Introduction _of_1914

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Teleconference

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IEEE 1914 (NGFI) WG

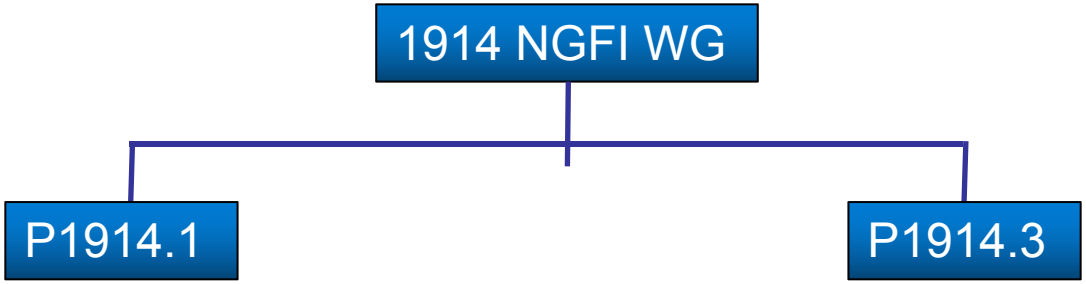
- ✓Sponsored by COM/SDB
- ✓Platform for 5G Fronthal standards, Close relation with other SDOs

  (NGFI: Next Generation Fronthaul Interface)

- ✓Website:https://sagroups.ieee.org/1914/
- ✓Chair:Jinri Huang, China Mobile
- ✓Co-chair:Tazi Abdellah, AT&T

- ✓Member: 28 members, including 15 voting members and 13 non-voting participants

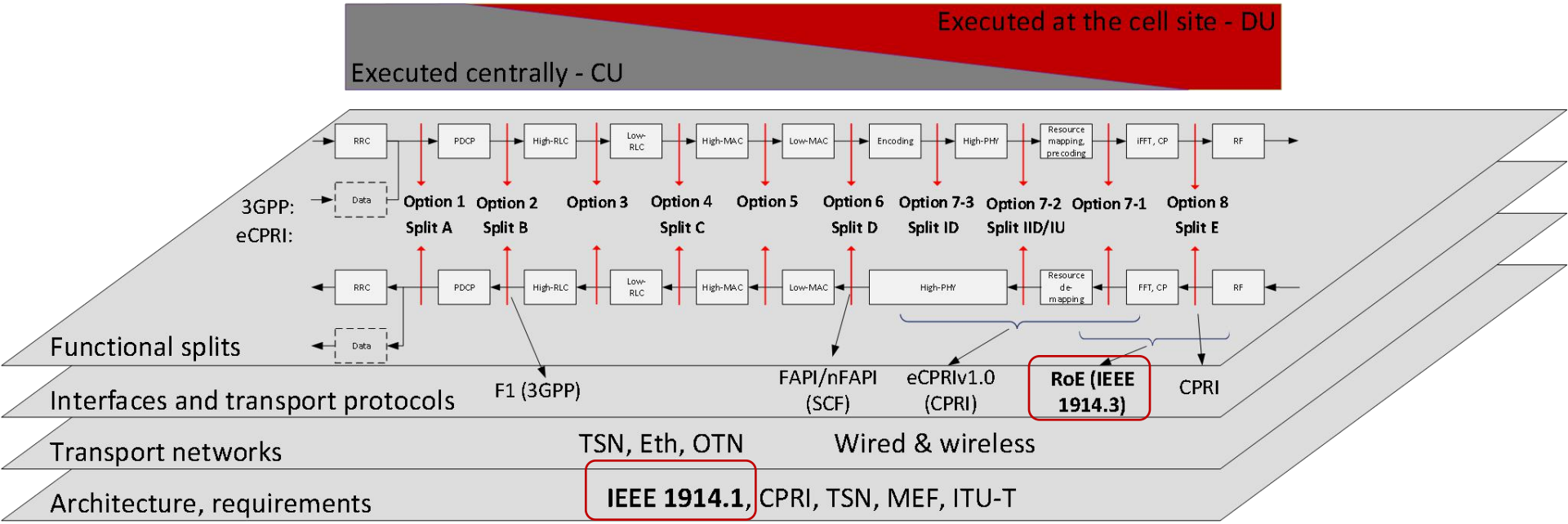
IEEE 1914 (NGFI) project



- Standard for Packet-based Fronthaul Transport Networks
  - Use cases and scenarios
  - Architecture
  - Requirements
- Standard for Radio Over Ethernet Encapsulations and Mappings (RoE)
  - Structure-agnostic
  - Structure-aware
  - IQ (CPRI/native RoE) encapsulations and mapping
  - IQ in time and frequency domain

IEEE 1914 relation with other SDO

Standardization and industry solutions for 4.5G/5G base stations



IEEE 1914.1 overview

✓Title: Standard for Packet-based Fronthaul Transport Networks

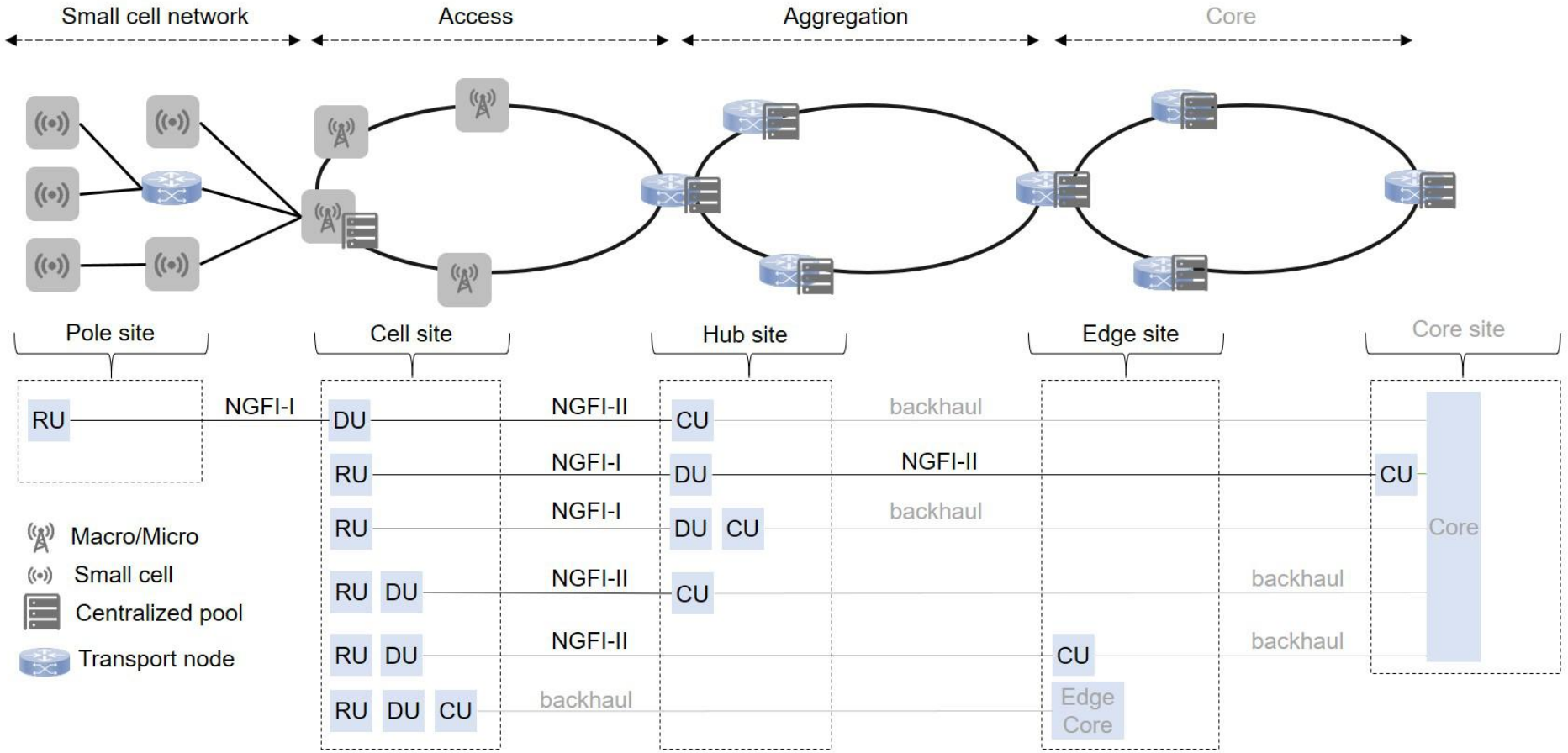
✓Scope:

- 1) Architecture for the transport of mobile fronthaul traffic (e.g., Ethernet-based), user data traffic, and management and control plane traffic.
- 2) Requirements and definitions for the fronthaul link, including data rates,timing and synchronization, and quality of service.
- The standard also defines functional partitioning schemes between Remote Radio Units (RRUs) and Base-Band Units (BBUs) that improve fronthaul link efficiency and interoperability among various vendors.

✓Status: IEEE Std 1914.1-2019 was approved by the SASB in November 2019.

IEEE 1914.1 overview

✓Reference network architecture and interfaces



IEEE 1914.1 overview

✓Requirements - network

- Transport classes of service – latency is a key factor
- Latency measurement
- Network slicing
- Throughput and scalability (informative)
- Synchronization
- Transfer time
- Availability
- Converged transport network
- Configuration management
- Operation, administration and maintenance
- Security

IEEE 1914.1 overview

✓Requirements - node (FTN)

- Processing time
- Interface rate
- Synchronization
- Operational requirements

IEEE 1914.3 overview

✓Title: Standard for Radio Over Ethernet (RoE) Encapsulations and Mappings

✓Scope:

- The encapsulation of digitized radio In-phase Quadrature (IQ) payload, possible vendor specific and control data channels/flows into an encapsulating Ethernet frame payload field.
- The header format for both structure-aware and structure-agnostic encapsulation of existing digitized radio transport formats.
- A structure-aware mapper for Common Public Radio Interface (CPRI) frames and payloads to/from Ethernet encapsulated frames. The structure-agnostic encapsulation is not restricted to CPRI.

✓Status: IEEE Std 1914.3-2018 was approved by the SASB in September 2018.

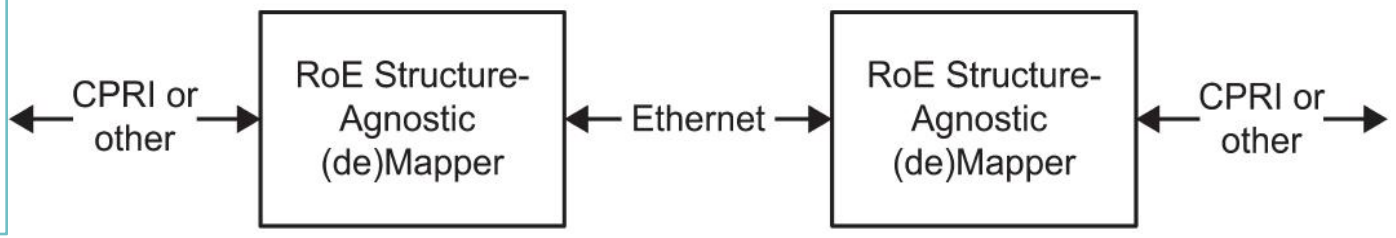
IEEE 1914.3 overview

✓Define:

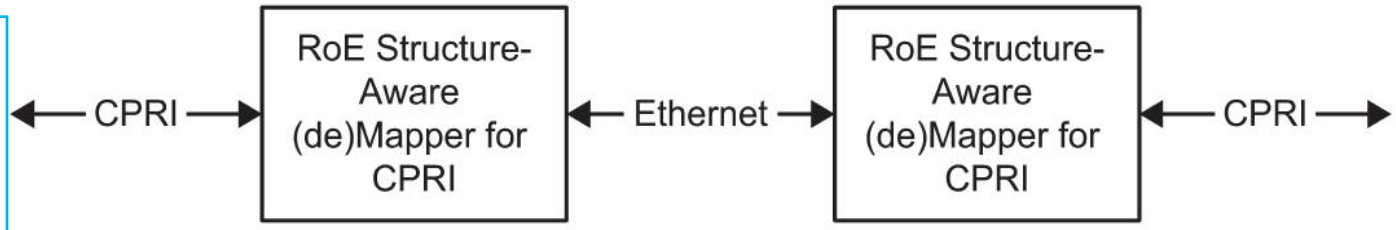
- Header formats and encapsulations
- Structural hierarchy, Parameter list and C&M encapsulations
- Methods for structurally re-containerizing CPRI into RoE

✓Scenarios:

1. Allow CPRI to be efficiently & agnostically tunneled



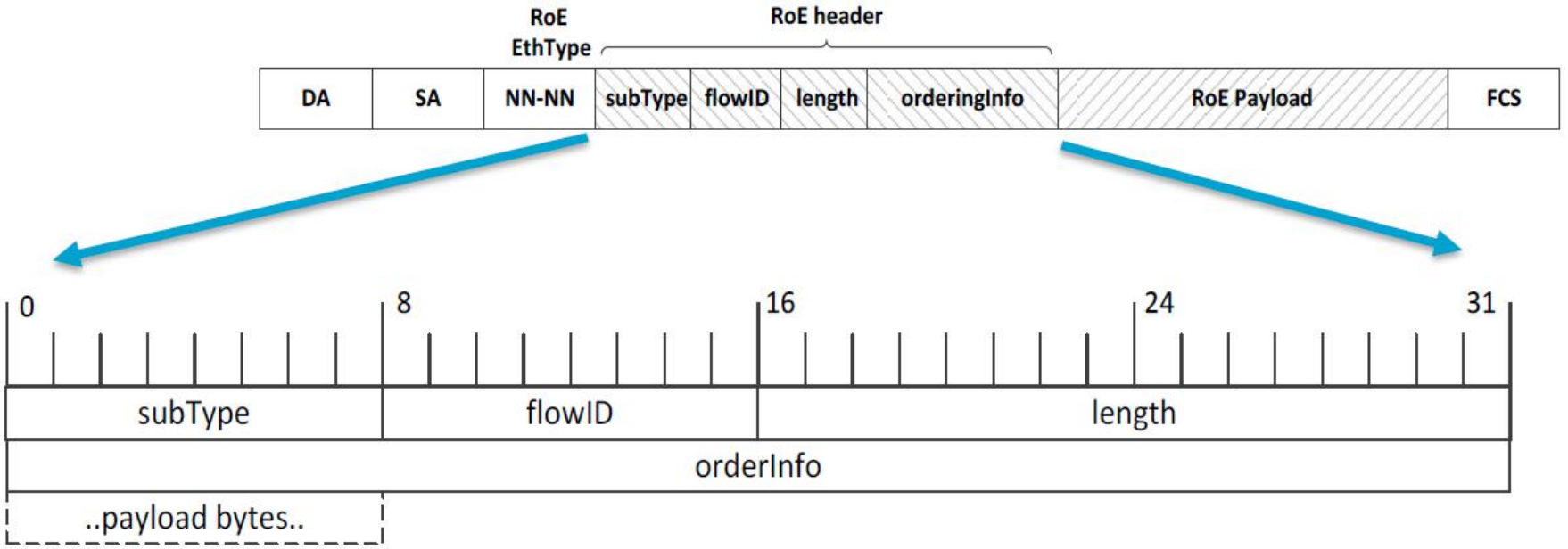
2. Allow CPRI to be structurally remapped over RoE



IEEE 1914.3 overview

✓Common Header Format:

- subType – Packet type
- flowID – Flows allow SA/DA pairs to distinguish connections
- length – Payload size
- orderingInfo – Sequence number or timestamp
- Payload – The IQ data / control information



IEEE 1914.3a overview

- ✓Scope: Amendment of 1914.3, adds the following to the base standard
  - 1. Specifications for mapping with UDP/IPv4 and UDP/IPv6 encapsulation layers.
  - 2. Specification of more parameters, control messages, and mechanisms to improve OAM functions.
  - 3. Specification of a management model.
  - 4. Specification of a mechanism for segmenting big messages.
  - 5. Extension of CPRI structure-aware mapping to the frequency domain.
  - 6. Elaboration on how the rbMap function can be used to send data with different priorities.
  - 7. Clarification on the relationships between all parameters of the standard..
- ✓Status: Recirculation working group ballot, plan to finish sponsor ballot in Aug 2020.

Thank You