Open Radio Access Network (RAN) Initiative
Industry Connections Activity Initiation Document (ICAID)

Version: 2.0, 21 August 2023

<mark>IC21-009-02 Approved by the CAG 21 September 2023</mark>

Instructions

1. Contact

Provide the name and contact information of the primary contact person for this IC activity. Affiliation is any entity that provides the person financial or other substantive support, for which the person may feel an obligation. If necessary, a second/alternate contact person's information may also be provided.

Name: Ashutosh Dutta
Email Address: Ashutosh.dutta@jhuapl.edu/ ashutosh.dutta@ieee.org
Employer: Johns Hopkins University
Affiliation: Johns Hopkins University Applied Physics Lab (JHU/APL)

IEEE collects personal data on this form, which is made publicly available, to allow communication by materially interested parties and with Activity Oversight Committee and Activity officers who are responsible for IEEE work items.

2. Participation and Voting Model

Specify whether this activity will be entity-based (participants are entities, which may have multiple representatives, one-entity-one-vote), or individual-based (participants represent themselves, one-person-one-vote).

Individual-Based

3. Purpose

3.1 Motivation and Goal

Briefly explain the context and motivation for starting this IC activity, and the overall purpose or goal to be accomplished.

The O-RAN Architecture is designed to enable next-generation RAN (Radio Access Network) infrastructures. It is designed with the principles of intelligence, virtualization, and disaggregation.

In an Open RAN environment, the traditional gNB (next-generation node B) or eNB (base station) is disaggregated into three main building blocks:

- the Radio Unit (RU)
- the Distributed Unit (DU)
- the Centralized Unit (CU)
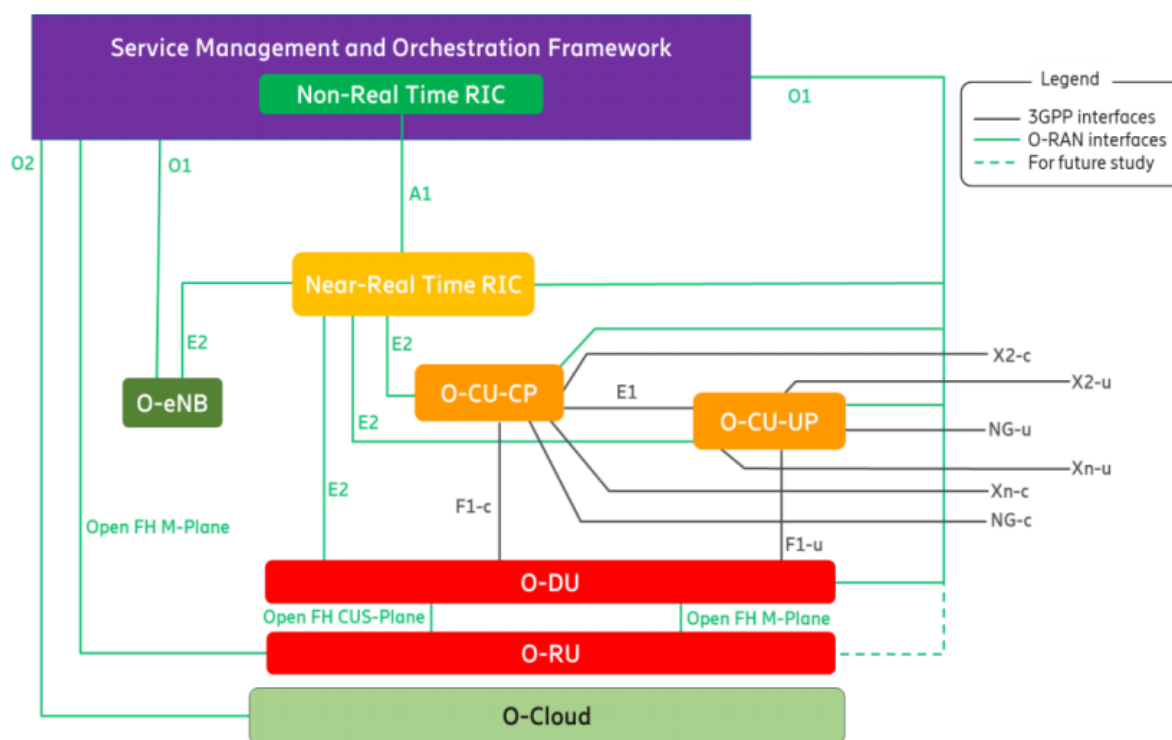
The RU is where the radio frequency signals are transmitted, received, amplified, and digitized. The RU includes the radio, lower physical layer, and fronthaul (eCPRI) interfaces towards a DU. The DU contains the upper physical layer as well as Layer 2 protocol stacks. The DU and CU are the computational parts of the base station, sending the digitized radio signal into the network. The DU is physically located at or near the RU whereas the CU can be located nearer the Core or be co-located with DU.

The key concept of Open RAN is "opening" the protocols and interfaces between these various building blocks (radios, hardware, and software) in the RAN. The O-RAN ALLIANCE has defined 11 different interfaces within the RAN including those for:

●   Fronthaul between the Radio Unit and the Distributed Unit
●   Mid-haul between the Distributed Unit and the Centralized Unit
●   Backhaul connecting the RAN to the Core

There are also different specifications developed by various standards organizations that are applicable to the interfaces between the different blocks.

The split architecture poses issues for applications that have latency requirements below 1 ms.

Dependent on the use cases, traffic models, and deployment scenarios there are different standards in play on the interfaces and that could create confusion.

The opening of the interfaces could have an impact on the overall performance of the network and present interoperability issues.

The openness with different vendors also could present challenges with the fault management and configuration management.

Thus, it is proposed that we develop a structured sustainable framework/guideline to address the deployment, interoperability, configuration & fault management, and performance issues.

The framework/guideline is intended to be flexible, adaptable, scalable, and formulaic and can be extended for different evolving ecosystems and may be used by governments, industry, and academia.

3.2 Related Work
Provide a brief comparison of this activity to existing, related efforts or standards of which you are aware (industry associations, consortia, standardization activities, etc.).

●   O-RAN Alliance Activities
●   3GPP Activities
●   IEEE Future Networks Technical Community
●   Next G Alliance
●   O-RAN nGRG
●   ITU

3.3 Previously Published Material
Provide a list of any known previously published material intended for inclusion in the proposed deliverables of this activity.

See the publications from Open RAN alliance

3.4 Potential Markets Served
Indicate the main beneficiaries of this work, and what the potential impact might be.

● Any communication ecosystem and architecture

Benefits operators by allowing multi-vendor deployments, enable smaller players to be part of the eco-system development for 5G and beyond

3.5 How will the activity benefit the IEEE, society, or humanity?
Describe how this activity will benefit the IEEE, society, or humanity.
● Achieve IEEE's goal of developing a framework that is open, flexible, scalable, and adaptable.
● New projects to be delivered across diverse sectors
● New activities, projects, and programs can be the outcome of the program. This is an excellent opportunity
   to extend the reach and depth of 5G enabled applications and services across several industries.
● Practices/guidelines that will help solution deployment across different interfaces, vendors, and frameworks.
● Results from the Testbed and prototypes will help fine tune the specifications and accelerate the deployment

4. Estimated Timeframe
Indicate approximately how long you expect this activity to operate to achieve its proposed results (e.g., time to completion of all deliverables).

Expected Completion Date: 09/2025

IC activities are chartered for two years at a time. Activities are eligible for extension upon request and review by ICCom and the responsible committee of the IEEE SA Board of Governors. Should an extension be required, please notify the ICCom Administrator prior to the two-year mark.

5. Proposed Deliverables
Outline the anticipated deliverables and output from this IC activity, such as documents (e.g., white papers, reports), proposals for standards, conferences and workshops, databases, computer code, etc., and indicate the expected timeframe for each.

In order to focus our activity, we have prioritized the deliverables year-wise
All of the below aspects can be considered

Prioritized Items for 2023-2024 Deliverables (Priority 1)
● Test bed and Proof of Concept
● Comprehensive White Paper including various use cases and implementation

- Workshops and Events
- Webinars
- Collaboration initiatives with other organizations.
- Open RAN Panels in various conferences
- New PARs based on the identification of issues discussed during RRSA (Rapid Reaction Standardization Activities) on August 9

Prioritized Items for 2024-2025 (Priority 2)

- Practice Guide/Framework for Various Deployment Scenarios
- Guidelines Specifications for the Configuration and Fault Management
- Guidelines for different implementations
- Guidelines to ensure proper interoperability and compliance

5.1 Open Source Software Development

Indicate whether this IC Activity will develop or incorporate open source software in the deliverables. All contributions of open source software for use in Industry Connections activities shall be accompanied by an approved IEEE Contributor License Agreement (CLA) appropriate for the open source license under which the Work Product will be made available. CLAs, once accepted, are irrevocable. Industry Connections Activities shall comply with the IEEE SA open source policies and procedures and use the IEEE SA open source platform for development of open source software. Information on IEEE SA Open can be found at https://saopen.ieee.org/.

Will the activity develop or incorporate open source software (either normatively or informatively) in the deliverables? No

Not known at this time

6. Funding Requirements

Outline any contracted services or other expenses that are currently anticipated, beyond the basic support services provided to all IC activities. Indicate how those funds are expected to be obtained (e.g., through participant fees, sponsorships, government, or other grants, etc.). Activities needing substantial funding may require additional reviews and approvals beyond ICCom.

No expenses anticipated apart from the basic support and RRSA activities for standardization

7. Management and Procedures

7.1 Activity Oversight Committee

Indicate whether an IEEE Standards Committee or Standards Development Working Group has agreed to oversee this activity and its procedures.

Has an IEEE Standards Committee or Standards Development Working Group agreed to oversee this activity?

If yes, indicate the IEEE committee's name and its chair's contact information.

IEEE Committee Name:
Chair's Name:
Chair's Email Address:

Additional IEEE committee information, if any. Please indicate if you are including a letter of support from the IEEE Committee that will oversee this activity.

IEEE collects personal data on this form, which is made publicly available, to allow communication by materially interested parties and with Activity Oversight Committee and Activity officers who are responsible for IEEE work items.

7.2 Activity Management
If no Activity Oversight Committee has been identified in 7.1 above, indicate how this activity will manage itself on a day-to-day basis (e.g., executive committee, officers, etc.).

Executive Committee of this program will manage the activities. The executive committee consists of the following.
Chair: Ashutosh Dutta, JHU/APL
Vice Chair: Ivan Seskar, Rutgers University WINLAB,
Vice Chair: Cagatay Buyukkoc, DT
Secretary: Mithun Mukherjee, Nanjing University of Information Science and Technology
Director of Industry Strategy and Alliance: Purva Rajkotia, IEEE SA
IEEE Industry Connections Administrator – Rosalinda Saravia

7.3 Procedures
Indicate what documented procedures will be used to guide the operations of this activity; either (a) modified baseline *Industry Connections Activity Policies and Procedures* (entity, individual), (b) *Abridged Industry Connections Activity Policies and Procedures* (entity, individual), (c) Standards Committee policies and procedures accepted by the IEEE SA Standards Board, or (d) Working Group policies and procedures accepted by the Working Group's Standards Committee. If option (a) is chosen, then ICCom review and approval of the P&P is required. If option (c) or (d) is chosen, then ICCom approval of the use of the P&P is required.

Industry Connections Activity Policies and Procedures will be adhered. (b) *Abridged Industry Connections Activity Policies and Procedures*

Participants

8.1 Stakeholder Communities
Indicate the stakeholder communities (the types of companies or other entities, or the different groups of individuals) that are expected to be interested in this IC activity and will be invited to participate.

Service Providers, Semiconductor Manufacturers, OEMs, OD
Telecom Vendors, Application Service Providers, Technology Providers. Universities, Start ups

8.2 Expected Number of Participants
Indicate the approximate number of entities (if entity-based) or individuals (if individual-based) expected to be actively involved in this activity.

There are currently 250 Individuals who are part of the mailing list and actively participate in the Open RAN Industry Connection Activities.

8.3 Initial Participants
Provide a few of the entities or individuals that will be participating from the outset. It is recommended there be at least three initial participants for an entity-based activity, or five initial participants (each with a different affiliation) for an individual-based activity.

Use the following table for an individual-based activity: (This is a sample list) – There are about 250 members who are engaged now

Individual Name	Employer	Affiliation
Sridhar Rajagopal	Mavenir Systems	Mavenir Systems
Nicholas Karter	Analog Devices	Analog Devices
Ashutosh Dutta	JHU APL	JHU APL
Narendra Mangra	Globenet Mobility	Self
Dr. Derek Peterson	Boingo Wireless	Boingo Wireless
Manish Singh	Dell	Dell
Brian Daly	AT&T	AT&T
Scott Poretsky	Ericsson	Ericsson
Sreenath Sriram	Lekha Wireless	Lekha Wireless
Amar Kapadia	Aarna Networks	Aarna Networks

8.4 Activity Supporter/Partner
Indicate whether an IEEE committee (including IEEE Societies and Technical Councils), other than the Oversight Committee, has agreed to participate or support this activity. Support may include, but is not limited to, financial support, marketing support and other ways to help the Activity complete its deliverables.

Has an IEEE Committee, other than the Oversight Committee, agreed to support this activity? Yes

If yes, indicate the IEEE committee's name and its chair's contact information.

IEEE Committee Name: IEEE COM/AccessCore-SC/Netsoft SC

Chair's Name: Alexander Gelman, Mehmet Ulema
Chair's Email Address: Alex Gelman adg@ieee.org, Mehmet Ulema m.ulema@ieee.org

Please indicate if you are including a letter of support from the IEEE Committee.