Establishment of PLC Test Beds in India

Industry Connections Activity Initiation Document (ICAID)

Version: 2.0, 18 May 2019

IC17-005-02 Approved by the IEEE-SASB 11 June 2019

Instructions

- Instructions on how to fill out this form are shown in red. It is recommended to leave the instructions in the final document and simply add the requested information where indicated.
- 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: Dr. A. Paventhan
Email Address: paventhan@eis.ernet.in
Phone: +91 99169 19763
Employer: ERNET (Education and Research Network is an autonomous scientific society of Ministry of Electronics and Information Technology)

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.

India is on the cusp of a **'Digital Revolution'**. With the Digital Backbone Initiatives being created by the Indian Government and the rush of Entrepreneurial capital, the stage is now being set for the unlocking of a Trillion Dollar Economy with the GDP expected to grow by 20-30% by 2025. Initiatives like 'Digital India', 'Skill India' and around 'Smart Cities' have created a huge growth opportunity for Infrastructure.

Several IoT technologies are coming into play to cater to various verticals like Transportation, Urban planning, Healthcare, Connected Vehicles, Agriculture, Telecom, etc. One of the significant technologies that will serve as a backbone for the Infrastructure growth is likely to be Power-Line Communications (PLC). This technology is being ably supported by the **IEEE 1901 Standards** and is being increasingly adopted in several projects across the world. PLC technology has also been recommended by the **Bureau of Indian Standards (BIS)** as part of its Smart City Framework Policy Recommendations.

This IC programme will help in further engaging with various stakeholders like Industries, Academia, Utility companies, etc **TO ESTABLISH A SERIES OF TEST BEDS FOR PLC**. The Test Beds will provide an ecosystem for various stakeholders, ranging from established industries to enterprising startups, to develop and test their solutions that have PLC as the core technology.

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.).

Various consortia like ISGF exist to popularize the Smart Grid Architecture for growth of Smart Cities in India. However, there seems to be no prior work on establishing a 'TEST BED' that will help in development of the entire ecosystem. It is likely to exist as a captive resource within Industries and Academia but those are few and far between.

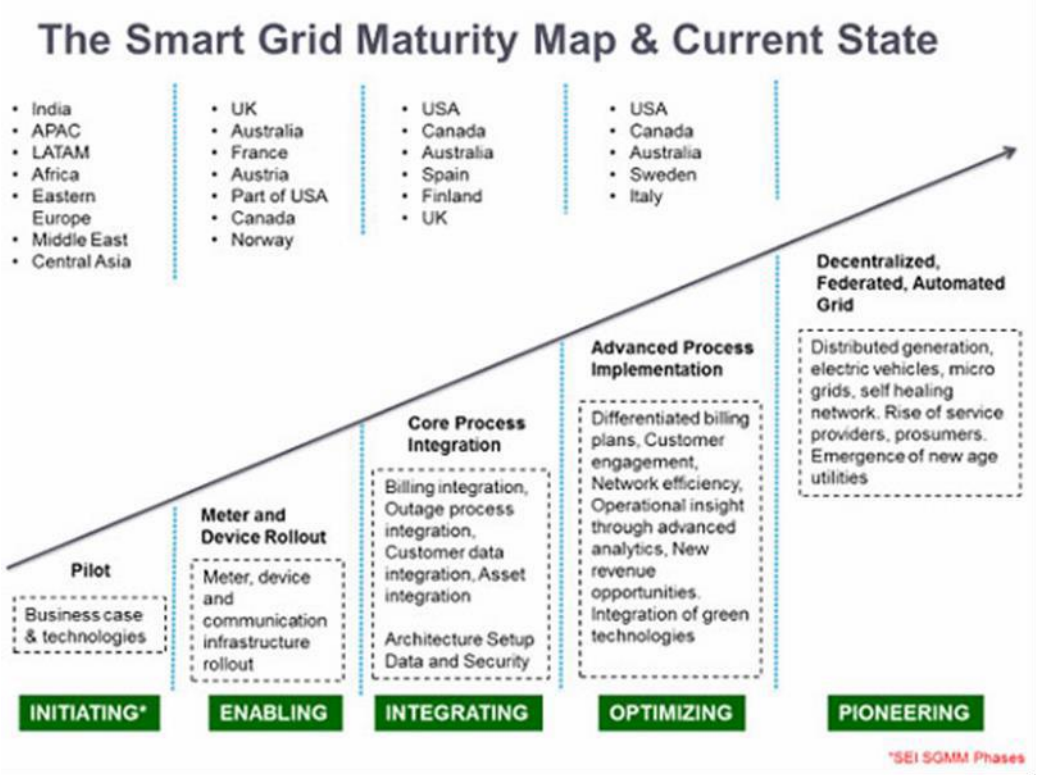
3.3. Previously Published Material

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

IEEE 1901 Standards

3.4. Potential Markets Served

Indicate the main beneficiaries of this work, and what the potential impact might be.
This work has the potential to impact emerging markets like India wherein PLC Technology has not yet been adopted as a core technology. This would include much of APAC, Africa, LATAM, Middle East, Eastern Europe & Central Asia. Please see figure below.



Source : Wipro

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: 02/2021

IC activities are chartered for two years at a time. Activities are eligible for extension upon request and review by ICCom and the IEEE-SA Standards Board. 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.

1. Outreach programmes leading to Whitepaper/Reports on "Opportunities for PLC in India"
2. Establishment of at least 3 PLC Test Beds in a 2-year timeframe
3. Workshop / Conference with focus on PLC-based solutions for 'Emerging India'
4. Specific standard clauses that could be added to the existing IEEE 1901 Standards based on unique challenges in countries like India (ex: how to overcome bad quality of wiring, multi-hop technology etc)

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.

Industry Connections staff will provide standard support as made available to all IEEE-SA IC activities. Activity members will provide or seek grants/sponsors for any needed support for outreach events or other activities that exceed available Industry Connections program support. Test Bed Infrastructure implementation costs will involve the pursuit of government and industry grants as needed.

7. Management and Procedures

7.1. IEEE Sponsoring Committee

Indicate whether an IEEE sponsoring committee of some form (e.g., an IEEE Standards Sponsor) has agreed to oversee this activity and its procedures.

Has an IEEE sponsoring committee agreed to oversee this activity? : NO

7.2. Activity Management

If no IEEE sponsoring 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 officers elected by participants engaged in the activity. Participants may opt for a committee style approach with chair, vice-chair, etc. as needed to be determined at the initial participant meetings.

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,* (b) Sponsor policies and procedures accepted by the IEEE-SA Standards Board, or (c) Working Group policies and procedures accepted by the Working Group's Sponsor. If option (a) is chosen, then ICCom review and approval of the P&P is required. If option (b) or (c) is chosen, then ICCom approval of the use of the P&P is required.

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.

Government & Private entities including, but not limited to, power distribution, AMR, Surveillance, Smart City Infrastructure, Telecom, R&D, Academia.

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 – 20 entities

8.3. Initial Participants

Provide a list 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
ERNET	A. Paventhan Add. Director, R&D paventhan@eis.ernet.in +91 99169 19763	
Bangalore Electricity Supply Company Limited	Anil Dsouza DGM and Head Technology & Innovation Center dgmtic@bescom.co.in	Lakshmi K AGM, Technology & Innovation Center agmtic@bescom.co.in
Kumaraguru College of Technology	Dr. Vinoth Kumar Department of Electrical & Electronics Engineering vinoth1109@gmail.com	
Dr. Mohan Kumar	Wearable Technologies mohan.k.rajagopal@ieee.org	
BESCOM	N. Murugesan nmurugesan@yahoo.com	
ST Microelectronics	Dr. Manoj Kumar manoj.kumar@st.co	R V Puranik rv.puranik@st.com
Velankani Electronics Pvt Ltd	Narayan P S narayan@velankanigroup.com	Mayank Singh mayank@velankanigroup.com
SLS Solutions	Tejas Vaghela tvaghela@slscorp.com	
Central Power Research Institute	Shiva kumar V Engg Officer, Utility Automation Research Centre shiva@cpri.in	Pradish M Engg Officer, Smart Power & Energy Systems pradish@cpri.in
Siddhant College of Engineering	Dr. Chanakya Kumar Jha erchankya@gmail.com	
SenRa Tech Private Limited	Shobhit Jain jain.shobhit90@gmail.com	

Use the following table for an individual-based activity:

Individual	**Contact Information**	**Employer**	**Affiliation**
Name	Email Address Phone Number	Entity Name	Entity Name