

A photograph showing a group of pigeons gathered on a dark, textured surface, possibly concrete. In the center, there are two large, bright yellow piles of food, likely birdseed or grain. The pigeons are of various colors, including grey, white, and black. Some are facing the food, while others are looking around. The background is slightly blurred, showing more of the same surface and some greenery.

हैकरgram

Building and Connecting
Sustainable Functional Communities
through Social Equity Exchange

Milestones 2013-2018

Origins

Founded in 2013, based first in Bhopal, हैकर्ग्राम was born out of a desire to create real as well as virtual community spaces where people can be themselves, pursue self development goals & work holistically together to create innovative & sustainable solutions to global problems.

हैकर्ग्राम exists as a dynamic network of individuals, communities & organizations subscribing to shared values of functionality & sustainability.



Today

हैकर्ग्राम has grown from being an experiment to a widening network of individuals, organizations and communities, all engaged in creating, sharing and trading value through what we call social equity exchange.

This document aims to share our journey, learnings and milestones between 2013 and 2018.

Philosophy

We agree with Buckminster Fuller's response to the Malthusian-Darwinian dynamic i.e. that it must be done away with, since the innovations by a small minority can sustain large numbers of people. However, research shows that humanity is not sufficiently evolved to effect the significant behavioral change needed to avert systemic collapse.

Approach

Our way of approaching the problem has been to set up innovation hubs in semi-urban, rural and remote areas which can generate viable self help solutions for communities by providing appropriate incentives to grassroots innovators and changemakers.

In the spirit of Gandhiji's Gram Swaraj philosophy, we envision these hubs as being the seeds for village sized communities of innovators and creators that are self sustaining and also capable of contributing value to global society





Membership

हैकरgram members neither pay a membership fee nor receive monetary compensation from the network itself.

Membership is purely voluntary and is regulated by peer review.

Members are expected to be able to sustain themselves independently.

We maintain a list of active members at any given time at <http://हैकरgram.org>



The Incentives

Members engage with हैकरग्राम for a variety of reasons

- Investment
- Incubation
- Capacity Building
- Self Development
- Livelihood Generation
- Participative Governance

Bhopal, Madhya Pradesh

2013

Supporting Community Media

HaiKuGram's first challenge was to find a way to support non commercial community media without being dependent on charity.

The community partner, CGNet Swara was a voluntary initiative working with citizen journalists in remote, rural & often conflict affected areas of central India.



The Need

To extend and sustain their reach, CGNet Swara required

1. A training facility for citizen journalists
2. A technological staff and setup to manage their web portal and outreach platforms
3. Accommodation for the trainees and trainers during the training programs.
4. Accommodation for a core team of moderators to operate the platform



The Solution

The हैकर्ग्राम team reclaimed and converted an abandoned mushroom farm, owned by some of the co-founders, into a community media production and training facility

The space was created largely using jugaad solutions built using only those skills and resources that were available in local communities



The Outcome

The facility over its operational phase of just over a year, trained over 150 individuals as citizen journalists and community technologists, while accomodating the CGNet Swara web portal team of system administrators and content moderators.

The facility also provided a base for other individuals & groups to experiment in other fields such as

1. wildlife protection,
2. open source technology
3. mental health management,
4. art and behavioural research.

Sharda Valley, Uttarakhand

2013



Communication for Disaster Preparedness & Response

In the aftermath of the 2013 floods in the region, the Indo Nepal Joint Action Forum, a consortium of civil society organizations from India and Nepal invited हैकरग्राम members to devise a mechanism to trace migrant workers in the case of disasters and also to improve overall safety, security and welfare of migrant workers by deterring human trafficking and exploitation



The Need

To allow migrants on both sides of the border to be able to communicate on a shared platform at a low cost, without violating telecommunications laws regarding international calling in either India or Nepal.

The platform would be maintained, monitored and documented by CSOs in both India and Nepal

The Solution

By repurposing the technology and processes developed for CGNet Swara, हैकर्ग्राम members deployed two voice portals, one with NNSWA in Nepal and another with Environics Trust in New Delhi. Users in either country could call these numbers to record and listen to messages from each other, like an audio bulletin board.

The metadata from the messages could be used by CSOs to keep track of migrant workers to provide better support, particularly during emergency circumstances.



Sharda Valley, Uttarakhand

2013



Outcome

The system was able to provide only limited relief during its initial phase, due to a shortage of trained technical team members.

The Nepalese side of the system also suffered technical breakdowns after about a year of operation. The Indian side has been revived in 2017 to provide a community communications platform for people living in the Sharda Valley and continues to be maintained by TechZone Academy for the Indo Nepal Joint Action Forum.

Ashoka Fellowship

2014



Finding Support

In 2014, one of the co-founders was awarded an Ashoka Fellowship to extend the work of providing rural and remote communities tools to access information and communication. The support from the Ashoka Network allowed us to focus exclusively on developing the tools, skills, processes, experience and credibility that we now rely on. The fellowship also allowed us to engage with and train community members in needed technical skills at no cost.

Hale Kote, Karnataka

2014



COWMesh – Community Owned WiFi Mesh

To fulfill the mandate of the Ashoka Fellowship, i.e. developing community communication infrastructure and processes, we partnered with Janastu and Servelots in Karnataka at the Janastu Base Camp in Hale Kote to develop and test the potential of WiFi as a scalable means for setting up community owned communications infrastructure. The location was selected for its remoteness and lack of connectivity in order to fully test the viability of the solution



The Need

To develop a set of hardware and software tools that would allow rural Indian communities to design, deploy and maintain community owned WiFi mesh networks. These networks would help ameliorate the gaps in the telecom service provider network that exist due to varying revenue potential of different regions.

The networks would also provide localized repositories of knowledge that could be disseminated by physical visitors as well as over the internet.



The Solution

Using open source router firmware developed by Open Technology Foundation, we were able to successfully deploy a local wifi mesh network connecting three villages in a radius of about 5 kilometres.

Local users could connect to the network using smartphones where available. To extend the reach of the network to members of the community without access to smartphones, including women and children, we utilized Raspberry Pi single board computers to connect legacy CRT as well as modern HD televisions in village households to the network.(PiFiTV)

Hale Kote, Karnataka

2015



The Outcome

Local users ranging in age from 14 to 65 were introduced to the network and trained in its usage. While older users experienced some challenges in using the network, the younger users quickly learned both how to use the network as well as basic skills in deploying and maintaining network infrastructure.

Due to the lack of a 3G signal availability within line of sight at the time of implementation, high bandwidth experiments could not be carried out. The network continues to be maintained by Janastu and Servelots

Hale Kote, Karnataka

2014

Mend The Gap

In order to ensure the success of the technological interventions we were working on, it was first necessary to engage with the community to enable and encourage their participation. This required communicating across language and cultural barriers with community members of varying age groups.



The Need

Given the vast cultural and linguistic disparity between the team and the local community, establishing grounds for mutual trust and exchange was crucial. The financial support available to us was not suited to be able to provide employment or other material incentives to community members. The only value we could offer the community was in the form of our skills and knowledge.



The Solution

Team members engaged with young members of the community through a vacation activity series aimed at exposing the participants to different cultures, both domestic as well as international through language classes, interactions with hackerspace visitors, outings and art programmes.

Exchanges of food and shared meals also played a very important role in connecting with the community.



The Outcome

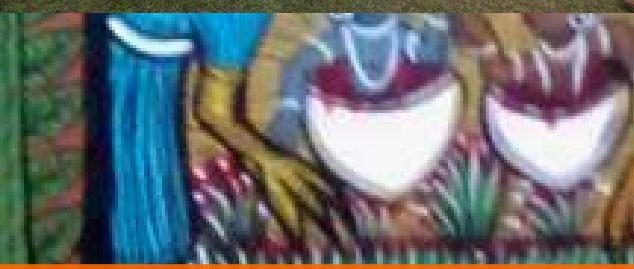
Despite the diversity in the cultural and economic backgrounds of the participants, the activity series received very positive responses from the local community. The team was inspired to learn spoken Kannada, while the local participants were able to hone their English and Hindi skills.

The multicultural educational program is now called Mend The Gap and is an integral part of the setup phase of all new हैकरंगम communities.

Food continues to play an important role in all हैकरंगम spaces!

Devarayanadurga, Karnataka

2015



AnthillHacks

To showcase the work done on the COWMesh and other projects undertaken by network members, we organized the first Anthillhacks in partnership with Rotary Club Tumkur, Janastu and Servelots



The Need

To celebrate our success with developing the COWMesh and to share our learnings with a wider audience

Provide a platform for solution exchange between communities such as those developed by हैकर्ग्राम and other similar networks

The Solution

AntHillHacks was organized as a 3 day unconference where individuals and groups from different parts of the country came together to share new ideas and learnings from their respective disciplines. The participants came from diverse fields such as technology, art, environmental research, martial arts and spirituality.

Devarayanadurga, Karnataka

2015



The Outcome

AntHillHacks continues to be a confluence of technology and art. Since the first event, the AntHillHacks community has diversified into working with artists, artisans and technologists in South India on a variety of projects and events

Bangalore, Karnataka

2015



COWMesh Ragigudda

Moving to Bangalore in 2015, the हैकर्ग्राम team began work on further developing the COWMesh network enable communities to adopt it. To do this, we partnered with Shruti and Agnii two community organizations run by a group of young people who have emerged from underprivileged backgrounds as professional artists.



The Need

The Ragigudda Housing projects are government accommodations provided to low income families. Despite being practically in the middle of Bangalore, the locality suffers from issues of urban disparity such as poverty, lack of access to proper sanitation, waste management and security. Our goal was to leverage COWMesh and PiFITV as local communication media to serve as a cohesive factor and to encourage digital skill building



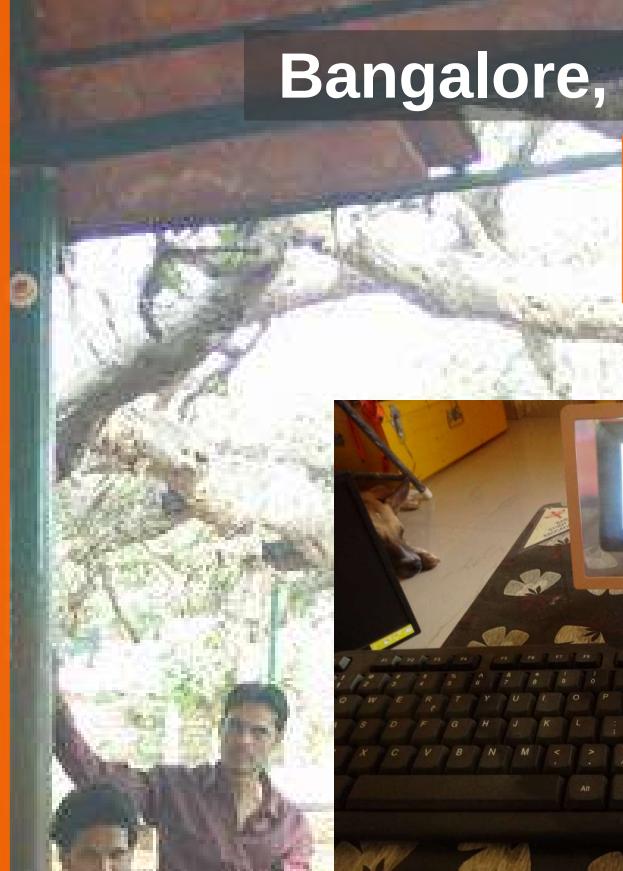
Bangalore, Karnataka

2015

The Solution

The हैकर्ग्राम team began by starting a training and awareness campaign with Shruti's cohort of Summer Camp participants about using digital media and how to go about setting up their own COWMesh.

Surplus equipment from the pilot in Hale Kote was combined with donated equipment from individual contributors to build out the network infrastructure.

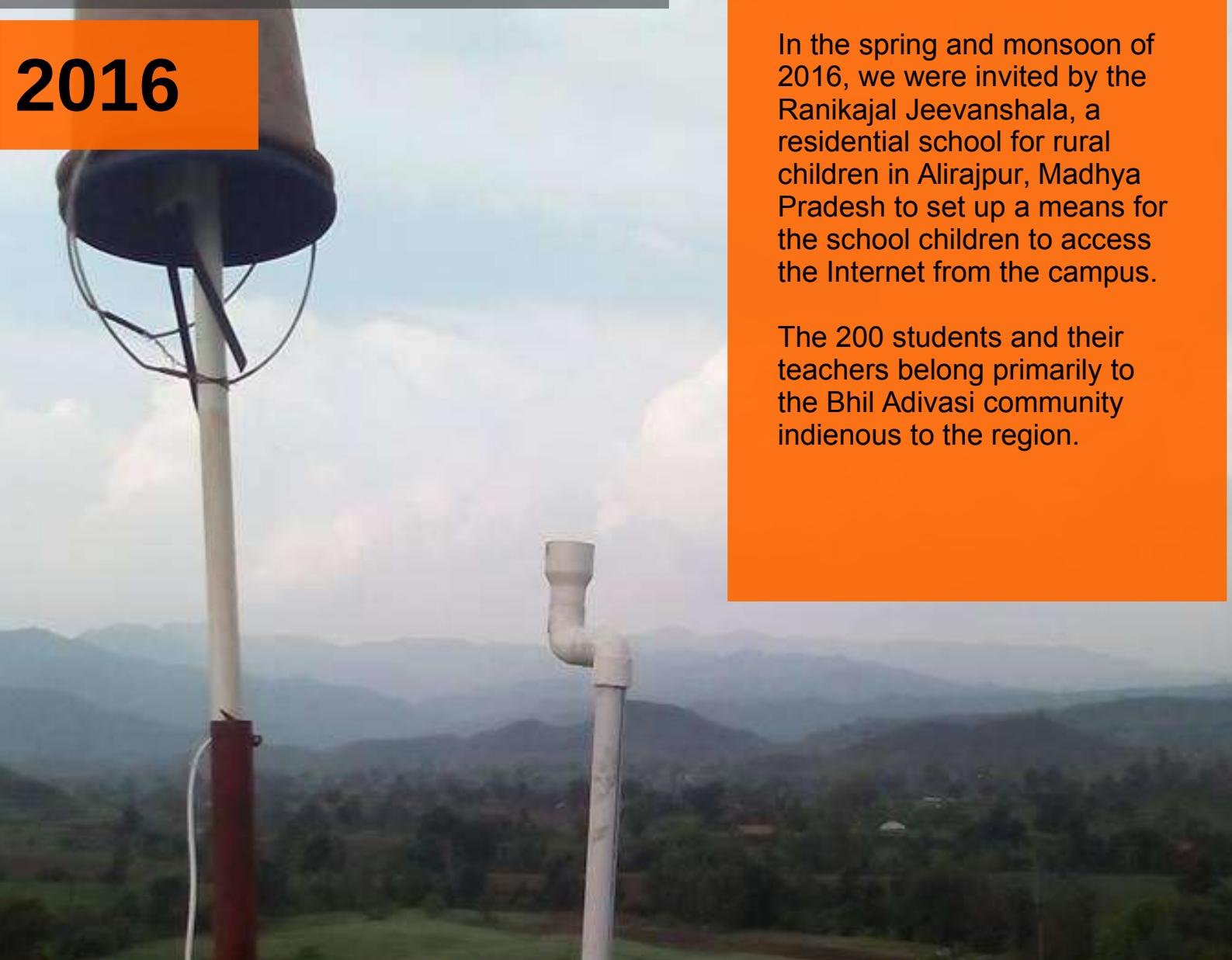


The Outcome

The participants responded very enthusiastically and the effort received coverage via a National Geographic channel promotion. However, the media attention did not go down well with local elements in the area and the effort had to be abandoned. The Ragigudda COWMesh remains an unfulfilled dream, one that we hope we can go back and complete some day! The experience underscored for us the growing socio economic divide in our cities. Despite being urban born and raised, we had been able to find our niche in the village, but failed in the city.

Kakrana, Madhya Pradesh

2016



The Need

Like many interior rural regions in India, Kakarana falls in a telecom dark region, i.e. a region that telecom service providers find unserviceable due to revenue constraints. As a result the only cellular connectivity in the region at the time was an intermittent 2G signal, available only from a hilltop within the campus. Our goal was to leverage this meagre connectivity to provide enough linkage to the Internet for the school community to be able to begin communicating with the outside world.

COWMesh Ranikajal

In the spring and monsoon of 2016, we were invited by the Ranikajal Jeevanshala, a residential school for rural children in Alirajpur, Madhya Pradesh to set up a means for the school children to access the Internet from the campus.

The 200 students and their teachers belong primarily to the Bhil Adivasi community indigenous to the region.



The Solution

Using open source software, हैकरग्राम members set up a mail proxy server combined with a point to point WiFi link connected to the 2G network via USB dongle. The mail proxy server was included in order to keep the user experience responsive and fast, while opportunistically uploading and downloading messages from the Internet when the connection became active. The entire school community shared a single email address linked to shared social media accounts in order to use the system

Kakrana, Madhya Pradesh

2016



The Outcome

The system was used enthusiastically by the school community to post regular updates to social media from the school campus for several months. The system was also augmented with a solar power backup. However, due to the unavailability of trained maintenance and support staff in the region, the system has been struggling to stay online over time as the original components complete their lifespan.

Development Of COWMesh

2016

Thought Experiment #1

Total Number Of Telecom Towers In India ~ **425000**

Percentage in Rural Areas ~ **70%**

Percentage of time the tower runs on diesel = **60%**

Diesel Burn per Hour in litres = **2**

Diesel burn per week per tower to ensure 24x7 uptime in litres = **201.6**

Diesel burn per week across all rural towers

(as per reported figures above)

59976000 ltrs

Per year burn in litres

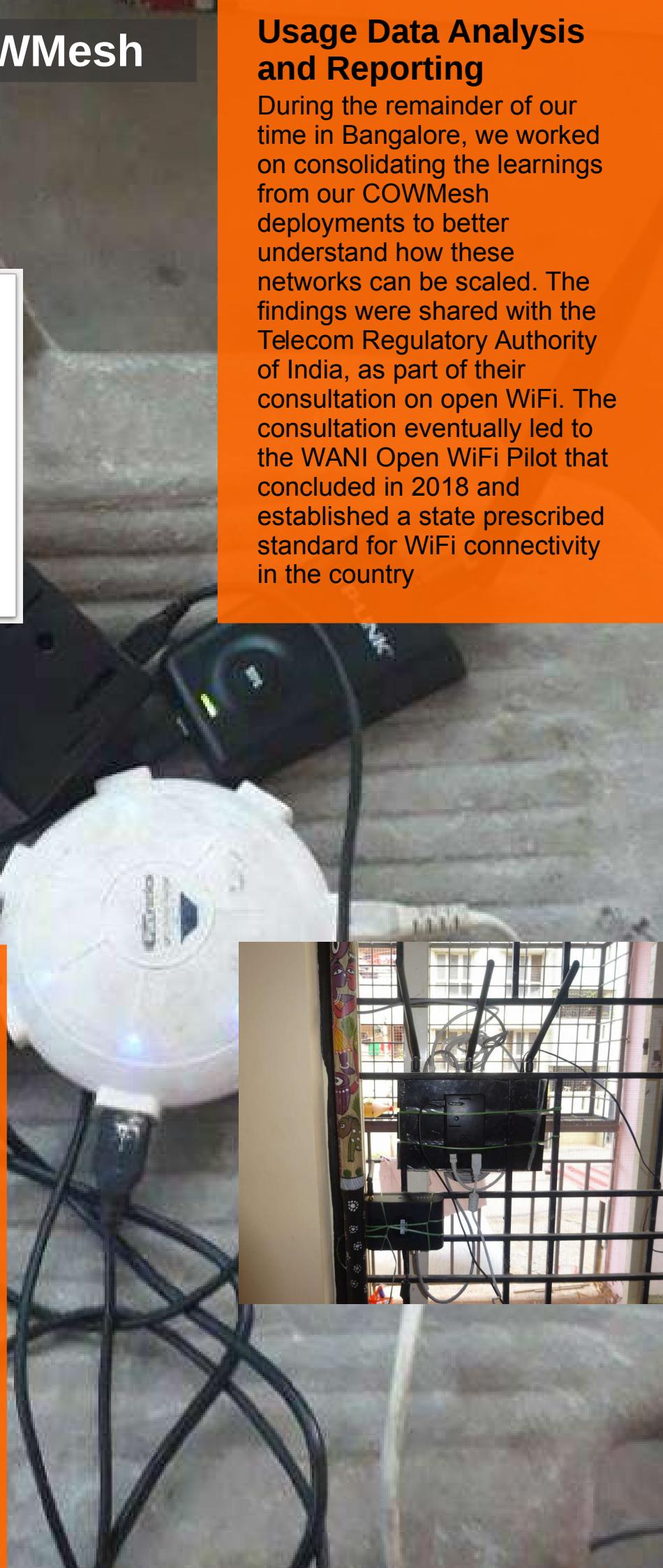
3118752000 ltrs

Usage Data Analysis and Reporting

During the remainder of our time in Bangalore, we worked on consolidating the learnings from our COWMesh deployments to better understand how these networks can be scaled. The findings were shared with the Telecom Regulatory Authority of India, as part of their consultation on open WiFi. The consultation eventually led to the WANI Open WiFi Pilot that concluded in 2018 and established a state prescribed standard for WiFi connectivity in the country

Development of Open Source Tools

In addition to consolidating our data, during this period we also developed a series of open source tools that can be used by communities to set up and manage their own COWMesh networks. Further details can be found at <http://cowmesh.net>



Consultation

Through a series of consultation engagements with international government and non-government institutions, हैकरग्राम members have been consistently sharing our learnings, solutions and results with the global community.

हैकरग्राम members have trained community organizations in Thailand, Afghanistan, Nepal, Myanmar, Bangladesh, Cambodia and Indonesia.

International Collaborations

2016



Ongoing Knowledge Sharing

हैकरग्राम members are now in many of the countries we have visited and we share knowledge by contributing to open source projects, publishing material under Creative Commons and other open licenses and create content that can enable people in different parts of the world to use our work in their own contexts and contribute their experience back to the shared pool

Hawalbagh, Uttarakhand

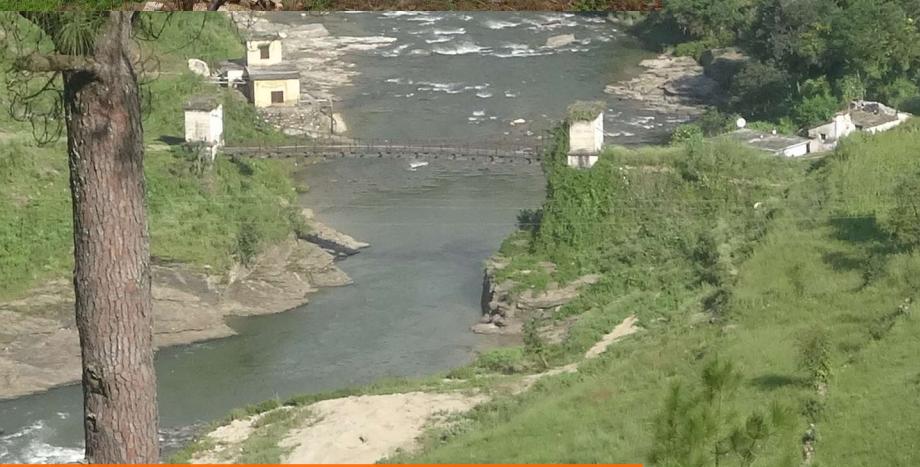
2016



हैकर gram Hawalbagh

After spending three years moving across different spaces to round out our understanding of grassroots communities, in 2016 we moved to Uttarakhand to set up a long term base of operations.

Friends in the local hospitality industry assisted us in settling into the local community and finding individuals and groups to engage with. Since July 2016, we have been working on expanding our understanding of the Himalayas while finding productive ways to engage with local changemakers



The Need

The Himalayas are an integrating factor for all Indians as well as international visitors. They represent a storehouse biodiversity and the wisdom of the thousands of adepts from varying disciplines who have made the mountains their home over centuries.

We are keen to do our bit to preserve both the natural and cultural heritage of the region while contributing what value we can based on the skills and knowledge that we have collectively acquired.



Engaging with Young People

We engage with local youth to find ways to stem migration to cities for livelihood and stimulation through informal activity sessions and conversational gatherings.

We have been able to identify many young people who strongly wish to remain close to their homes and we work with them to find ways to generate income locally through skill building and entrepreneurship development

Hawalbagh, Uttarakhand

2016



Encouraging Holistic Education

We have been working with school and college level students and their parents to find ways to augment the structured education model provided by the school and college system. This includes activity based learning, language skill building, behavioral training and mindfullness.

Jyoli, Uttarakhand

2016



Incubating Leadership

We believe that the next generation of leaders will come from our villages. In line with this vision we encourage young people to be active in the local community organizations and to take initiative in implementing their own visions for the community



Encouraging Dialogue

We engage local community members in open discussions where conflicting opinions can be voiced and discussed.

While this can frequently be challenging, it has helped us to build strong and personal ties with our neighbours, who in turn have provided us support when we have needed it the most.



Kosi, Uttarakhand

Ongoing

TechZone Academy

TechZone Academy is the first participant in the हैकर्ग्राम entrepreneur incubation program.

Founded by a young local entrepreneur in 2016, TechZone aims to bring technology skills and services to rural and remote regions in Uttarakhand.

हैकर्ग्राम members hold an equity stake in the business and the network provides support in the form of mentorship and compliance support

the bong book cafe
न यह दुकान काहार
द चोना बुक शॉप
+919902431999
+919032929311

TechZone Academy

Courses
Typing & DTP (Basic - English) • Computer Operation (Cert) • Accounting
Programming (C/C++, Java, JavaScript, Python, HTML, CSS)
Blockchain • Cryptocurrency • Digital Security & Ethical Hacking

Services
Printing • Scanning • Photography • Web Design • Software Development • Internet Browsing • Mobile Recharge • Digital Marketing
Website Maintenance • नेट शाखाएं
918989161881 • email: info@techzoneacademy.com

The Bong Book Cafe

Founded by हैकर्ग्राम members as a business model to support the initiative itself, BBC aimed at bringing global cuisine which is locally sourced and freshly made. The nuanced “theory of change” - Food is an excellent conflict resolution tool!

हैकर्ग्राम Residency

The हैकर्ग्राम Residency aims at providing alternative vocational education on an apprenticeship based model to students who are keen to develop their sustainability skills holistically.

Ongoing



Professional Apprenticeship

Along with learning, students apply these skills to on-going projects. The contribution to the work not only enhances their understanding but also gives them an opportunity to earn while they are learning.

All हैकर gram spaces

Ongoing

Jugaad a.k.a. Frugal Innovation

While the word jugaad may have positive or negative meaning for different people based on context, for us it is simply a style of innovation that follows the principles of

1. Lateral Approach
2. Medial Applicability
3. Frugal Utilitarianism

Competitive Jugaad

We believe that bringing a competitive element to Jugaad thinking through open events such as the Smart India hackathon series organized by the Government of India can be an accelerator for innovators everywhere. We aim to design and organize similar events at varying scales to provide innovators with a platform for excellence rather than compromise. The first of these events, The Great Indian Jugaad Challenge is going live in August 2018

Shared spaces for expression and collaboration

We believe that simply interacting with other innovators can be a stimulant for new ideas. To enable this many हैकरंग्राम members host hackerspaces or innovation hubs where people can meet to express themselves and their ideas in a peer group.

All हैकरंग्राम spaces

Ongoing



Social Equity Exchange

Innovators often find themselves in a scenario where they have created value that is apparent to them but that has not yet found commercial acceptance at a large enough scale to provide a livelihood.

हैकरंग्राम members are often able to find value in each others work, providing grounds for trade that can help sustain innovative ideas before they become commercially viable for mainstream application. Transactions between network members occur in the form of both barter as well as contractual agreements

All हैकरgram spaces

Ongoing



Spending time with animals

हैकरgram locations usually have a few different species of animals in the vicinity. Many हैकरgram members also have pets. Even those members who don't have pets of their own generally enjoy spending time with both domestic animals as well as surrounded by wildlife.



Keeping a small consumption footprint

We share the Gandhian belief that the earth can provide for the needs of every living being but cannot sustain the greed of even a single entity. We therefore strive to keep our consumption footprint as low as possible.



Development of tools and technology to aid local communication

Research and development of technological solutions that are applicable to rural and remote communities remains a core area of work for हैकरंग्राम members. Our solutions are now being deployed by communities as well as institutions in the field and providing technical support for these solutions provides a revenue stream for network members

All हैकरंग्राम spaces

Ongoing

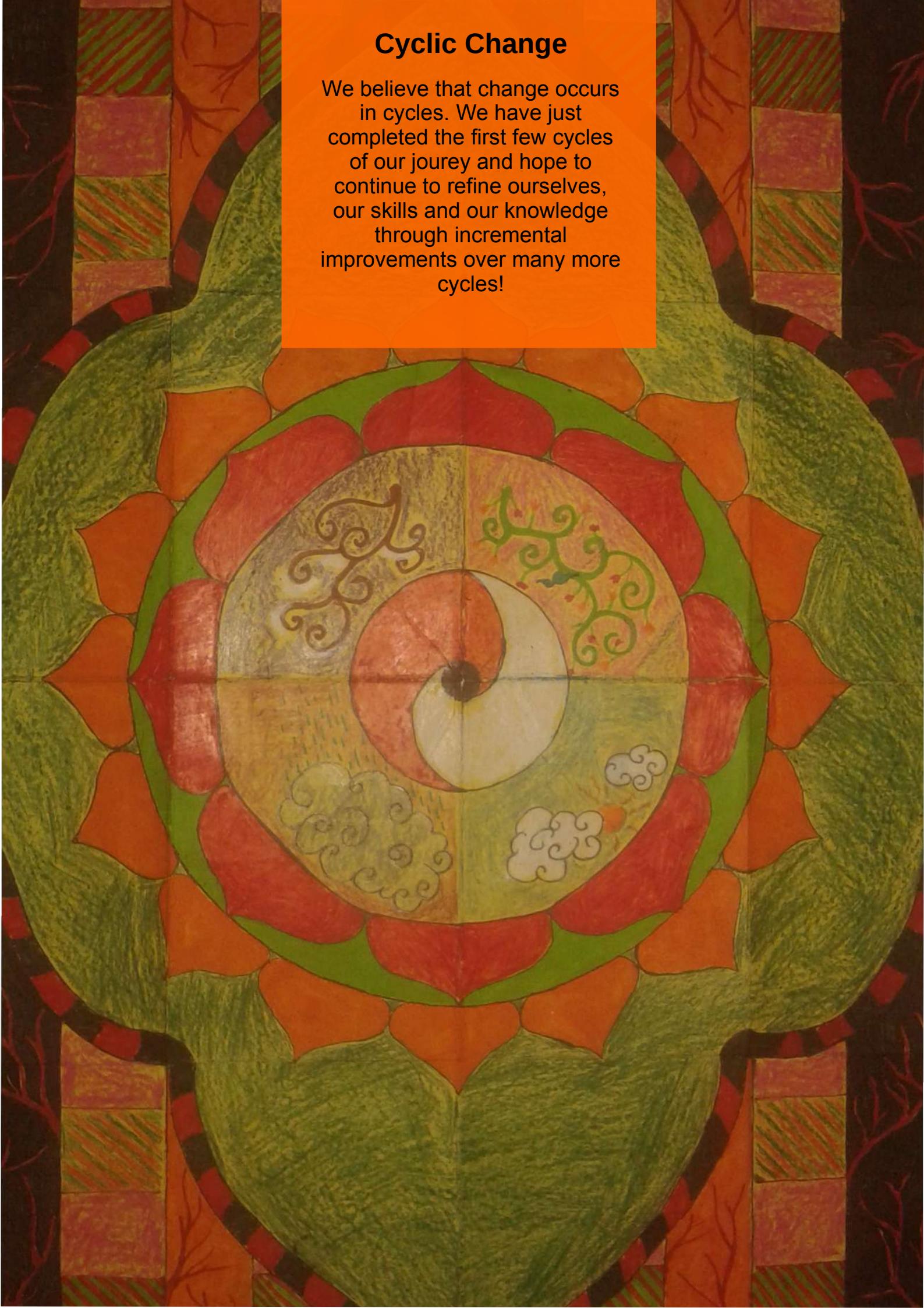


Skill Building and Knowledge Sharing

Skill building and knowledge sharing go hand in hand at all हैकरंग्राम locations. This is done both through informal interactions as well as certification programs provided by हैकरंग्राम member organizations.

Cyclic Change

We believe that change occurs in cycles. We have just completed the first few cycles of our journey and hope to continue to refine ourselves, our skills and our knowledge through incremental improvements over many more cycles!



Organizations We Have Worked With During this Period

1. The Mojolab Foundation, India
2. CGNet Swara, India
3. Environics Trust, India
4. Indo Nepal Joint Action Forum, India & Nepal
5. Shruti, India
6. Techzone Academy, India
7. The Red Door, India
8. Saheli, India
9. Majlis, India
10. Servelots, India
11. Digital Empowerment Foundation, India
12. Internews, United States
13. Open Technology Foundation, United States
14. Ashoka India, India
15. International Center For Journalists, United States
16. Rotary Club, India
17. United States Institute of Peace, United States
18. Change Alliance, India
19. Grant Thornton CSR, India
20. Gandhi Smriti and Darshan Samiti, India
21. Tactical Technology Collective, Germany
22. Artists Without A Cause, Germany
23. Ranikajal Jeevanshala, India
24. DHAS Gramin Vikas Kendra, India
25. Dakshana Valley Foundation, India
26. Jan Swasthya Sahyog, India
27. Agnii, India
28. Janastu, India
29. Phandeeyar, Myanmar
30. BRAC, Bangladesh
31. Afghan Womens Network, Afghanistan
32. Telecom Regulatory Authority, India
33. Center for Internet and Society, India





Links and References

The Malthusian–Darwinian dynamic and the trajectory of civilization – Nekola et al, USGS Staff Published Research
<https://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1723&context=usgsstaffpub>
Hackerspaces Wikipedia article
<https://en.wikipedia.org/wiki/Hackerspace>
NDTV Report on हैकरग्राम, Bhopal
<https://www.youtube.com/watch?v=D40c9fTI2No>
Report in Hindu featuring हैकरग्राम, Bhopal
<https://www.thehindu.com/sci-tech/technology/bhopal-journalist-wins-digital-activism-award/article5814955.ece#!>
Sharda Ke Swara Audio Portal
<http://indonepal.net/activities/mahakali-basin/sharda-ke-swar-a/>
Ashoka Fellow Profile – Arjun Venkatraman
<https://www.ashoka.org/fellow/arjun-venkatraman>
The Better India article featuring Janastu हैकरग्राम
<https://www.thebetterindia.com/28811/let-arjun-venkatraman-show-access-connectivity-can-tackle-rural-indias-grass-root-problems/>
Motivateme.in article featuring Janastu हैकरग्राम
<http://motivateme.in/arjun-venkatraman-computer-engineer-working-for-tribal-peoples-benefit/>
KnowYourStar.com article featuring Janastu हैकरग्राम
<http://stories.knowyourstar.com/arjun-venkatraman-interview/>
National Geographic TV Coverage of COWMesh Ragigudda
<https://www.youtube.com/watch?v=ZF0kEVqIY4Y>
Dhwani.com Interview – Arjun Venkatraman
<https://www.youtube.com/watch?v=X2WiT-RXfJo>
Dhwani.com Interview – Deepta Naha
<https://www.youtube.com/watch?v=CiMRWHO0btc>
Bringing a Jugaad Approach to the CSR World
<https://www.linkedin.com/pulse/bringing-jugaad-approach-cs-world-deepta-naha/>

Acknowledgements and Errors

Individual members have not been mentioned by name to respect individual privacy. Organizations have been mentioned by name in the interest of full disclosure. Please report errors and issues with this document to listenter@hackergram.org