IEEE SA STANDARDS ASSOCIATION

Smart Identification in Internet of Things (IoT)

Industry Connections Activity Initiation Document (ICAID)

Version: 1.0, 13th June 2023

IC23-006-01 Approved by the CAG 10 July 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: Yanti Chen
Email Address: Yanti.chen@iothstech.com
Employer: IOTHS Technology (Shenzhen) Co., Ltd.
Affiliation: IOTHS Technology (Shenzhen) Co., Ltd.

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).

Specify: "Entity-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 blueprint of Internet of Things (IoT) is becoming a reality in some form and places today, especially in the domains of intelligent manufacturing, smart cities, smart homes, etc. However, the extension of IoT applications into wider scenarios will face the issue of data division related to unknown identifications (IDs) of other systems. The outstanding challenge for the realization of full IoT-based business is the lack of standards for the universal identification solutions for all the things in IoT environments from different owners, with current or emerging identification devices, which is the foundation for the interoperation between business partners and end users.

The goal of this activity is to assess requirements for harmonized identification solutions over various smart tags or devices in IoT-like applications in order to minimize the system segmentations, identify gaps not currently addressed by any communication protocol standards or other fundamental standards such as IEEE 802.15, 802.11 and facilitate industry consensus towards proposals to initiate new standards development efforts.

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.).

The smart IoT related standards should absolutely include IEEE standards such as 802.15, 802.11ah, and other standard systems issued and maintained by other organizations such as Long-Range Radio Wide-Area Network (LoRaWAN), Long Power Wide-Area Network (LPWAN), Narrow Band Internet of Things (NB-IoT), IPv6 over IEEE 802.15.4 (6LoWPAN), etc. These standards mainly focus on the physical and Media Access Control (MAC) layers communication protocols for Machine to Machine (M2M) communication, and some of them include the standardization of envelop of Internet Protocol (IP) or specific application messaging over low energy narrow band tunnels.

The barcode, Quick Response (QR) code and Radio Frequency Identification (RFID) technologies have facilitated the global commerce and logistics for over 40 years, and the universal standardization, which includes dozens of ISO standards of Auto Identification and Data Collection (AIDC) techniques, promoted by GS1 is vital for the supply chain transparency and intelligent management of things for different partners of the whole business process. The IC activity will coordinate with other ongoing activities through participants and liaisons with active IEEE, ISO/IEC or GS1 standard working groups.

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.

This creative Industry Connections Activity will pave the way for the smart IoT infrastructure which is compatible with the current and state-of-the-art data capture or communication technologies, and hence it will redefine the smart version of IoT as the IT infrastructure more applicable, more reliable and more realizable for various businesses including industry 4.0, Metaverse, smart city and smart home, etc.

The commodity digitalization, assets management companies, smart device and hardware manufacturers, and IoT solution providers, alongside business-oriented research associations and relevant alliances are the primary beneficiaries of this initiative.

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

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

IEEE benefits: This Initiative will strengthen the leading role of IEEE in IoT standardization, and it will also enable the new IoT public services opportunities for IEEE in a large variety of industries. Several industrial activities and standards proposals are expected to be initiated as the direct results of discussions and engagements with appropriate expert groups to contribute to development of standards.

Society and humanity benefits: It will bring significant benefit to society and humanity with key syntax for the encoding of Unique identifiers and the context to simplify the interoperation of variety devices running different technical protocols of IoT, and minimize the information gap between systems and societies. It will simplify the adoption of various smart devices in the industry 4.0. It is expected that this activity will help identify and gather a group of experts and organizations directly involved in smart IDs related industries and associated technologies that can contribute to the development of new smart-ID products and solutions, proposal for standards, and recommended best practices.

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: 06/2025

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.

Work will be conducted over 2 years from the IC activity start date and will include:

- meetings to exchange ideas and discuss technology advancements, by utilizing guest speakers

- proposing topics for initiating new standards proposals based on gap analysis
- organizing workshops and symposiums (one per year)

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.

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

- An annual global in-person seminar (symposium) involving technical discussions related to smart ID technologies and applications is to be organized by the parties involved worldwide.
- Case studies of smart ID solutions provided by the IC participants for different scenarios are to be collected through webinars/seminars and displayed in IC Activity reports, and whitepapers on specific subject areas will be produced as needed.
- By identifying a group of participants, proposals are to be prepared for standard development. The new standard proposals will focus on the application and technologies of smart IDs in commodity digitalization management and identification data analysis.

This IC initiative may also organize more focused industrial workshops on key topics, associated with identification compatibility, smart tag/device technologies, and relevant solutions, in order to learn from a wider crowd, gain further industry expertise, seek cross-industry cooperations, and promote industry development.

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.

Some limited funding may be required for supporting logistical aspects of in-person meetings. The funds will be raised internally from supporting members or through applying for funds from supporting committees.

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? No

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

IEEE Committee Name: None
Chair's Name: None
Chair's Email Address: None

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.).

The activity will have an Executive Committee (ExCom) to oversee the progress and deliverables.

The following IC Activity management structure is proposed:

- Chair
- Vice-Chair
- Secretary
- Two or more workstream leads and/or liaisons for cross organizational (IEC, GS1, …) and cross-committee coordination of the IC activities.

The Activity will identify 2 or 3 workstreams for each year of operation to focus on the key topics of interest and progress toward specified deliverables.

The IC activity will hold a minimum of two workstream meetings per quarter and one in-person meeting per year.

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.

The IC activity will utilize Option (b) to follow Abridged Industry Connections Activity Policies and Procedures (entity).

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.

- Smart ID solution providers (IOTHS, Huabiaoweiye, Linklogis,…),
- IoT device or equipment manufacturers (Luxshare, Yunliwuli, TCL,…)
- System integrators (Newamstar, Huachuang,…)
- Identification distributers, and Regulatory and Government bodies.

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.

10 to 20 entities are expected – eight entities are confirmed; three entities are tentative.

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
IOTHS Technology	Tao Sun	Yanti Chen
Beijing Huabiaoweiye Technology	Wengui Hu	Pinghua Liao

Linklogis	Nina Du	
Yunliwuli	Min Zhang	
TCL	Wei Huang	
Luxshare	Qunfeng Zhang	
Newamstar	Gang Yin	
Nanjing Huachuang	Min Yuan	

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.