



**EU-INDIA FI-MEDIA & UNNAT BHARAT ABHIYAN
CLUSTER TO CLUSTER (C2C) PARTNERSHIP WORKSHOP ON
'SMART VILLAGE ECOSYSTEMS: OPPORTUNITY FOR C2C PARTNERSHIPS'
DATE 18 DECEMBER 2015**

Name of document: EU-India FI-MEDIA –UBA C2C Workshop report (Version 1)

Purpose of document: The workshop organisers have written this report summarising the concept, discussions and outcomes of the successful joint workshop held on 18th December, 2015, hosted by IIT Delhi, dedicated to building a Cluster to Cluster (C2C) partnership between India and the EU in relation to research and innovation (R&I) for Smart Villages ecosystems.

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FOREWARD



On behalf of myself, Mr. James Clarke (left), my EU-India FI-MEDIA project¹ partners, Prof. MP Gupta, Management Department, Chair of Information Systems & also Coordinator-Center for Excellence in E-Gov at Indian Institute of Technology Delhi, and Mr. Abhishek Sharma, CEO of Beyond Evolution Tech. Solutions of Gurgaon, I would like to take this opportunity to humbly thank the organisers & esteemed participants of our first joint Cluster to Cluster (C2C) partnership workshop held at IIT Delhi with the Unnat Bharat Abhiyan (UBA) initiative on 18th Dec. 2015.

The EU-India FI-MEDIA project is a project funded by the Delegation of the European Union to India², under a programme entitled ICI+, which is instrumental in the formation of mutually beneficial EU-India cluster to cluster (C2C) partnerships in a variety of Lots, including Information and Communications Technologies (ICT), the focal point of our four year project (Dec. 2014 – Dec. 2018).

In the first year of the FI-MEDIA project, the team members set out to identify real world themes for clustering activities within the areas of interest for C2C partnerships in relation to Future Internet and Media, firstly in India, where the contribution from EU members would be of mutual benefit in the present setting as well as future growth, research, innovation, and sustainability.

The first area for clustering that emerged in India was related to the research and innovation (R&I) for the development of Smart Village ecosystems, which is a prominent component of the Digital India programme. With this in mind, the partners made contact with relevant clusters and organisations in order to promote this topic as one for the building of a C2C partnership that would be of mutual benefit to both EU and India and this is what has brought us to this important workshop centred on clustering for R&I for Smart Villages Ecosystems. At the forefront of this topic in India is the IIT Delhi coordinated Unnat Bharat Abhiyan initiative, whose vision is to foster a transformational change in rural development processes by leveraging higher educational knowledge institutions to help build the architecture required for an Inclusive India.

A significant amount of local organisation took place, especially at IIT Delhi, and, I would like to express my sincere appreciation to Prof. MP Gupta and his team at IIT Delhi for providing these organisational aspects in such a professional and timely manner to ensure the event resulted in such a resounding success.

The following report summarises our initial recollections of the proceedings of the event. If anything has been missed, please let us know and we will re-issue a second version.

Yours Sincerely,

A handwritten signature in blue ink that reads "James Clarke".

James Clarke,
Waterford Institute of Technology, Ireland,
EU-India FI-MEDIA Coordinator

¹ <http://www.bic-fimedia.eu/>

² EuropeAid/135-474/DD/ACT/IN programme under Grant number ICI+/2014/342-895
(<http://eeas.europa.eu/delegations/india>)

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OVERVIEW

On 18th December, 2015, the EU funded EU-INDIA FI-MEDIA project and India funded Unnat Bharat Abhiyan initiative organised a joint workshop, graciously hosted by IIT Delhi, and dedicated to the building of an EU-INDIA Cluster to Cluster (C2C) Partnership on 'SMART VILLAGE ECOSYSTEMS'.

The objectives of the FI-MEDIA / UBA Cluster to Cluster (C2C) workshop was brainstorming from the perspectives of both EU and India to develop clarity on various research and innovation challenges and potential solutions related to the development of 'Smart Villages', including Pilots. The program contained the following sessions: Inaugural session, Presentations on Rural projects by IIT Madras, Clustering opportunities for Smart Village Ecosystems in India, Clustering with EU initiatives to enable solutions for Smart villages, & Sustainability: Aligning with existing Programs: Reflections on Policy.

Through the 50+ workshop participants, a wide range of stakeholders were in attendance, including research and innovation organisations, academia, industry, NGO and Government of India and EU.



The starting point of the workshop was the Inaugural session comprised of welcoming talks from the Director of IIT Delhi, Prof. Kshitij Gupta, co-partners of the EU-INDIA FI-MEDIA project, Mr. James Clarke, Waterford Institute of Technology (WIT), Ireland and Prof. MP Gupta, IIT Delhi, the Unnat Bharat Abhiyan initiative coordinator, Dr.V.K.Vijay, the perspectives from the funding agency of the EU-India FI-MEDIA project, the Delegation of the European Union to India, represented

by Dr. Klaus A. Pendl and Ms. Sarojini KAUL , and the inspirational inaugural speech was given by Dr.Vijay P Bhatkar, Chairman, BOG-IIT Delhi.

Prof. MP Gupta (right), Management Department, Chair of Information Systems and Coordinator-Center for Excellence in E-gov at Indian Institute of Technology Delhi, and co-partner of the EU-India FI-MEDIA³ project, opened the event by welcoming the participants from a wide range of stakeholders and especially expressed his appreciation to all the Gov't participants from the EU and India taking time from their important agendas to be with us today. Prof. MP Gupta stressed the importance and good timing of this event in relation to the strong push in both India and the world over for the development of Smart Villages in a rural setting, which is a prominent component of the Government of India's Digital India programme⁴.



³ <http://www.bic-fimedia.eu/>

⁴ http://deity.gov.in/sites/upload_files/dit/files/Digital%20India.pdf

The key messages from the Inaugural session brought by the Director of IIT Delhi, Prof. Kshitij Gupta (right), focussed on the pleasure of having the opportunity to bring together like-minded researchers, innovators, industry, and other stakeholders being hosted at IIT Delhi in order to work on such a topic of high importance and of mutual benefit to both India and the EU.



Having the UBA initiative and EU workshop joined at this particular moment in time

was highlighted by both Dr. Kshitij Gupta and IIT Delhi UBA coordinator, Dr.V.K.Vijay (left), as putting the involved stakeholders in a glorious moment in India and beyond, as the vision of UBA is focussing on the development and betterment of rural villages and

inhabitants, whereby 70% of the population lives in rural areas, engaged in agrarian economy with agriculture.

During the Inaugural session, it was stressed that there has already been a long cooperation between EU and India in a number of topics in previous research and development programmes in the EU and this looks set to continue in Horizon 2020 (H2020), the current research and innovation programme running from 2014 to 2020.



In his presentation, Dr. Klaus A. Pendl (left) of the Delegation of the European Union to India highlighted areas in the H2020 work programme in which Information and Communications Technologies (ICT) and international cooperation were featuring and a booklet on the current Work plan for 2016 – 2017 was distributed to the delegates. Dr. Pendl elaborated that the H2020 programme is open universally wherein Indian organisations can also participate. However, Indian organisations desirous of participation need to have a source of their own financing.

Dr. Pendl presented the three focal points of the H2020 programme: a) Excellence in Science; b) Industrial Leadership and c) Societal Challenges. He further presented other possible instruments for EU-India cooperation, including the ICI+ programme supporting C2C partnerships, in which EU-INDIA FI-MEDIA is funded, ERASMUS Mundus and Marie Curie sponsoring fellowships and mobility of researchers, Partnership instruments focussing on EU-India cooperation projects in areas such as ICT standardisation, sustainable urbanisation, 5G, Intelligent Transport Systems, Smart cities, Future of Networks, and others, and a programme in construction called Start-up Europe India, which will focus on leveraging the flourishing start-up ecosystems in both EU and India.

Dr. Pendl concluded by highlighting the “Experts” programme of H2020 and encouraged Indian professionals to register and participate in this paid programme for expert evaluators of H2020 proposals. More information is available in the “Experts” tab of the participant portal at <http://ec.europa.eu/research/participants/portal/desktop/en/experts/index.html>.

In his inaugural speech, Dr. Vijay P Bhatkar (right), Chairman, BOG-IIT Delhi, stressed the need to look at smart cities and smart villages in a wider context and the need for building stronger and mutually beneficial cooperation models between the EU and India, especially in an areas highlighted in the workshop programme. Dr. Bhatkar stressed the importance of involving all of the right stakeholders at all levels in cooperating together in seeking how advanced ICTs in the Future Internet can be used to develop smart cities / villages not merely from the technological perspective but also from the angle of making cities/ villages more 'liveable' than they currently are today, and in a way that the inhabitants can make use of ICTs productively in their daily lives. He also suggested that there is need to consider sociology perspectives to address the extreme disparities in villages such as growth of smart phones versus absence of waste management facilities.



In the afternoon, the workshop was blessed to have a talk given by Dr. D K Sharma (left), Joint Secretary in the Ministry of Panchayati Raj (Governance by Village Councils).

Dr. D K Sharma told the workshop participants that the Government of India has definite policies and plans for village development and the use of ICT in all the schemes is well considered. These plans are routed through umbrella programs such as 'Digital India', 'Swachh Bharat' and 'Unnat Bharat Abhiyan'. 'Digital India' involves infrastructure projects such as the 'National Optical Fibre Network', which

is aimed to provide last mile connectivity, high bandwidth and means of content and service delivery.

According to Dr. D K Sharma, digital literacy is an important part of the skill development programs that will enhance usage of ICTs in villages. The Smart Village is considered a key next step and will flourish over with success of these projects.

Of all the programs, 'Swachh Bharat' is a current priority, in which schemes are aimed to create awareness and a drive for cleanliness. The Finance Minister has already increased service tax to meet the budgetary requirements. The corporate sectors are also coming forward to support this program, according to Dr. D K Sharma.

Dr. D K Sharma pointed out that via the 'Unnat Bharat Abhiyan' initiative, the higher education institutions are pooled together to engage in research & development, developing a 'Proof of Concept', collaborate with NGOs, and implement and scale up, wherever feasible, in Clusters of villages.

OUTCOMES

The full day C2C workshop opened with panel sessions comprised of presentations with time left for questions and answers after each talk. The panel sessions comprised the following: Presentations on Rural projects by IIT Madras, Clustering opportunities for Smart Village Ecosystems in India, Clustering with EU initiatives to enable solutions for Smart villages, & Sustainability: Aligning with existing Programs: Reflections on Policy.

The following contains the key summary areas of interest arising from the panel sessions of the C2C workshop of Smart Villages Ecosystems.

Smart Farming techniques and tools was a topic brought to the workshop by Mr. Brian Foley (right) from Ireland in his presentation. Interesting collaboration ideas on smart farming from the EU side has garnered significant interest from the India participants in Unnat Bharat Abhiyan (UBA) and others, especially in relation to monitoring of animals health and the impacts to/from their feeding practices using “smart technologies” such as Internet of Things (IoT) and big data analytics, amongst many others.



According to Mr. Foley, “Smart Agriculture, which is leveraging advances in information and communication technologies (ICT) in traditional industries is a frequently untapped source of added value that has the potential to propel early adapters towards acquiring global competitive advantages. Such a potential is clear today in smart agriculture, where ICT advances are enticing businesses to rethink their processes along the full value chain - from the field to the table - and consider a vast array of innovations. At the same time, societal challenges foresee serious potential impacts on the Agro-food sector: concerns include food security and food safety, energy efficiency, efficiency and sustainability of the use of resources”. In the discussions that followed with delegates, it was clear that this was an area presented where EU and India could cluster together.

The presentation of Mr. Brian Foley (right) also focussed on an EU-India collaboration topic related to **E-Governance in rural settings**. The presentation dwelled on the Irish led EU Commission-funded project, eDIGIREGION⁵, whose objective is to look at developing transnational collaboration among research-driven clusters from four different European regions, which drew some resonance for India – EU cluster cooperation. These regions, including South East Ireland, Bucharest, Central Hungary and Castilla-La Mancha, raised some interesting ideas for attendees who are involved in eGovernment activities in India, engaged in relation to developing inter-regional collaboration, especially in realising a number of strategic



⁵ <https://www.edigiregion.eu/>

regional smart specialisations. In the discussions and in following presentations from India participants, it became clear that this is a topic which could be brought also to the India context in which there is good experience already in the development of models for good rural E-Governance (engaging with both members of local institutions and citizen leaders generally), in areas such as the use of ICTs for water management, and agricultural development.



A cooperation theme of **Trustworthy ICT** and the convergence with the **Internet of Things (IoT)** raised significant interest, including security, privacy and trust management for Internet of Things (IoT) for Agriculture, as a topic for EU-India C2C cooperation. Work going on in these topics in the UBA initiative in India, as presented by Dr. Arpan Kumar Kar (left) of IIT Delhi, and ongoing work on these topics in the EU in FP7 and H2020 can be leveraged between the EU-India research and innovation communities for immediate and mutual benefit.

A talk was given on the work of **large scale pilots** in India by Mr. Vikas Kanungo (right), Chairman of The Society for Promotion of e-Governance (SPEG), a major think tank and mission mode organization working to accelerate e-Governance initiatives in South Asia region. Mr. Kanungo's talk focussed on the availability of running pilot villages (via UBA, SPEG and World Bank) and it was found to be very interesting from the perspective of externalising activities of large scale pilots in the EU, which is a current major topic in the H2020 Work Programme 2016 call. For example, there is currently an open call in relation to large scale pilots in IoT for Agriculture. Mr. Brian Foley presented some interesting opportunities for collaboration in this area to the participants and these will be explored further as part of the C2C partnerships.



The presentation of Dr. Raul Palma (left) of Poznan, Poland focussed on the setting up the **base ICT "Future Internet " infrastructure**, which is the key to enable a faster development of smart applications in agriculture. This includes fast communication links and scalable infrastructure with high-availability policies enabling developers to focus on the development and integration tasks, and providing a positive experience to the end users.

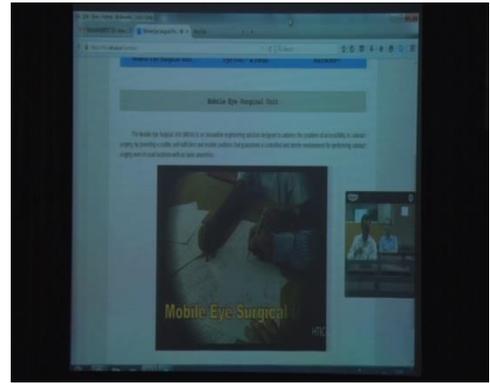
There was keen interest in Dr. Palma's presentation on **Open systems / tools for development in Smart Agriculture**, which is a

key focus of the EU's FOODIE⁶ project, whose full name is Farm oriented open data in Europe, and the project's use of the FIWARE-lab⁷, where each node provides virtualized resources to end-users (typically SMEs) for deploying FIWARE technologies (particularly Generic Enablers) in order to build FIWARE-enabled applications and services in smart agriculture quickly and without worrying on setting up the environment and having enough resources.

⁶ <http://www.foodie-project.eu/>

⁷ <https://account.lab.fiware.org/>

The good work being carried out at IIT Madras was presented during the workshop via Skype (right) on how the **Future Internet can be used for the management of natural resources**. The presentations focussed on using ‘Future Internet’ ICT technologies, including Open Source GIS tools, in support of energy conservation, energy creation, management of natural resources (water, soil and waste management), mobile surgery units, and traditional craft industries (e.g. hand weaving).



Prof. M. Moni (left), Chairman of Centre for Agricultural Informatics and e-Governance Research Studies, SHOBHIT University, NCR Delhi made a presentation related to the strong need for cluster to cluster cooperation in relation to the development of a **Climate Smart Village Farm ecosystem**. In his presentation, Prof. M. Moni emphasised that it would be highly worthwhile for India and EU clustering together on a Climate Smart village farm ecosystem, including the following six Smart pillars: Weather, Water, Carbon, Nitrogen, Energy, & Knowledge.

Prof. Dibakar Rakshit (right) of IIT Delhi presented work on **Energy Optimisation in Buildings** as it relates to the Smart Villages Ecosystem. Areas of joint collaborations between India and EU on these topics were raised during the discussions.



There were two impassioned presentations made in relation to the **Empowerment of Communities in Clustering activities**. The first was made by Dr Syed Kazi (right) of the Digital Empowerment Foundation (DEF⁸) and the second by Dr.



Charru Malhotra (left) of the Indian Institute of Public Administration (IIPA⁹). Both of the presentations were inspiring accounts on how the EU and India should compare / collaborate on methodologies and frameworks for cluster development and growth with strong involvement of the stakeholders (empowerment of communities).



⁸ <http://defindia.org/>

⁹ <http://www.iipa.org.in/>

The workshop concluded with a presentation by EU-INDIA FI-MEDIA partner, Mr. Abhishek Sharma (right), of Beyond Evolution Tech. Solutions, Gurgaon, on the need to have **Sustainability of the Cluster to Cluster (C2C) partnerships** as a foundational value from the very start. As shown below, project has developed a roadmap to ensure successful & sustainable Research & Innovation (R&I) and Business Engagement. As shown in figures 1 and 2, the presentation showed in a step by step roadmap on how sustainability could be achieved via future R&I engagements, in conjunction with new business relationships and engagements as the R&I products and solutions are then brought to the society as a whole for sustained use.

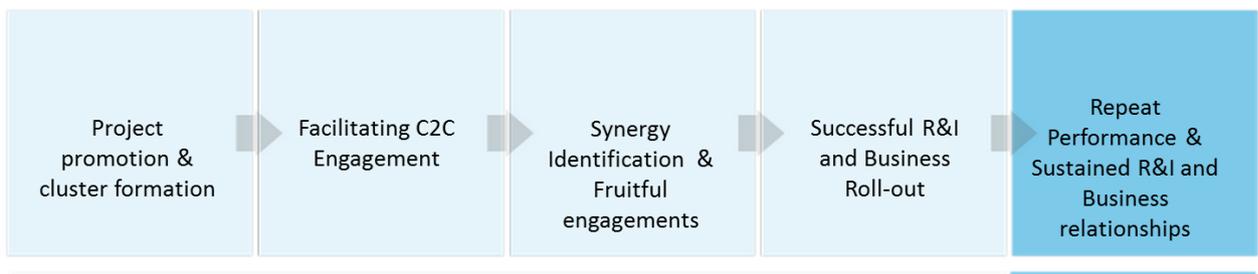


Figure 1. Roadmap for Sustainability as a foundational value of C2C partnerships

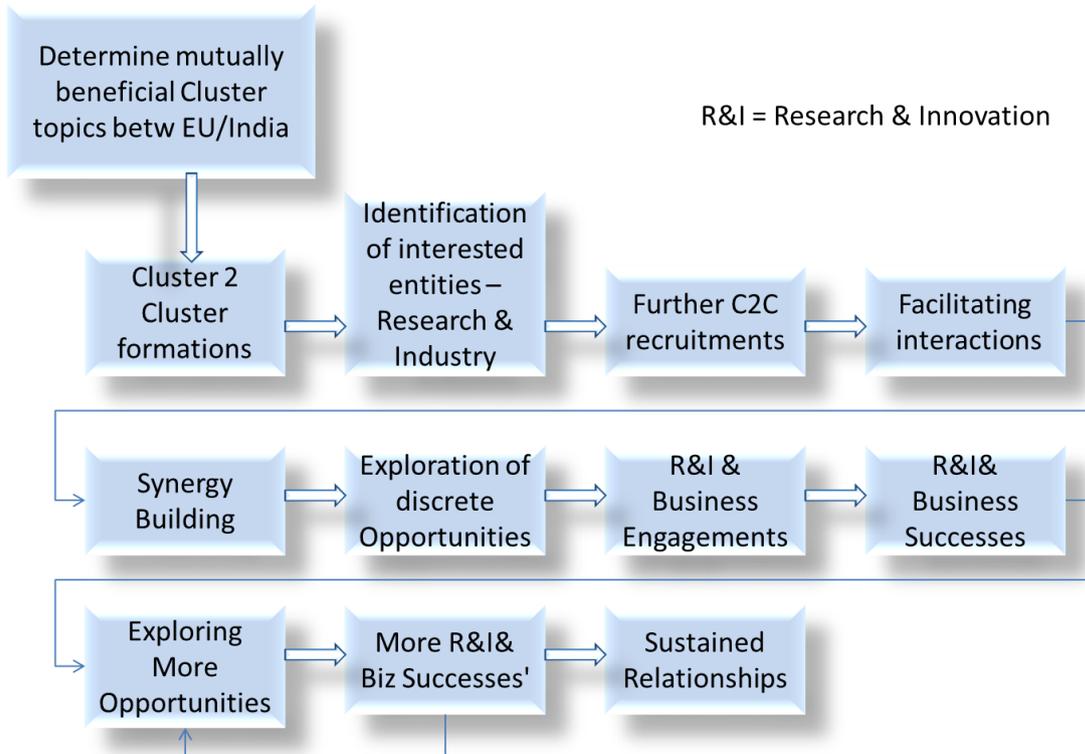


Figure 2. Cluster 2 Cluster Sustainability Cascading Model

NEXT STEPS AND HOMEWORKS

As discussed at the workshop, this C2C workshop on SMART VILLAGE ECOSYSTEMS is not a one off event. There is also a need to explore further areas of common interest within the scope of IoT / Future Internet technologies, which could have natural interest on both EU and India sides to work on and lead to C2C cooperation in a more natural and sustainable manner. The C2C partnership will now be followed up with this report on the event and complemented with additional recruitment of members, as needed.

With this in mind, the participants (both presenters and delegates) were asked to send a **2 pager on their areas of expertise and where they would recommend that clustering between EU and India would be mutually beneficial in the areas related to the Smart Village Ecosystem.** Please note that the summary of key items above may not be exhaustive so please add to these as you wish.

All of the delegates were also requested to fill out a **clustering data gathering form with their contact information and areas of strengths and those areas where you would like to be clustered with other expertise** in order to support your research and innovation and / or business plans.

With the above in mind, there are two actions on all delegates and we would request that you also ask other collaborators in your constituency, whom you feel would benefit by collaborating in this C2C partnership on Smart Village Ecosystems.

Action 1. All presenters and delegates to write a summary of their presentation focussing on highlighting their expertise and also focussing on where you feel collaboration in a cluster setting with EU participants would assist in your research/innovation/business plans.

Action 2. All delegates to fill out the information gathering form to enable the EU-INDIA FI-MEDIA project to carry out a clustering analysis, which would enable matchmaking between parties to their mutual benefit.

ACKNOWLEDGEMENTS

ABOUT EU-INDIA FI-MEDIA

During the first year of the EU-INDIA [FI-MEDIA](http://www.bic-fimedia.eu/) project¹⁰, the partners have taken part in a number of highly relevant activities in both India and EU, enabling identification of the hot Future Internet and Digital Media (FI-MEDIA) topics for building cluster cooperation and leading to the recruitment from a pool of like-minded participants from both industry and research elements in both EU and India. While identifying clusters, the project members followed a systematic process to investigate the landscape of relevant themes and topics in India first and then carry out a scoping, recruitment and matching exercise with the EU constituency to ensure there would not be a chance of having any potential mismatches between the identified clusters in India and EU. (<http://www.bic-fimedia.eu/>)

ABOUT UNNAT BHARAT ABHIYAN (UBA)

The IIT Delhi led UBA initiative is inspired by the vision of transformational change in rural development processes by leveraging knowledge institutions (IITs, NITs, IIMs etc.) to help build the architecture of an Inclusive India. The Mission is to enable higher educational institutions to work with the people of rural India in identifying development challenges and evolving appropriate solutions for accelerating sustainable growth. (<http://unnat.iitd.ac.in/index.php/en/>)

CLUSTER TO CLUSTER (C2C) PARTNERSHIPS GOALS AND PURPOSE

A C2C Partnership is defined as a partnership of clusters from India with similar Cluster(s) from Europe held together by working on mutually beneficial topics for cooperation.

The first Cluster to Cluster (C2C) partnership under development is dedicated to Smart Villages Ecosystems and Agriculture. For this C2C partnership, FI-MEDIA is collaborating with the Unnat Bharat Abhiyan (UBA) initiative¹¹ and the Smart Villages Forum¹². The project has also initiated collaborations with a smart farming initiative undertaken jointly by Vodafone, Accenture and Oxfam India¹³.

Through the creation of this C2C partnership, to include other like-minded researchers and industry innovators, FI-MEDIA will work closely with the IIT Delhi led UBA initiative and other stakeholders to bring knowledge from the European setting on smart practices guiding rural economic life to these clusters for replications in whatever form/format that is feasible and relevant.

Therefore, the overall purpose of this EU-INDIA FI-MEDIA / UBA C2C workshop is brainstorming from the perspectives of both EU and India to develop clarity on various research and innovation challenges and potential solutions related to the development of 'Smart Villages Ecosystems', including Pilots.

The workshop is dedicated to find out what is being done already and identify gaps and to work towards filling these gaps through the building of clustering activities between the interested parties. Knowledge sharing and dissemination will be a key enabler for achievement of the workshop objectives and the further building of the C2C partnership.

¹⁰ <http://www.bic-fimedia.eu/> The EU-INDIA FI-MEDIA project has received funding from the European Union's EuropeAid/135-474/DD/ACT/IN programme under Grant number ICI+/2014/342-895 (<http://eeas.europa.eu/delegations/india>)

¹¹ <http://unnat.iitd.ac.in/index.php/en/>

¹² <http://www.smartvillagesforum.com/2015/index.php>

¹³ <http://www.bic-fimedia.eu/News/vodafoneaccenture-report-building-opportunities-use-mobile-technology-smart-agriculture>