**User Experience in WLAN Network**

**Industry Connections Activity Initiation Document (ICAID)**

Version: 1, 8 July 2024

IC24-00x-0x

**Instructions**

* Instructions on how to fill out this form are shown in red. Please leave the instructions in the final document and simply add the requested information where indicated.
* Spell out each acronym the first time it is used. For example, “United Nations (UN).”
* Shaded Text indicates a placeholder that should be replaced with information specific to this ICAID, and the shading removed.
* Completed forms, in Word format, or any questions should be sent to the IEEE Standards Association (IEEE SA) Industry Connections Committee (ICCom) Administrator at the following address: [industryconnections@ieee.org](mailto:industryconnections@ieee.org).
* The version number above, along with the date, may be used by the submitter to distinguish successive updates of this document. A separate, unique Industry Connections (IC) Activity Number will be assigned when the document is submitted to the ICCom Administrator.

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:** Min HUANG

**Email Address:** [huangmin@waa-alliance.com](mailto:huangmin@waa-alliance.com)

**Employer:** WAA(World WLAN Application Alliance)

**Affiliation:** WAA(World WLAN Application Alliance)

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.

1. **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).

Entity-Based

1. **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.

Wireless LAN is the most popular access technology nowadays and affords about 60% data transmission in access network. But some user experience issues of Wireless LAN network are observed as following:

1. Improving Wireless LAN connection robust:

By IoT Analytics investigation, there are 17.6 billion IoT connections in the world at the end of 2023. And 31% of them are based WLAN technology, especially in smart home scenario where IoT device such as refrigerator, air conditioning, washing machine etc., accesses to network via wireless LAN.

In these WLAN-based IoT connection, the access failure is often happened, and even though access successfully, it is very easy to lost the connection. CMCC ’s(China Mobile) investigation shows that the 30% of customer complaints in WLAN-based IoT is about connections(access failure or lost connection). So as the user experience point of view, we need to recognize the reason of connection problem in WLAN of IoT scenario, and find some ways to improve WLAN-based IoT connection robust.

1. Meeting APP’s requirement precisely.

Performance metrics in MAC/PHY layers does not match the APP’s requirements. Peak throughput reaches 9.6 Gbps in WiFi6 and even reach 23Gbps in WiFi7 which much higher than any application’s requirements. But some APP’s requirements, for example real-time game which needs stainable low latency is not always satisfied. In fact, WLAN MAC/PHY layer cannot even recognize what the APP is, and thereby don’t know how to satisfy the APP’s requirements. It is meaningful to recognize each of APP’s requirements precisely and find out some mechanisms in network to satisfy the requirements.

1. Self-operation in WLAN Network:

Unlike cellular network which is operated & maintained professionally, most of WLAN is deployed in home without any maintenance. If there is something wrong in the WLAN network, such as access failure, the video conference/games lagging etc. Most of users don’t know how to deal with it since they have no knowledge about WLAN. For better user experience to operate this WLAN device, it is a good idea that the WLAN network can self-trouble-shooting and self-recovering from fault without any user’s intervention.

To make user experience better and promote the development of WLAN industry, WAA (World WLAN Application Alliance) has made some effort, including held some industry events such as roundtable, forum and industry summit to collect industry requirements and information and build consensus, and has issued some test specifications and certifications. With willing of involved more users and partners in, WAA would like to initial an industry connection activity within the scoped of IEEE SA.

So the goal of this IC is focusing on the user experience improvements from multiple dimensions, including connection robust, APP’s requirement, and Self-operation in WLAN Network.

**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.).

IEEE 802.11 working group had developed 802.11k/v/r to improved WLAN roaming experiences. And based on 802.11kvr, WAA has developed “Wireless Local Area Network Network-Terminal QoS Coordination Technical Specifications” and “Wireless Local Area Network Network-Terminal Roaming Collaboration Technical Specifications” for further improved user experience improved.

In 2019, IEEE 802.11 initial an Real Time Application Topic Interest Group to study all kinds of real time APP’s requirements, and output “IEEE 802.11 Real Time Applications TIG Report”.

**3.3 Previously Published Material**

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

1. 802.11k/v/r, IEEE 802.11
2. Network-Terminal QoS Coordination Technical Specifications, WAA

**3.4 Potential Markets Served**

Indicate the main beneficiaries of this work, and what the potential impact might be.

This work will serve and benefit all the markets including WLAN-Based IoT markets and Wireless Broadband markets by improve APP experience and operation experience.

**3.5 How will the activity benefit the IEEE, society, or humanity?**

Describe how this activity will benefit the IEEE, society, or humanity.

By improving APP experience and operation experience in WLAN network, this activity will promote business application of IEEE 802.11 standards. It will help IEEE and IEEE SA enhance leadership in IoT scenario and broadband scenario. It will also help IEEE and IEEE SA grow membership (especially corporate members) and influence globally.

1. **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:** 9/2026

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.

1. **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.

Specify the deliverables for this IC activity, please be specific.

* Documents (e.g., white papers, reports)

This activity plans to complete at least two white papers on user experience in WLAN network by 2026.

* **Whitepaper on user experience on wireless broadband service and IoT service.** This paper will investigate the status and the requirements on WLAN network from the wireless broadband service and IoT service, and the gap between technologies and the requirements, and try to give technical proposal.
* **Whitepaper on WLAN network operation and maintenance.** This paper will recognize the pain point of using and operation WLAN network at present, and then try to give some advice.
* Organize the pre-study and 2 new proposals for standards:
  + Based on requirements and technologies discussed in whitepaper above in this IC activity, it is expected output two new proposals for standards.
* Organize workshops/seminars regarding industry requirements on user experience in WLAN network.
  + two workshops in 04/2025 and 04/2026 respectively of this IC activity focusing on requirements from industry and possible solutions.
  + More webinars will also be executed for global experts to discuss requirements and technologies easer and in good time.

**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/*](https://saopen.ieee.org/)*.*

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

1. **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.

None

Meetings will be mostly online. In the case of workshops/events, expenses will be covered via registration fees and/or in-kind contributions of the participating entity members of the program.

1. **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?** No

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

**IEEE Committee Name:** Committee Name

**Chair’s Name:** Full Name

**Chair’s Email Address:** who@where

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.).

Briefly outline activity management structure.

The activity will be managed by an executive committee(ExCom) composed of a chair, vice-chair, secretary, and other functions to deal with the regular activities of the IC activity. The ExCom will organize at least one plenary session per quarter. During the quarterly meetings, ExCom will plan and review the work of the whole IC activity, including seminars, workshops and other events, and the group’s financial requirements.

**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](https://standards.ieee.org/content/dam/ieee-standards/standards/web/governance/iccom/IC_Activity_PNP_Entity_Baseline.doc), [individual](https://standards.ieee.org/content/dam/ieee-standards/standards/web/governance/iccom/IC_Activity_PNP_Individual_Baseline.doc)), (b) *Abridged Industry Connections Activity Policies and Procedures* ([entity](https://standards.ieee.org/content/dam/ieee-standards/standards/web/governance/iccom/IC_Activity_PP_Abridged_Entity.doc), [individual](https://standards.ieee.org/content/dam/ieee-standards/standards/web/governance/iccom/IC_Activity_PP_Abridged_Individual.doc)), (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.

(b) *Abridged Industry Connections Activity Policies and Procedures* ([entity](https://standards.ieee.org/content/dam/ieee-standards/standards/web/governance/iccom/IC_Activity_PP_Abridged_Entity.doc))

1. **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.

All entities and different groups that are involved with the businesses related to WLAN networks.

**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.

20 + entities are expected.

**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 entity-based activity:

|  |  |  |
| --- | --- | --- |
| **Entity Name** | **Primary Contact Name** | **Additional Representatives** |
| WAA | Min HUANG |  |
| Huawei technologies co. ltd. | Yanchun LI |  |
| Huawei technologies co. ltd. | Chenghe JI |  |
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**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?** No

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

**IEEE Committee Name:** Committee Name

**Chair’s Name:** Full Name

**Chair’s Email Address:** who@where

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