locations.
- This is simpler than SDR while obtaining high benefits for different scenarios.

# Multi-tenancy

- 5G bandwidth requirements can only be met if the network is densified.
- This means deployment costs will skyrocket. One way of solving this issue is to share the network → multi-tenancy.
- Several vendors already selling products allowing this (e.g., there are shareable eNBs in the market).
- IEEE technologies are not following this trend. For example there are no standard mechanisms to instantiate new networks (instantiate a new AP) or to allocate resources and dynamically create VLANs.