

Implementation Roadmap for Systemic EV Adoption in India and Asia

Industry Connections Activity Initiation Document (ICAID)

Version 2.0, 1 November 2022

IC20-023-02 Approved by the CAG 16 December 2022

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: Ravikiran Annaswamy

Email Address: Ravikiran@Numocity.com

Employer: Numocity Technologies

Affiliation: none

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).

"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.

Electric Vehicles (EV) are emerging as the option for clean mobility across the world. The EV ecosystem brings together three industry verticals who traditionally have not worked together. EVs need Automobile industry to modify the vehicles to use Batteries and new connected vehicle technologies. Power industry needs to gear up to fueling these EVs with electricity and they need to build Charging infrastructure across the highways, malls and workplaces. All these equipment are IOT enabled and connected so both telecom connectivity (4G/5G) along with Digital tech like Cloud, Data, and analytics become essential for accelerating EV adoption.

The goal of the IC activity is to bring all together the stakeholders (policy, business, and tech) across Auto, Power, and Digital technologies and create a viable, systemic and meaningful roadmap for the Indian market. India is different from other world markets in mobility with over 85% being 2 and 3-wheeler vehicles. The technology and business models are frugal and designed for the Indian market.

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.).

In the Indian market, the Policy body (NITI Ayog) did a consultative paper with Rocky Mountain Institute (RMI Colorado) for putting together a consultative paper from Government on the strategy and implementation. The BIS working groups are bringing some of the standards into the Indian market like ISO 15118, OCPP in Charging Infrastructure. ARAI is the body certifying all EV products.

3.3 Previously Published Material

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

https://niti.gov.in/writereaddata/files/document_publication/EV_report.pdf

3.4 Potential Markets Served

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

The initial focus is on the Indian market and by the nature of the market, it can be extended to most of Asian countries, Africa and Latin America.

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

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

We see that there is no organized body focusing on technology roadmap, approach and design of large-scale systems, and interoperability standards. IEEE can be the leader in defining these for the Indian market

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: 12/2024

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

- EV Industry Advisory body will be created with all involved stakeholders in Indian market by January 2021.
 - In 2022, there will be additional advisory boards created in other markets of Asia, Africa and LATAM
- Create a series of workshops also under the banner of the IC program - focused on the 3 pillars and one workshop bringing together all the elements (some teaser webinars planned for Dec 2020)
 - Three workshops one every month by May 2021.
- The IC program will identify specific deliverables - workshops, white papers and discussion papers, identification of reference use case on the grid side, all of them towards development of the final roadmap document. IC program can also include standards gap analysis for developing future standards
- Monthly meetings of the advisory board and there will be an activity (webinar or workshop) every quarter during the duration of the program

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 ICom.

Funding required for organizing workshops and to create industry advisory body for developing the roadmap. Where funding is needed, the plan is to explore donations from participating members and/or IEEE as applicable. No additional funding requests are anticipated for services beyond the standard services provided for IC programs. Activity members will provide any needed support for hosted meetings, marketing activities that exceed basic IC support.

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

This IC activity is planning to reach out to IEEE VTS Standards Committee.

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

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 be managed by the leadership of the working group as defined in the activity's policies and procedures.

We will create an Industry advisory body with 15 members across all the stakeholder segments. We will have a Chair, Vice Chair and other functionaries.

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.

This activity will use the baseline Industry Connections Activity Policies and 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.

Automobile Companies: Bosch, Mahindra and Mahindra, Ather, Greaves Cotton, Bajaj, Hero, TVS, Tata
 Battery Companies: Amaron, Exide, Okaya, Exicom

Power Utility Companies: EESL, PowerGrid, NTPC, BESCO
 Power Product Companies: ABB, Siemens, Delta, Exicom
 Charge Point Operators: Fortum, Tata Power
 IOT and Software Technologies: Numocity, Microsoft
 Fleet Companies: Bounce, Vogo, Blusmart, Lithium
 Policy and Standards, ARAI, Niti Ayog, BIS

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.

15 entities

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	Primary Contact	Additional Representatives
Numocity	Ravikiran Annaswamy	Sudeep Prasad Siddharth Sreenivasan
Bosch	Abhijit Lele	
Greaves Cotton(Ampere)		
Bajaj / Hero		
ABB	Vaibhav Deshwal	
Amaron	Daiva Prakash	
EESL	N Mohan	

BIS		
Powergrid	Rajeshkumar Panda	Sudhir Agarwal
ARAI	<u>Anand Deshpande</u>	
Niti Ayog	Anil Srivatsava	
Fortum	Awadesh	
Microsoft	Shivkumar Kalyanaraman	
Mahindra & Mahindra	Santosh Vasantkumar	
Cygni Energy Private Limited	Venkat Rajaraman	
KPIT	Dr. Uday Mhaskar	
Charge Zone	Ravindra Mohan	
VOLVO Group India	Sujaya Kumar	Vijay Kumar
PRDC	Dr. Chandrasekhar Atla	
Ashok Leyland	S A Sundaresan	
Christ University	Dr. Ivane Jose	Dr. Joseph Rodrigues
Consultant-Vehicle Electronics	Ashoka Kumar	
Global Automotive Research Center	K Rajrajeswari	
LDRA	Shinto Joseph	Raja Pandian

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.