

SMART CITY – COMPLIANCE INDICATORS
Industry Connections Activity Initiation Document (ICAID)
Version: 2.0, 30 August 2017
IC15-003-02 Approved by the IEEE-SASB 28 September 2017

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: Mr. Pankaj Gupta
Email Address: Pankaj.Gupta@ilfsindia.com
Phone: +91 9825012041
Employer: IL&FS
Affiliation: IL&FS, Gandhinagar, Gujarat (India)

Name: Dr. Anil K Roy
Email Address: anilkroy@ieee.org
Phone: +91 9376163094
Employer: Dhirubhai Ambani Institute of Information and Communication Technology (DA-IICT) , Gandhinagar, Gujarat (India)
Affiliation: DA-IICT, Gandhinagar, Gujarat (India)

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

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.

Cities around the world are already making tremendous progress in achieving economic, environmental and social sustainability by implementing innovative ways and means. All of these are excellent ways to improve city living standards and economies. The concept of smart cities doesn't compete with these efforts. In fact, a Smart City augments these objectives by leveraging cutting-edge technologies. It supports and enhances the work quality which is already underway.

We realize that the name 'Smart City' has been conceived differently in different parts of the globe. It is either used interchangeably or loosely which is left on the interpretation of the context in which it is used. The goal of our proposed activity is to come up with a definition of a Smart City and the factors that determine the 'smartness' of a city. We will first identify the 'indicators of smartness' that are must for a city to be called as a smart city. Based on these indicators and their impact on the overall environment of the city we will develop a rating index.

The final deliverable will be a white paper on Smart City that would include key indicators and rating index that would qualify a city to a smart city.

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.).

Our basic thought process is that for being consistent and uniform in development of a smart city, the developer must follow some standards. These could be standard procedures, standard technologies, standard protocol, standard inter-operable features, etc. So the first stepping stone for reaching up to the uniform and objective scale of setting up of a Smart City starts with investigation of applicable standards.

In due course of working on this document, we will be referring to many of the IEEE Standards, viz., IEEE 802 series, IEEE 1377, IEEE 1547 series, IEEE 1619, IEEE 1701, IEEE 1815, IEEE 1888 series, IEEE 1901 series.

3.3. Previously Published Material

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

The work that we are proposing to do is writing a white paper on Smart City, viz., what qualifies a city to be called a smart city. Few groups or teams of people, worldwide, have tried to do something related, but not exactly what we are aiming at. Our intended deliverable is to produce a list of indicators that should be looked into very carefully by the promoters of a Smart City. These indicators will give an idea of degree of compliance with regard to a city to be called a Smart City. This white paper would also tell the promoters of a smart city compliance of which standards (particularly IEEE standards) could make them achieve their goal.

The earlier published materials on the topic of Smart City, which we have gathered so far, are:

RESEARCH PAPAERS

1. "Network Architecture and QoS Issues in the Internet of Things for a Smart City", by Jiong Jin, Jayavardhana Gubbi, Tie Luo and Marimuthu Palaniswami
2. 1-An IoT-Aware Architecture for Smart Healthcare Systems
3. 2-Securing the Internet of Things A Standardization Perspective
4. An Information Framework for Creating a Smart City Through Internet of Things
5. Carbon-Aware Energy Cost Minimization for Distributed Internet Data Centers in Smart Microgrids
6. Connected Vehicles Solutions and Challenges
7. Internet of Things for Smart Cities
8. Privacy-Preserving Cooperative Route Planning
9. Research Directions for the Internet of Things
10. RFID Authentication scheme for IoT in Healthcare using Elliptic Curve Cryptography
11. RFID Technology for IoT-Based Personal Healthcare in Smart Spaces
12. The Cluster Between Internet of Things and Social Networks
13. Ubiquitous WSN for Healthcare Recent Advances and Future Prospects
14. "Smart City Architecture: A Technology Guide for Implementation and Design Challenges", by RONG Wenge, XIONG Zhang, COOPER Dave, LI Chao, SHENG Hao
15. "The "SCOOT" (Split, Cycle and Offset Optimisation Technique) Urban Traffic Control System"

ARTICLES and WHITE PAPERS

1. "SMART CITIES" - for Parliamentarians reference, a Govt. of India document
2. Five ICT Essentials for Smart Cities - A Whitepaper for Business", an Eicher group document
3. "ISB to develop Smart City Index for Indian cities" - a news article, March 2015
4. IEEE Recommendations for a Successful Action Plan for Electronics Industry in Europe
5. IEEE in Europe vision of critical infrastructures cybersecurity
6. IEEE contribution on the network and information security (NIS) Directive
7. "How to Invest in IoT", by Erin Griffith, Fortune
8. White Paper on "Intelligent Cities: A City Process Management Approach Creating a people-centered future intelligent city", a report published jointly by Tata Consultancy Services and Singapore Management University

9. "Smart City ICT Framework", January 31, 2015, an article published by NASSCOM & Accenture
10. "ZTE Smart City White Paper: ZTE iCity Solution"
11. "Lodha group launches 'Palava'- The City of Opportunity" - a city emerging near Mumbai
12. "SMARTSANTANDER PROJECT"
13. IEEE SMART CITIES GUADALAJARA PILOT
14. The city of Santander: The smartest smart city

Govt. of India's initiative

1. National Conclave of States and Union Territories on SMART CITIES on 12/09/2014
2. Benchmarks for Smart Cities
3. Draft Concept Note on Smart City Scheme - Dec 2014
4. Financial Architecture for Smart Cities
5. Record of discussion held with Commercial Business/Non-Profit Organizations and Professionals on "Smart City Scheme" on 22nd September, 2014 in Conference Hall (Room No -123), Nirman Bhavan.

The Guardians articles

1. "The truth about smart cities: 'In the end, they will destroy democracy'" - 17 Dec 2014
2. "The smartest cities rely on citizen cunning and unglamorous technology" - 22 Dec 2014

3.4. Potential Markets Served

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

The market of our white paper is immense. As we claim that this work will be a reference document on smart city wherein indicators of qualification will be described, whosoever wants to develop and/or promote a smart city would like to refer to this. Besides them the following are also the user of our reference white paper:

- Government
- Suppliers/Vendors who would get engaged to integrate any technology for development of a smart city
- Auditors of compliance
- Investors in such huge projects
- People who live in these cities

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: 03/2018

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.

White paper defining Smart City Index: This white paper is still in the form of work-in-progress. We want to give it a final shape. Therefore, we request for a further extension till March 2018.

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.

Right now we are doing it as an academic exercise, so a minimum fund of USD 5000 may be required which will be used to support interns working on this project and on some occasional travels of some of the team members.

Fund is expected to be obtained through sponsorship and grants.

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?: Yes

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

Sponsoring Committee Name: IEEE Gujarat Section

Chair's Name: Prof. R.B. Jadeja

Chair's Email Address: rbjadeja2001@gmail.com

Chair's Phone: +91- 972-772-4686

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 an executive committee comprising of the following individuals:

1. Mr. Pankaj Gupta (IL&FS)
2. Dr. Anil Roy (DA-IICT)
3. Dr. Sanjay Srivastava (DA-IICT)
4. Dr. Manik Lal Das (DA-IICT)
5. Dr. Sanjay Chaudhary (Ahmedabad University)
6. Dr. R.B. Jadeja (Marwadi University, Rajkot & Chair, Gujarat Section)
7. Mr. Varun Gopalakrishnan (CII, Gujarat)

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*, or b) Sponsor or Working Group policies and procedures accepted by the IEEE-SA Standards Board. The chosen policies and procedures must be reviewed by ICom

The activity will follow a modified version of the baseline Industry Connections Activity Policies and Procedures (P&P). Modifications will be limited to the variable parts of the baseline P&P.

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.

Academic Institutions and a Smart City driving company

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.

Seven

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 Representatives
Entity Name	Contact Name Email Address Phone Number	Name, Email Address Name, Email Address

Use the following table for an individual-based activity:

Individual	Contact Information	Employer	Affiliation
Name	Email Address Phone Number	Entity Name	Entity Name
Mr. Pankaj Gupta	pankaj.gupta@ilfsindia.com +91- 982-501-2041	IL&FS, Gandhinagar	IL&FS, Gandhinagar
Dr. Anil Roy	anilkroy@ieee.org +91-937-616-3094	DA-IICT, Gandhinagar	DA-IICT, Gandhinagar
Dr. Manik Lal Das	maniklal_das@daiict.ac.in	DA-IICT, Gandhinagar	DA-IICT, Gandhinagar
Prof. Sanjay Srivastava	sanjay_srivastava@daiict.ac.in	DA-IICT, Gandhinagar	DA-IICT, Gandhinagar
Prof. Sanjay Chaudhary	sanjay.chaudhary@ahduni.edu.in	Ahmedabad University, Ahmedabad	Ahmedabad University, Ahmedabad
Prof. R.B. Jadeja	rbjadeja2001@gmail.com	Marwadi College, Rajkot	Marwadi College, Rajkot
Mr. Varun Gopalakrishnan	varun.gopalakrishnan@cii.in	CII, Ahmedabad	CII, Ahmedabad