

**IEEE 802 Network Enhancements for the Next Decade
Industry Connections Activity (Nendica)
Industry Connections Activity Initiation Document (ICAID)**

Version: 4, 19 July 2023

IC17-001-04 Approved by the CAG 21 September 2023

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.
- 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: Roger Marks

Email Address: r.b.marks@ieee.org

Employer: None

Affiliation: EthAirNet Associates

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

While operating as a subgroup under IEEE 802.1, any person attending a meeting may vote on all motions (including recommending approval of the deliverables). A vote is carried by 75% of those present and voting Approve or Disapprove.

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 goal of this activity is to document emerging requirements and directions for IEEE 802 networks, identify commonalities, gaps, and trends not currently addressed by IEEE 802 standards and projects, and facilitate building industry consensus towards proposals to initiate new standards development efforts. Encouraged topics include enhancements of IEEE 802 communication networks and vertical networks as well as enhanced cooperative functionality among existing IEEE standards in support of network integration. Topics concerning higher-layer applications related to new standards development in the IEEE 802.1 Working Group are also specifically expected and encouraged. Findings related to existing IEEE 802 standards and projects are forwarded to the responsible working groups for further considerations.

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.).

There are no known IEEE 802 based activities comparable to this Industry Connections activity proposal. The proposed activity addresses topics distinct from the IEEE 802.3 'New Ethernet Applications' Industry Connections activity. It will cooperate when findings may benefit both activities.

3.3 Previously Published Material

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

None

3.4 Potential Markets Served

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

IEEE 802 technologies are deployed in a huge number of market applications, which are exhibiting a growing diversity in terms of the features needed. Solutions spanning these

different application spaces and feature requirements will be best addressed by leveraging common technology approaches. This activity will enable industry consensus building on the market/application requirements and identify gaps and trends not currently addressed by IEEE 802 standardization of new solutions, which will help to foster industry engagements in new study groups and standardization topics.

During the 2017-2023 initial terms of this IEEE 802 Nendica activity, three primary markets were addressed:

- (1) Nendica's Lossless Data Center Networks (LLDCN) Work Item led to publication by IEEE in August 2018 of "[IEEE 802 Nendica Report: The Lossless Network for Data Centers \(ISBN 978-1-5044-5102-4\)](#)." An active project (IEEE P802.1Qcz, on Congestion Isolation) arose from the Work Item, and the resulting draft is currently in IEEE Standards Association Ballot. Resulting discussions, including those raised in a well-attended IEEE 802/IETF Data Center Workshop in Bangkok in November 2018, led to a followup Work Item, resulting in the June 2021 publication by IEEE of "[Intelligent Lossless Data Center Networks](#)"(ISBN:978-1-5044-7741-3).
- (2) Nendica's Flexible Factory IoT (FFIOT) Work Item has led to the publication by IEEE in April 2020 of "IEEE 802 Nendica Report: Flexible Factory IoT — Use Cases and Communication Requirements for Wired and Wireless Bridged Networks"(ISBN 978-1-5044-6229-7). Discussion stimulated in this Work Item led to the development of PAR P802.1Qdq.
- (3) A Nendica Study Item on "Cut-Through Forwarding in Bridges and Bridged Networks" was initiated in March 2021 and developed the goal of preparing an IEEE 802 tutorial (7 July 2021) on the value of standardizing cut-through forwarding procedures within IEEE 802. The activity identified relevant markets in industrial networks, high-performance computing networks, and audio/video networks. Over 130 people attended. Further activity in the Study Item, including consensus building among various perspectives in several IEEE 802 Working Groups, led to the drafting and refinement of the P802.1DU PAR for a new standard on "Cut-Through Forwarding Bridges and Bridged Networks," which achieved consensus in the IEEE 802 community in March 2023.

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

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

The activity expects to continue to broadly identify new standardization requirements and stimulate new standardization activities.

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. Auto-renewal after two years.

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.

Deliverables will be of two types:

- Records of the meetings, including minutes and supporting documents, some of which may be prepared for delivery to other venues for purposes such as encouraging interest and participation
- A set of reports and other consensus outputs documenting the findings of the IC activity, with recommendations regarding overviews of current industry practice and trends, new standardization topics, documentation of use cases and user needs for those topics, and proposed organizational approaches to ensure effective participation from user communities

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

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.

None

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? Yes

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

IEEE Committee Name: IEEE 802 LAN/MAN Standards Committee

Chair's Name: Paul Nikolich

Chair's Email Address: p.nikolich@ieee.org

This activity operates as a subgroup under the IEEE 802.1 Working Group.

Working Group Chair: IEEE 802.1 Higher Layer LAN Protocols Working Group

Chair's Name: Glenn Parsons

Chair's Email Address: glenn.parsons@ericsson.com

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.).

N/A

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 ICom review and approval of the P&P is required. If option (c) or (d) is chosen, then ICom approval of the use of the P&P is required.

IEEE 802 Policies & Procedures
 IEEE 802 LMSC Operations Manual
 IEEE 802 Working Group Policies & Procedures
 IEEE 802 Nendica Report Development Process
<https://1.ieee802.org/802-nendica/ieee-802-nendica-procedures>

8. 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.

Stakeholders identified to date include but are not limited to: users and producers of systems and components for networking systems, data center networks, high performance computing, cloud computing, telecommunications carriers, automotive, intelligent transport systems, Internet of Things (IoT), factory automation, and industrial applications.

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.

30 individuals

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:

Individual Name	Employer	Affiliation
Roger Marks	EthAirNet Associates	EthAirNet Associates
Glenn Parsons	Ericsson	Ericsson
Paul Congdon		Congdon Consulting, LLC
Jessy Rouyer	Nokia of America Corporation	Nokia
Johannes Specht	Self	Analog Devices, Inc.; Mitsubishi Electric Corporation; Phoenix Contact GmbH & Co. KG; PROFIBUS Nutzerorganisation e.V.; Siemens AG; Texas Instruments, Inc.
Lily Lv	Huawei Technologies Co., Ltd	Huawei Technologies Co., Ltd
Ludwig Winkel	Self	Self
Hiroki Nakano	CAHI Corporation	Kyoto University; National Institute of Information and Communications Technology (Japan)

Paul Nikolich	Self	Self, HPE, Huawei, YAS BBV, Origin Wireless, Wyebot
Nader Zein	NEC Europe Ltd	NEC Laboratories Europe GmbH
Dieter Proell	Siemens AG	Siemens AG
Ramesh Sivakolundu	Cisco Systems Inc.	Cisco Systems Inc.
Leon Wessels	TSN Systems	TSN Systems
Norman Finn	Self	Huawei Technologies Co., Ltd
Marcel Kiessling	Beckhoff Automation	Beckhoff Automation
Huajie Bao	Huawei Technologies Co., Ltd	Huawei Technologies Co., Ltd
Stephan Kehrer	Hirschmann Automation and Control GmbH	Hirschmann Automation and Control GmbH

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.