Revisiting CGNet Swara and its Impact in Rural India

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ABSTRACT

CGNet Swara is a voice-based platform for citizen journalism, launched in rural India in 2010. Since then, CGNet Swara has logged over 575,000 phone calls, over 6,900 published stories, and 287 reports of specific problems that were solved via the system. In this paper, we characterize the ongoing impact of CGNet Swara using a mixed-methods approach that includes 70 interviews with contributors, listeners, moderators, journalists, officials, and other actors. Our analysis also draws on the content of published posts, two focus groups, and a 9-day field immersion. Our results highlight personal narratives of the transformative benefits CGNet Swara has brought to rural communities. While the resolution of grievances is the most visible impact, we also uncover a diverse portfolio of other impacts connected to contributing and listening to the platform, as well as opportunities to further enhance impact. Our work contributes to the dialogue surrounding the impact of ICTD projects, especially those that span multiple years.

Categories and Subject Descriptors

K.4.0 **[Computers and Society]**: General

Keywords

Interactive voice response; IVR; CGNet Swara; impact; India

1. INTRODUCTION

As several projects in ICTD are graduating from research pilots to scalable interventions [7,13,19,31,32], it is increasingly important to understand the opportunities and challenges in achieving meaningful impact at scale. While the definition of "impact" in ICTD is a matter of debate [15,16,20,21], researchers typically share a deep motivation for bringing benefits to low-income stakeholders, and there are various quantitative [10,14] and qualitative [9,10,16,21,26] tools for evaluating such impacts. This paper advances our understanding of impact in ICTD by examining the evolution of a project from a research prototype to a real-world system encompassing tens of thousands of users.

The focus of our inquiry is CGNet Swara: a voice portal for citizen journalism in rural India. Using low-end mobile phones, users can call CGNet Swara to report stories of local interest and to listen to stories that others have recorded. Submitted stories are reviewed by a team of moderators, and approved stories are made available for listening over the web as well as the phone. A follow-up team appeals to government officials to act on any problems reported, resulting in concrete changes in rural communities.

The story of CGNet Swara starts with its launch in 2010. Some of the paper authors were involved from the beginning as creators and champions of the system, while others came later for observation, analysis and critique. After 1.5 years in the pilot stage, the emergent behaviors of CGNet Swara users were characterized and published (in ICTD 2012 [24]). Now, 3.5 years after this initial inquiry, CGNet Swara has grown to encompass a total of 63,200 callers who have recorded over 6,900 stories and have called over 575,000 times to listen. Moreover, the platform has been credited with considerable impact, including 287 cases (and counting) where users have narrated specific cases where problems were solved as a result of using CGNet Swara.

The contribution of this paper is a detailed characterization of CGNet Swara's impact, as evidenced by the personal narratives of contributors, listeners, moderators, journalists, government officials, and others who have come in contact with the system. When we use the word "impact", we are broadly referring to any change in the ecosystem that was reported to arise as a result of using CGNet Swara. We characterize such impact via a mixed-methods analysis of 70 semi-structured interviews as well as field observations, focus groups, and analysis of posts[1].

Our analysis provides strong evidence that CGNet Swara has resulted in transformative benefits for many of its users. While the most visible impact is the resolution of grievances, we also uncover a broad portfolio of other impacts. Some kinds of impact are connected to reporting on the system – for example, the benefit associated with being heard, having an audience for artistic expression, and promoting personal development. Others are associated with listening – for example, allowing discovery of previously unvoiced issues, building awareness of local news, and inspiring confidence and agency that positive changes are within reach. We also discuss cases where impact is lacking or could be improved, for example, by improving transparency of moderation or by improving follow-up on complaints. We hope that our account of CGNet Swara can inspire others to pursue long-term interventions that offer both depth and diversity of impact.

2. RELATED WORK

2.1 Impact in ICTD

The question of impact, and how to measure it, has been the subject of ongoing discussion in ICTD (e.g., [9,10,11,15,16,20,21]). One of the reasons for this is that impact is complex to understand and measure, going beyond simple statistics of uptake and usage. Heeks and Molla [20] describe three sub-elements to impact assessment (outputs, outcomes, and development impacts), each of which is more complicated to measure than the previous. Looking at their compendium of different impact studies it quickly becomes apparent that impact cannot be measured on a single scale – and

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[1] It is important to note that we do not aim to document the exact chain of causal events that led to impact. For example, with respect to grievance redressal, the impact ultimately depends on government actors who are influenced by several different forces, most of which we cannot directly observe.

indeed the results of any impact assessment very much depend on through whose eyes one is judging the impact.

Perhaps the simplest, but by no means unproblematic, assessments of impact focus on quantitative measures – counting numbers (of devices, users, etc.) or economic impacts (e.g., opportunities for income generation) [15]. However, there has been a growing awareness that a broader range of more social, less easily quantifiable, impacts also need to be taken into account, although there is no simple, single method for how to measure such complex, situated phenomena. Gomez & Pather [15] suggest we should take lessons from business when assessing ICTs – considering them as enablers of change and transformational, rather than focusing only on tangible and directly measurable benefits. However, they do not provide concrete guidelines for how one might go about this.

From the development literature, Sen's capabilities approach [28] calls for a radical rethink of the idea of development as being about enabling human freedoms rather than wealth. In particular, he calls for an understanding of what development means from the perspective of the people involved. When applied to ICTs this could involve evaluating how ICTs contribute to freedom and empowerment [20]. Kleine attempts to operationalize the capabilities approach through her Choice Framework, which puts the focus on an "individual's own development outcomes" [21]. While both Sen and Kleine cover a much wider space than we are concerned with here, their prioritization of the needs and concerns of those affected by the project is of key relevance to us.

The importance of this bottom-up approach is illustrated by Parthasarathy and Srinivasan [26]. They present two convincing examples of how a deep understanding of a system's use, gathered through ethnographic study, can result in radically different assessments than more formal, and less rich, techniques.

In this paper, we take up these calls from various members of the ICTD and development communities to understand the impact, or otherwise, of CGNet Swara from the perspectives of those touched by the system. While we do present quantitative measures of uptake and continued usage, we 'look behind' these measures with a qualitative, primarily interview based study, which aims to understand what impact means in the terms of those concerned with or connected to the system. To do so we cast our net wide, talking not just to various user groups (such as contributors, listeners and CGNet Swara staff) but also to others surrounding the system (such as government officials, mainstream journalists and former users) to understand their perspective on the impact or lack thereof. Furthermore, we are responding to Heeks and Molla's call [20] to assess the impact of longer-term projects, rather than just pilots, as CGNet Swara has been operational since 2010. The resulting rich picture of use (and non-use) reveals both what might be considered the tangible, objective impact of the system and a set of less tangible but equally important impacts on the lives of its users.

2.2 Prior research on CGNet Swara

This is not the first paper to consider the usage and even the impact of CGNet Swara. Mudliar, Donner and Thies examined the initial usage of CGNet Swara [24]. They analyzed posts from the first 20 months of the project, and conducted interviews (between the 11th and 13th months) with a range of people, including listeners, contributors, mainstream journalists and government officials, to understand how they "perceived and used the system, perhaps in ways that differed from the founders' expectations". Mudliar et al. highlighted how grievance redressal was an emergent and unexpected category of activity which seemed, even at an early stage, to be the most impactful category of use. Mudliar and Donner also reflected on CGNet Swara as a participatory medium [25].

Our current study builds on Mudliar et al. and is distinguished by (i) the significant expansion and evolution of CGNet Swara in the 3.5 years since the prior study, and (ii) an explicit focus on characterizing the impact of the service. When the prior interviews were conducted, CGNet Swara had shown only modest impact. Its structure for grievance resolution has since become more formalized and specific, as described in the next section. For example, the idiom of requesting callers to formally report resolved grievances did not start until after Mudliar et al. had finished interviews. Since then, the system has released 287 such reports, and they serve as a focal point of our analysis.

Chadha and Steiner [6] examined the impact of CGNet Swara as a citizen journalism site, by conducting 10 in-depth interviews with regional and national journalists to uncover their opinions on citizen journalism in general and CGNet Swara in specific. They found that while journalists were initially positive about citizen journalism sites such as CGNet Swara, on deeper probing rather different opinions were revealed. Mainstream journalists reported not using CGNet Swara to help source stories for a variety of reasons, including (i) reports were considered to be too much about activism, too partial (one sided) and not vetted for accuracy, (ii) reports on marginal rural issues were not considered newsworthy for their urban audiences, and (iii) there is endemic corruption in mainstream media in India, including the partiality of media owners and journalists and the common practice of paying for stories. Overall they concluded that CGNet Swara did not succeed in its aim of giving a voice to tribal communities, as stories were only rarely taken up by mainstream news agencies.

In comparison to Chadha and Steiner, our impact study takes a broader focus. Firstly we take into account the voices of a wider group of people, including the rural communities for whom the system has been set up. Secondly, unlike Chadha and Steiner, we do not take an external, pre-constructed definition of impact; rather, we let the various respondents define impact (or lack thereof) for themselves. Chadha and Steiner's definition of impact, i.e., to bring about action through dissemination of stories by mainstream media, certainly has validity in that it was one of the stated aims of CGNet Swara when it was conceived by the founder; however, our study reveals that this aim has evolved over time. While the goal of bringing about action is as important as ever, the organization relies more on direct advocacy of officials than on mainstream journalists as agents of change. Our findings challenge Chadha and Steiner's assertion that "only mainstream journalists can effectively disseminate stories and bring about action."

2.3 Voice-based systems in developing regions

In addition to CGNet Swara, others have used voice-based systems as an inclusive means of accessing, reporting, and sharing information in rural communities. Recent interactive voice forums have spanned various domains, including citizen journalism [18,32], agriculture [27,31], feedback on school meals [17], job search [30], rural information portals [1], and forums for immigrants in high-resource settings [4]. Together, these forums have attracted millions of calls and hundreds of thousands of recordings [1,31,32]. A recent evaluation showed that a voice-based agricultural information service offered benefits to farmers [8]. Researchers have also explored how to increase participation in community radio programs, using mobile phones [22,23], custom devices [29] or other means [3].

When it comes to grievances redressal, perhaps the most common solution is relatively low-tech: a helpline with live operators. For example, the state of Madhya Pradesh launched the CM Helpline in July 2014 to aid in grievance redressal [33]. They report

receiving about 45,000 calls per day and over 500,000 grievances thus far. Another example is Childline, a government helpline in India that assists children in distress [34]. While CGNet Swara has much in common with help lines, it also has some key differences: reports are monologues as opposed to two-way conversations, reports are recorded, and reports are released to the public. In future work, it would be interesting to understand how these characteristics impact the success of grievance redressal.

3. CGNET SWARA ECOSYSTEM

This section provides background on CGNet Swara. (The 'CG' in CGNet stands for the Central Gondwana region of India, while Swara is the Hindi word for voice.) While the CGNet organization used to perform broader activities, now it focuses exclusively on CGNet Swara. Thus, for the sake of brevity, this paper sometimes uses CGNet as an equivalent, shortened form of CGNet Swara.

3.1 Callers

CGNet Swara aims to promote participation by people in rural, tribal India. Because these communities have little access to information technologies, the organization conducts in-person training and awareness sessions. To date, there have been over 50 multi-day workshops that have trained over 2,000 community members and social activists about the goals of CGNet and how to record reports on the system. There is also a traveling dance and puppetry troupe, the "Yatra", which spreads awareness about the system via performances in remote villages. Callers to CGNet typically learn about the system via word-of-mouth, originating from participants who attended one of these outreach activities.

We refer to *listeners* as people who call CGNet and listen to other posts. Those who call and record content are *contributors*. Most contributors start as listeners and start to contribute only as they become more familiar and confident. Some of the trained individuals serve as local proponents, or *field champions*, of the service, including soliciting and intermediating posts on others' behalf. While CGNet does not charge contributors for featuring or solving their grievances, it does request that impacted contributors – those whose complaints have been redressed – record an *impact post* that explains the problem and its resolution. These posts raise awareness about the effectiveness of the service.

3.2 Technology

The CGNet Swara server runs an IVR service (using Asterisk and PRI digital phone lines) as well as a website (hosted at http://cgnetswara.org/). Callers send a missed call [12] to the server, which calls them back. In India, missed calls are free and very common, and incoming calls are free when not roaming. Thus, CGNet bears the entire cost of the call. Upon answering, the IVR system presents users with three choices: record a post, listen to the latest posts, or listen to the latest impact posts. This last option was added recently, in August 2014. If a user chooses the first option, they are given 3 minutes to record a post. If a user chooses the second or third option, the four latest posts or impact posts, respectively, are played back. In addition to the IVR service, published posts appear on the CGNet website and are announced via Facebook, Twitter, and mailing lists.

3.3 Moderation

The server emails every recorded post to a mailing list consisting of CGNet's editorial team, viz., CGNet's founder, one editor and eight moderators. The founder has an extensive background in journalism. Prior to CGNet, the editor had worked as the sub-editor of a regional daily. Moderators are hired on the basis of their interest and willingness to work rather than any required qualifications, leading to a wide range of educational backgrounds, from primary education to college graduates.

The editorial team treats their inbox like an issue tracking system: each recorded post becomes a ticket and its email thread a running report of its status. One or more moderators evaluate each post. Inaudible or blank posts are discarded. Every post is expected to contain the name and detailed location of the contributor and, in case the contributor is an intermediary, those of the affected person.

A grievance post must outline the complaint and end with a call to action specifying the concerned government official's phone number. CGNet focuses on grievances affecting multiple people and discourages posts about personal problems. Further, CGNet requires that contributors first apply to government actors to solve their grievance, and only post on CGNet as a last resort. A posted song is required to be a folk or traditional song, not a popular, mainstream or religious song; it must also contain an introduction.

If a post is appropriate in content but lacks structure or details, a moderator calls the contributor to explain and request that they re-record; they also place reminder calls every day for up to 5 days.

A post that is approved by the moderators is advanced to the editor, who either vetoes it (thus closing its ticket) or confirms that it should be prepared for release. In the latter case, a moderator summarizes the post in textual form and manually edits the audio to reduce noise and remove blank snippets. The editor finalizes the textual summary and uploads it to the server along with the new audio file, and marks the post as ready for release. Every few hours, the founder makes final edits and publishes the posts.

3.4 Follow-up

For many posts, publication is the last stage of CGNet's intervention. For grievance reports, however, publication sets into motion the follow-up process, which aims to have the complaint resolved. The main actors in this process are the contributor, CGNet's follow-up team, local field champions, CGNet's audience, and finally, actors within the state government.

The resolution process begins by releasing the post to online channels, targeting English-speaking, Internet-savvy urban activists. Next, all stakeholders need to be mobilized to act. CGNet employs a team of five whose main responsibility is to follow-up on posted grievances. A team member first calls the contributor to verify their story and suggest alternative ways of seeking help from the government. The follow-up team gets involved only once they ascertain that the contributor has indeed tried all traditional means of resolution. The actions they take vary by case, but are typically a combination of phone calls, emails and often, in-person visits to officials. Field champions play an important role by following up in person on cases from their area.

Listeners and the web audience are encouraged to call the official, bring the stated issue to their notice, and ask for a speedy redress. By providing the official's phone number in every post, CGNet makes following-up seem like an easy process to contribute to. This is crucial to enabling what is essentially citizen activism. As a bonus, some of these citizens are also part of the bureaucracy. Government clerk GC1 said, "*I don't just call, I make sure he (senior official) actually sees the petitions, which I either hand to him or place on his table.*" There have also been cases where international NGOs respond to posts; for example, a petition on change.org (http://chn.ge/1toNoUu) gathered 2,889 signatures within two weeks, leading to prompt repair of a rural borewell.

We see that citizen journalism and activism are thus closely interlinked in the working and effectiveness of CGNet Swara.

3.5 Example impact

To provide a concrete example of how CGNet Swara works, we consider a recent grievance that was reported and resolved via the system. As detailed later, we interviewed all of the actors described below, and made an in-person visit to the field site.

In July, 2014, CGNet received a report[2] from an adivasi bricklayer in Gadhvayi village, Madhya Pradesh, saying that cholera was spreading through the village and three people had died in the last ten days. Cholera cases are underreported in India, where water and sanitation systems are weak and disease surveillance is low. After the outbreak, village members sought help from the village ASHA (an Accredited Social Health Activist, trained by the government) as well as an appointed medical officer. However, the ASHA fled the village once cholera started to spread, and the medical officer was unresponsive. The people in the village felt helpless. The government had never sent ambulances or doctors, citing the remote location and the lack of good roads. At the time of the post, this story had not been picked up by any newspaper or TV channel.

The moderators received this story at midnight and immediately released it. "*This isn't normally our policy*", said the CGNet editor. "*We realized how serious it was. While we usually call our field champions to check the veracity of posts, for this we pushed out the post because we understood that lives were at stake.*" Local field champions were notified and immediately called the chief medical officer of the district, as well as the district collector.

Ten days after the original report, a social worker from the village recorded an impact post[3], thanking CGNet Swara "for saving our lives". It reported that the chief medical officer and a team of doctors had visited the village the day after the post appeared on CGNet. The team brought medical supplies and stayed for a week. The chief medical officer later confirmed to us that the ASHA had left because cholera had broken out in the Dalit (low caste) quarters. The chief medical officer fired both the ASHA as well as the medical officer for the village. We visited the village a few weeks later and found that the spread of cholera had stopped. While some patients were still recovering, no new cases were reported.

Re-tracing the steps that led to impact, the chief medical officer said, "*I got a few phone calls and I immediately rushed to send help.*" While he did not acknowledge that the phone calls were connected to CGNet, he recognized the voice of a field champion who sat in on our interview. Similarly, the collector acknowledged receiving about three calls, but said he had not heard of CGNet. This hints at the delicate relationship between CGNet and state actors. In other impact cases, such as overdue payment of wages[4] and repair of hand pumps[5], the officers interviewed were knowledgeable and grateful that calls were connected to CGNet and had helped to identify and resolve the issue. The severity of the cholera case may have heightened sensitivity to placing any blame on state actors.

3.6 Usage trends

CGNet Swara was deployed in February 2010. As illustrated in Figure 1, the number of calls and posts has increased steadily since then. (The dip in spring 2014 was due to a technical problem, while the recent spike is due to the impact of the traveling Yatra.) Currently CGNet publishes about 7 new posts and receives approximately 900 calls per day.
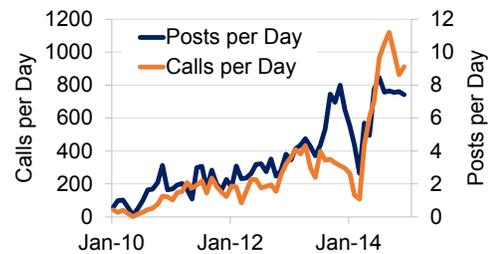

Figure 1: Number of calls and posts to CGNet Swara.

As of March 1, 2015, the server has received a total of 575,000 calls and published 6,900 posts, including 287 impact posts. The posts were contributed by at least 2,600 different callers. About 12% of posts were contributed by women. 63,200 distinct callers have listened to content on the system; of these, 11,000 have called at least 10 times, 1,800 have called at least 50 times, while 23,100 called only once. The average phone call is 5 minutes long.

4. METHODS

Our study incorporates analysis of 202 impact posts, 70 semi-structured interviews, two focus groups spanning 15 people, and direct observations during a 9-day field visit.

To analyze the impact posts, we used the textual titles and summaries to assign each one a set of broad keywords or themes. Themes can overlap in some cases; for example, posts about the Mid-Day Meal Scheme (providing free lunch in schools) were categorized under both food and education. We inspected the most recent 50% of posts to see how long the grievance was open prior to the post, and how long it took to resolve after the post appeared on CGNet. We also determined the geographic distribution of posts based on the locations, indicated in the summaries.

Interview participants represented a wide variety of people who were connected to CGNet Swara in some way, and were interviewed either in person or via phone between May and July, 2014. All interviews were conducted in Hindi, with the exception of the founder and two journalists, who were interviewed in English. Participants in the phone interviews were:

• 10 contributors who had recorded impact posts. We selected the most recent impact posts as of May, 2014. We called 15 contributors, of whom 10 answered and were interviewed by phone. (When attributing quotes, we label these contributors as *IC*.)

• 10 contributors who posted grievances that were not yet resolved (i.e., not yet followed by an impact post). We called 20 consecutive contributors of reports starting in May, 2014. Of these, 10 people answered and were interviewed by phone.

• 9 contributors who posted only songs and poems. We inspected songs and poems starting in May, 2014, and selected contributors whose prior contributions (if any) were limited to songs and poems.

• 6 active listeners who had never contributed to CGNet Swara. Listeners were deemed as "active" if they called at least once per week for 8 weeks starting on May 30, 2014.

• 6 listeners who never contributed to CGNet Swara and recently became inactive ("drop outs"). Each of these people had called at least once per week in June 2014 but did not call during July 2014.

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[2] http://cgnetswara.org/index.php?id=37266
[3] http://cgnetswara.org/index.php?id=37644

[4] http://cgnetswara.org/index.php?id=35058
[5] http://cgnetswara.org/index.php?id=40769

• 4 mainstream journalists. Recommended by the founder, they worked for local, mainstream, vernacular newspapers that covered stories from rural districts.

The following people were interviewed in person:

• 7 of the 8 of the CGNet Swara moderators, who were based in CGNet's field office in Bhopal (the 8th moderator was remote).

• 4 field champions who were recommended by the founder. They were based in Rewa, Madhya Pradesh and Kawardha, Chhattisgarh.

• The editor of CGNet Swara.

• The founder of CGNet Swara.

The following interviews were split between phone and in person:

• 12 government officials, most of them mentioned in a grievance or impact post. Of these, 10 were interviewed in person and 2 via the phone. Since phone numbers were included in the reports, they likely received phone calls from CGNet Swara field champions and potentially from listeners as well. Officials held positions spanning from an office clerk, to a sub-divisional officer (SDO), a chief medical officer of a district, an IAS officer, and other roles.

Interviews covered a range of topics, to varying degrees and depth, depending on the category of interviewee. For example, the contributors of impact posts, the founder and field champions were interviewed in the most depth regarding the process of resolving grievances. These interviews typically lasted between 35 minutes and an hour. Interviews with other participants were typically shorter, lasting on average 15-20 minutes, and covered specific questions, such as why they stopped listening (for inactive listeners). One question that was constant across all interviews was "what do you think is the biggest impact of CGNet Swara?" In Hindi, there is no absolute equivalent of the word 'impact'; it translates as 'influence' or 'effect'. Participants were told that all names and identifying information would be kept confidential. They could withdraw from the interview whenever they wished.

The interviews were supplemented with field observations. Two researchers spent 4 days in the CGNet office, observing the work of the staff to get a detailed understanding of the moderation and editing process. One of these researchers, who conducted the interviews, also spent 5 days shadowing field champions in two areas with significant uptake of the service: Rewa, Madhya Pradesh and Kawardha, Chhattisgarh. This allowed the researcher to observe first-hand how reports are recorded, to observe the relationship between field champions and officials, and to visit people and sites (near schools, hand pumps, etc.) that were impacted by CGNet. Data was collected through field notes and audio/video recordings.

During the field visit, two focus groups were conducted: one in Rewa with 10 participants, and one in Kawardha with 5 participants. The field champions convened both the groups; all of them were listeners but only some had contributed posts or impact posts. The conversations lasted for about 90 minutes and explored a broad range of topics; in addition to gathering views on impact, we discussed how CGNet Swara could work more efficiently and improve its ability to resolve issues.

To enable analysis and review, all interviews and focus groups were recorded. Key portions of these interviews, as well as footage from the field visits, were translated, transcribed, and analyzed for recurrent themes via data sessions of the research team.

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[6] Baiga adivasis are a tribe of about 400,000 people living primarily in mountainous forest regions of central India.

5. RESULTS

This section characterizes the impact of CGNet Swara as revealed by our mixed methods analysis. We discovered a diverse portfolio of impact encompassing various roles and usage scenarios. We organize our discussion into four parts: grievance redressal, impact on contributors, impact on listeners, and cases lacking impact.

5.1 Impact of grievance redressal

Evidence from impact posts

To appreciate the depth and breadth of grievances redressed on CGNet Swara, we urge readers to visit the online feed where all impact posts are displayed (http://cgnetswara.org/impact). For example, there are numerous cases where calls to CGNet Swara are credited with payment of overdue wages; resumption of mid-day meals in schools; provision of denied ration cards; repair of broken hand pumps; and other important issues. One report tells the story of an officer who took a bribe of Rs. 99,000 (USD 3,300) from 33 Baiga[6] adivasis. Upon hearing the report on CGNet, the officer not only returned the bribe but recorded his own post to apologize.

The practice of soliciting impact posts started in 2011, in which there were about 1.5 impacts per month. Since then, the number of impact posts has grown steadily: 2.5 per month in 2012, 8 per month in 2013, and 10 per month in 2014.

Our exercise of tagging posts by topical area confirmed that they span a wide variety of issues. The most common tags were food (12% of posts), education (11%), money (10%), labor (8%), and sanitation (8%). More specific topics included NREGA wages (7%), mid-day meals in schools (5%), roads (5%), hand pumps (4%), rations (4%), land (3%) and forests (2%).

In terms of time to resolution, we were able to determine the amount of time a grievance was pending prior to the post for 36% of posts considered; we determined the time to resolution after the post for 56% of posts. Among this sample, the average age of a grievance prior to posting was 668 days (median=365, stdev=665). The average amount of time taken to resolve the grievance following posting was 19 days (median=8, stdev=28). While there is a lot of variation in these measures, they do suggest that CGNet can greatly accelerate issue resolution compared to the status quo.

Geographically, impact posts originated from the states of Madhya Pradesh (MP), Chhattisgarh (CG), Odisha, Jharkhand, Andhra Pradesh, Uttar Pradesh, Rajasthan and Bihar. MP had the highest number of reported impact stories (40%), followed by CG at 35%. The sites of our field visits, Rewa in MP and Kawardha in CG, contained 21% and 14% of the impact posts, respectively.

Evidence from interviews

In our interviews, by far the most reported impact of CGNet was its success in resolving grievances. Contributor IC3 said, "*Its biggest impact has definitely been convincing people that it can help solve issues. CGNet helps them find a voice and more importantly solve issues to improve their quality of life.*"

The primacy of grievance redressal as an impact category seems to arise from a combination of three things: that people's grievances are resolved; that such resolutions are regularly reported on CGNet itself; and that CGNet makes it seem easy relative to other options:

"*We try to solve our issues by sending news reports to local journalists, talking to local officials, strikes, marches and protests to officials, but it takes very long and involves too much work. On CGNet all we need to do is post the news and we can hope for something positive. This is CGNet's greatest effect and impact.*" (FG1, focus group participant)

Not all resolutions come so quickly, however. For instance,

"*A village Chorbhatti in the Anuppur district in MP had a pipeline laid down in 2008 but no water was supplied. After my CGNet report, officials visited and promised to get it working soon but they did not return for more than a month. But now a few days ago a friend called to say that water was flowing through it and now the people were living comfortably.*" (IC3, contributor)

Other problems, though not fully resolved, see important progress. Contributor C3 said, "*In one of my latest stories I wrote about how there was an attack by elephants inside our town one night. While I post a lot and it may look like there is no effect happening, it's not like that. CGNet ensures that our voices reach the right places and often officers come to meet us. The elephant menace is a big issue. At least now they take us seriously and at least come to see us about the issue. My stories may not have rebuilt houses but at least now there is better monitoring.*"

Of course, not every report leads to action by officials: "*I have posted lots of news pieces. About half of them have initiated action at some level and brought about some change.*" (FG1, focus group participant). We discuss reactions to unresolved grievances in more detail in Section 5.3.

Closely related to grievance resolution is CGNet's perceived impact on corruption. For example, in one case ration shops were closed; after a report on CGNet, the shops opened and the owner was arrested. Contributor IC3 said, "*Before CGNet they [officials] would hardly do any work. We had to pay bribes for getting even our legitimate rights. The fact that we have CGNet now and that we can post news as and when we like has acted as a great deterrent.*" CGNet is also used as a way to circumvent members of traditional media, who (according to our interviewees) frequently sought bribes to publish stories relevant to remote communities.

In addition to posting on issues which have the potential for immediate resolution, contributors also post about long-term problems. Some will require a long-term change in attitudes, e.g., "*Issues like that of child marriage and improving the health situation in our community will take time and many stories.*" (IC2, contributor). Others, like mining, are entangled with big business and unlikely to see rapid resolution. Contributors are realistic about what can be achieved and understand that social change is a slow process, and impact, if any, will come with repeated posts over time. "*The more people call and put pressure, the better we can change the situation. [...] Our biggest motivation is that change will surely come. It may be slow but it will be there.*" (C3, contributor)

5.2 Impact on contributors
In addition to grievance redressal, there were several other benefits expressed in connection with contributing to CGNet Swara.

Having a voice, feeling heard
This was the second biggest impact category reported across the spectrum of contributors, champions, moderators and listeners. Many of CGNet's posts originate from typically unheard and powerless sections of society, such as remote and tribal areas with low levels of literacy.

"*It gives us a voice that we didn't have before. It's a rendition of the issues we face and it portrays our issues through our voice. It's what we want to say. We aren't often given this chance.*" (IC4, contributor)

"*CGNet helps us women put our voice across. It takes up issues that no newspaper or radio takes up.*" (IC9, contributor)

Coming from communities that often face neglect, contributors love having the freedom to choose their own topics and relate them in their own voice. On CGNet they can pick issues relevant to *themselves*, without caring about whether they interest city dwellers or mainstream media.

"*With CGNet I can promote not just my views and voice but the voices of all those people who really need to be heard. Some of the issues we face are just not relevant to the people who live in the cities.*" (FC1, field champion)

Even when a grievance does not get resolved, that it has been published and is now publicly available is an impact in itself: "*I may not report the impact story but I do believe that my report has effects. At least it documents the issues that need attention.*" (C11, contributor). Field champion FC2 confirms, "*It's not as if every story we publish has an effect. But CGNet for us is a way to at least get our stories out there. [...] It brings into public consciousness a forgotten people.*"

Being heard by people across the nation gives them a sense of solidarity, of a change in people's perception of the problems faced by vulnerable populations. It also creates connections between those communities and the government: "*CGNet's impact lies in the connection it makes between officers and the communities it serves*" (FC3, field champion) and it "*helps reach ordinary voices to the government*" (M7, moderator). It also helps to connect communities and mainstream journalists: "*I think its greatest impact has been the link it's created between mainstream journalists and citizen journalists*" (J4, journalist).

At an individual level, contributors value that posting requires neither high levels of literacy nor skilled articulation. Moreover, they appreciate that posts are "*recorded just as we would like it with no embellishments or changes or anything*" (FG8, focus group participant). That posts are available not only to friends or neighbors but also to an audience "*beyond the boundaries of our villages*" (IC6, contributor) amplifies the contributors' happiness at having their voice heard.

Artistic, cultural and other forms of expression
Although having a voice in many cases is closely linked with grievance redressal, its importance to community members is wider than that. CGNet has some contributors who exclusively post songs or poems, because along with mainstream media, mainstream culture also marginalizes the same constituency of people:

"*Where else will be go with songs of this kind? No other media is interested. I think CGNet's greatest influence is not just the issues it solves but the fact that it also gives us a space to record these cultural items. It's becoming a repertoire of our culture.*" (S7, song contributor)

CGNet actively encourages contributors to record their own poems and songs. The founder said,

"*We also publish 'sadak chap' poetry or street poems that won't get space in any other magazine. We are for those people who aren't getting space any way else.*"

By differing from the conventional stance on what qualifies as art worthy of publishing, CGNet has evolved into a space for contributors to showcase their talent. Being heard by a large audience is a big motivator for contributors: "*We are a small school for tribal children in Andhra Pradesh. [...] Its [CGNet's] biggest significance is that we can share the talents of our children with the world.*" (S2, song contributor)

Interestingly, the songs submitted to CGNet often blur the boundaries between art, culture and protest. Contributor S6, who posted a protest song about a controversial mining project, said,

"I base my protest through songs. [...] I think its greatest significance is that we can post the stories of our protest in any form—it doesn't have to be a straightforward narrative—like my songs. They can convey all the suffering that my people are going through."

Evidently, CGNet's lack of insistence on a single prescribed form plays a big role in enabling contributors to express themselves. Not all listeners are charmed, however. Recent dropout DO3 said, *"CGNet was my favorite channel at one point. But now I feel anyone who wants to post can post on CGNet. There is no discrimination. Also the poems and everything make it seem like it's a children's channel. I know it has had lots of effects and I am sure that's a real impact but for me, the channel has lost value."*

Entertainment value
CGNet also serves as a medium of entertainment. We found that users derive pleasure from both contributing and listening:

"I like uploading songs because this sort of music you don't get to hear anywhere else. Yes, I think about the many issues people post. I think that's their thing to post, but I would also like to hear songs so I post songs." (S3, song contributor)

Importantly, the act of recording itself can give people joy. Five of the nine contributors who published songs exclusively mentioned enjoyment as one of their rationales. Contributor S2 from a school that recorded its students singing said, *"It was such fun to record and we really enjoyed it."*

Knowing that many others will listen to one's post makes for an even more attractive prospect: *"We love to perform these songs. Now we know there is a wide audience out there who is listening to us."* (S8, song contributor)

Personal development
As well as community impact, contributors, moderators and one mainstream journalist mentioned that CGNet had personal benefits to them: *"It makes me want to do good and to me that's CGNet's biggest impact."* (FC3, field champion) Contributor IC6 said they received wide recognition for their work: *"I am now known by my work if not by face all over India."* Two others said that working with CGNet to resolve grievances gives them the satisfaction of having been instrumental in change and a sense of achievement at helping those less fortunate than themselves. For example, moderator M3 said, *"This is the main reason why I work here [...] we are facilitators of change."* Moderator M7 said, *"The social angle and the fact that I can directly help people enthuses me on. I know my work has direct impact."*

5.3 Impact on listeners
Even without contributing posts to the system, many people reported benefits due to listening to others' posts.

Issue discovery
CGNet has, over time, become a repository of grievances posted from various parts of the country. It is natural, then, that some treat it as a means to discover ground realities. We particularly found this to be the case with some journalists and government officials.

Freelance journalist J2 said that CGNet keeps him "rooted" and highlights "real issues" which are not reported elsewhere that could benefit from publicity in mainstream press. Since every published post also includes the contributor's phone number, the journalist finds it easy to verify facts without having to visit the location in person. Other interviewed journalists echo the sentiment, saying that CGNet helps them monitor their area of coverage or interest, particularly remote locations. Journalist J1 said, *"The biggest impact that CGNet has for journalists like me is that it brings to our attention stories from these very remote areas that we otherwise wouldn't be able to give national coverage to."*

We met several officials who regularly consume CGNet as a means to discover issues faced by their constituents: *"I listen to CGNet about issues that concern areas under my jurisdiction. I think it's a very good service that goes deep into areas where collecting information is hard. It helps us reach places that don't feature on our radar."* (O9, officer). Many of them have been instrumental in the impact cases reported on CGNet. Some officials also use CGNet to judge the temper of the people in their constituency: *"For me, CGNet helps me gauge what the people on the ground are thinking about and will act on."* (O8, officer)

Police officer O6 rues the fact that even if the police are eager to help, people are often too afraid to approach them. He said that having CGNet as an intermediary made officers like him more effective. Another official expressed frustration that people didn't approach him directly. For instance, he discovered the lack of BPL cards in a village only via CGNet, and then acted to resolve the issue. Given that even seasoned field champions take time to establish rapport with officials, it is no surprise that not everyone finds it comfortable or useful to approach officials themselves.

Our data suggest that CGNet serves an important supplementary role for some mainstream journalists and government actors. However, as we will see below, not all officials are so willing to recognize CGNet's role. Chadha and Steiner's research [6] suggests that not all journalists are so positive, either. Nonetheless, relationships such as these with CGNet's allies 'in high places' are important to foster and sustain. Journalists help to increase CGNet's reach, and officials are the only ones that can solve most of the grievances reported.

Awareness and education
Many listeners treat CGNet as a source of news, and for some, it is their only source of news. An oft-cited reason for listening to CGNet is to build awareness of current affairs: *"When we listen to news on CGNet we also get information about what's happening in different parts of the country and we like that."* (IC2, contributor)

Some use CGNet as a means of staying in touch with their roots. For instance, RL5, a Baiga adivasi who is a regular listener of CGNet, told us, *"I don't have issues of the kind that CGNet posts online so I don't post news but the news is relevant because it is about my people. I am a Baiga adivasi but I live in the plains now. Reaching news to relevant audiences is I think CGNet's biggest achievement."*

Adivasi contributor IC4 said that CGNet builds solidarity and acts as an educator: *"Adivasis from different parts of the country get to listen to issues adivasis face in other parts of India and realize that they share the same problems. It proves to be a great learning experience as well. When they hear, for example, about land grabbing or human rights abuses they can take a lesson and become more careful about protecting themselves."*

Source of inspiration, confidence, and agency
Listeners report feeling inspired by hearing the posts on CGNet. While even the poems and songs are a source of inspiration for some, it should come as no surprise that many listeners find the resolution of others' problems to be particularly inspiring.

Hearing that other people's grievances get resolved gives people the confidence that they too can change things. Impact contributor IC6 said, "*To me its biggest impact has been managing to convince people that they can solve their problems. All it takes is the ability to pick up your phone and make that call.*" Contributor IC3 said that CGNet helps them "*do things we would never endeavor to do, helps us achieve things that we wouldn't have imagined earlier.*"

Three of the interviewees stated that CGNet helped them achieve their social goals. Journalist J2 said, "*I have always wanted to do journalism that benefits people with little resources and CGNet has really helped me do this.*"

Not everyone agrees with this definition of agency, though. DO3, a recent dropout, complains that CGNet makes people lazy and should teach people to solve their issues themselves instead of waiting for the state officials. He adds, "*I think CGNet would be more impactful if we had clear instructions about how we could resolve our issues. For example: instead of saying call the collector for a hand pump why don't you tell us how we can repair our own hand pumps?*"

5.4 When impact is lacking
Here we consider cases where expectations of impact were not met.

Grievances that are not resolved
Contributors had varying reactions when reported grievances were not resolved. Some were satisfied that even a fraction of reports were addressed. Contributor IC9 said, "*[...] when nothing happens I put it on CGNet. Usually that brings on a solution soon. Sometimes, though, when we post nothing happens. That's a time we have to be patient. CGNet isn't magic. It can't solve every problem but what it solves genuinely improves our quality of life.*"

Contributors with no recorded impact made similar points. Five out of the nine interviewed, although disappointed that their stories had not led directly to change, were hopeful that CGNet could help them on such issues in the future: "*None of my stories have had impact but I am not disheartened. I believe it's a start and so while it hasn't worked for us this time, it might work the next time.*" (C1, contributor)

But we also came upon cases where the lack of impact led to disillusionment with the service:

"*I heard about CGNet from the people in my area. I thought posting here will bring us help. No, I won't post anything again. Like everything else this is also a waste of time.*" (C4, contributor)

"*I liked listening to the stories about how issues were being resolved but I was very unhappy because we had posted a story, about six months ago [...] but nothing happened. So I am a little disturbed and have given up listening to CGNet.*" (DO6, dropout)

It should be noted that CGNet does not make it mandatory to report impact posts. Thus, even during interviews of contributors that we thought were without impact, some mentioned receiving redress but not recording an impact story.

Reports that are not published
Contributors are understandably peeved when their posts are not published. Most interviewees whose posts were not published said they did not understand why. Contributor FG9 said,

"*When a thing like this happens my credibility with the people goes down. Next time there is an issue and I want to record it online they will not be willing to participate. We don't want overnight change. But a response would have been great.*"

A lack of visibility about the moderation process only adds to the confusion. Though limited connectivity can sometimes prevent moderators from giving personalized feedback to would-be contributors, giving public guidelines on what makes a post 'publishable' (for example, via the IVR itself) would certainly help.

Officials that do not acknowledge impact
One government official claimed not to have heard of CGNet at all. Another admitted to having heard of it but said he did not access it. Some others said that they had received calls about specific issues, but the callers did not necessarily mention CGNet during the call.

The Indian government runs several helplines for citizens to seek redress. In fact, CGNet encourages people to try resolving their issues via official means, and only post if nothing else works. That CGNet still receives a large number of grievance posts suggests that there might be problems in the state's grievance redress mechanisms. However, O1, an officer involved in the cholera case sums up the attitude of many, saying, "*What has happened is an awful issue. [...] But I don't need a CGNet to tell me about it.*"

Other officers say that they are already taxed with too much work to listen to an additional service and reconcile the information with that received from their own helplines. They suggest that CGNet should publicize government helplines. Officers who admitted to receiving calls from CGNet listeners say that they would have helped regardless, because that is their job as government servants.

Evidently, many officials felt that CGNet was of no use to them. However, it must be noted that since many of the grievances reported on CGNet explicitly indicate mismanagement or negligence on the part of state officials, publicly admitting to the usefulness of CGNet might be frowned upon.

6. DISCUSSION
6.1 Grievance redressal and beyond
When Mudliar et al. carried out their research [24], grievance redressal was just emerging as the most impactful use of CGNet Swara. By the time of our study, grievance reporting has become firmly established as the primary use and redressal the most reported impact. While this acts as a driver of much of the use of the system, we also revealed a multiplicity of other impacts, equally valuable to those concerned albeit in smaller numbers.

The handling of grievance has evolved over time. Initially, escalation of reported grievances was handled in a rather informal manner, with primarily the founder attempting to disseminate the issue through mainstream media or by direct contact with government. A more formal follow-up process has now evolved, from being more equally focused on contacting journalists and/or government officials to being primarily focused on government officials. Staff members, and other users, may be pleased when journalists take up stories and the founder remains true to his journalistic principles and continues to promote stories in the mainstream media. However, the main work of grievance redressal is undertaken through lobbying relevant government officials. The reasons for this are likely to lie in the tensions between CGNet Swara and mainstream media, first highlighted by Mudliar et al. [24] and expanded on by Chadha and Steiner [6]. The continuing lack of interest by mainstream journalists in rural issues, which are not considered newsworthy for their target audiences, and the endemic corruption in the mainstream press, are likely reasons for why this route proved to be less fruitful for CGNet Swara. Instead change is primarily created through direct action, thus largely circumventing mainstream media.

Our findings therefore lead us to a different conclusion than that of Chadha and Steiner. We agree that "`the bridge between these communities and the media' that [the founder] hoped to build has not developed", at least to the extent that was hoped for. However, we question the final conclusion that journalism is necessary to mediate between the people and the government, and that since the mainstream journalists do not take up the story, CGNet Swara "does not directly expand citizen participation". Rather our findings show that even in the face of journalistic apathy, CGNet Swara brings an alternative, and perhaps more effective, means of creating change by amplifying community voices through local field champions, who directly appeal to the officials involved.

As well as the actual resolution of problems, another albeit less tangible, but arguably equally important, impact of CGNet is that it gives its users hope that wrongs can be righted, corruption fought and so on. It gives an otherwise marginalized people a channel for reporting problems, taking action, and seeing results – if not every time, at least regularly enough to inspire confidence. That contributors also use it in attempts to bring about more fundamental or longer term changes also speaks to their belief in the system.

Beyond grievance redressal, other categories of impact include having a voice, for anything from protest to cultural contributions and tribal knowledge, staying in touch with one's community, and personal development. In terms of personal development, as CGNet has evolved it has moved from an outlet for confirmed social activists, as well as less regular contributors, to providing a means of becoming an activist for (often unemployed) members of the community. While this may impact relatively small numbers of people, it is actually quite a substantial impact in the lives of the individuals concerned.

6.2 Assessing impact in ICTD

The multiplicity of impacts revealed in our study has led us to reflect more broadly on impact assessment in ICTD. While we certainly do not have a comprehensive framework to propose, we hope that our work is another demonstration of the value of combining qualitative understanding of impact, particularly as expressed through the eyes of those impacted by the system (e.g., [5,26,28]), with more quantitative measures. Even grievance redressal, which seems relatively tangible, is difficult to measure objectively in the real world. In some cases it is hard to prove exactly how much influence CGNet Swara has, as multiple factors are operating together towards a resolution. Beyond grievance redressal, we have a mixture of outcomes which are more amenable to easy measurement: number of listeners, songs, people who become social activists, etc. However, one might argue that the development benefits which underlie these indicators are the ones that matter most – having a voice, hope, cultural expression, enjoyment, contributing to community life and so on – and the numbers can only serve as a proxy for these. The sustained and increasing use of CGNet tells us something about its value, but it is the rich qualitative data, in combination with the numbers, that paints a picture of what the system really means to the community.

6.3 Opportunities for increasing impact

General awareness in rural areas

When asked how CGNet could be improved, our respondents often suggested increasing awareness among their peers. CGNet is advancing this goal through face-to-face outreach activities. In addition, as a result of this research, CGNet introduced a separate IVR menu option for playing impact posts. Listening to these `success stories' may increase interest and retention of callers, and remind them to contribute similar stories of their own.

Unpublished contributors

Our findings showed that would-be contributors were disappointed or even disillusioned when a recording submitted to CGNet Swara was not published. While the moderation team uses a careful set of criteria when screening posts (for example, a focus on community issues as opposed to personal ones), it appears these criteria are not being consistently communicated to many potential contributors. This suggests an opportunity to increase the understanding of the moderation process, for example, by including a tutorial (perhaps as part of the IVR) that explains what makes an appropriate post.

Women contributors

For several years, only about 12% of posts on CGNet Swara are contributed by women. By comparison, the fraction of female reporters, correspondents, and editors working at the district level in Chhattisgarh stands at 9.4% [2]. Both figures represent an enormous gap and loss of important issues that could be voiced by women in the community. To ameliorate this disparity, we recommend targeted outreach and training camps for women. Also, the IVR could be modified to say the prompts in a female voice, and potentially to have a separate category that highlights women's posts to make it more comfortable for other women to contribute.

Government officials

Several of the higher government officials deny that CGNet Swara influences them. Gaining their acknowledgement is not strictly necessary for having impact, as CGNet Swara may have influence via channels that are hidden to them – for example, via lobbying by CGNet field champions. Nonetheless, we are interested in making it easier for officials to engage with the platform.

Though some officials reported listening to CGNet Swara, analysis of the server logs revealed that there were no incoming phone calls from any numbers known to belong to officers (i.e., numbers that a contributor associated with an officer). It is possible that officials were using one phone to receive complaints in the office, and another phone (perhaps a personal mobile) to access CGNet.

In order to encourage officers to listen to CGNet Swara, we recommend a simple feature that notifies officers via SMS whenever their phone number is mentioned in a CGNet report. Officers who call this system should hear the relevant post automatically, without searching through other posts. The system could also notify officers once a given number of people (say 100) have listened to a report, highlighting its visibility and importance.

7. CONCLUSIONS AND FUTURE WORK

This paper sought to characterize the impact of CGNet Swara as it evolved from an ICTD research prototype to a larger project throughout central India. By highlighting the personal narratives of those who were connected to the system, we uncovered a diversity of usage and corresponding impacts of the system.

Perhaps the most striking aspect of the impact reported is its simultaneous depth and breadth. On the one hand, CGNet Swara appears to have enabled important interventions, including timely response to cholera, payment of overdue wages, delivery of missing school meals, fixing neglected hand pumps, and so on. At the same time, these 'tangible' impacts represent only a fraction of the benefits reported by our respondents. For contributors, broader impacts encompassed feeling heard, enabling artistic expression, providing entertainment and personal development. Meanwhile, listeners reported benefits in discovering issues, improving their awareness of news, and feeling new inspiration and hope that change is possible. While the system is not perfect by any means − there were no shortage of respondents whose grievances were left unresolved, whose posts were not published, or whose jobs as

officials were not openly transformed − in aggregate the narratives offer strong evidence that CGNet Swara is playing an important role in the lives that it touches.

One question remaining for future work is to tease apart the mechanisms that contribute to the impact observed. For example, currently we are unable to monitor who is acting on the posts by placing phone calls to government officials, or even whether the posts directly lead to impact at all. Thus, the relative influence of field champions, rural listeners, remote Internet activists, and other external factors is not well understood. Future work could seek to observe such interactions, for example, by augmenting the IVR system to forward calls to an official. Similar questions could be asked regarding the role of online social media, or that of moderator feedback, in resolving grievances and providing other benefits.

ACKNOWLEDGMENTS

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