

To

Are you applying as an independent applicant or on behalf of an organization?* Independent Applicant Organization

Application Details

Project Title* Improving Maternal and Child Health through Offline Healthcare Information Access in Remote Villages

Project Budget in USD* 199738

Project Start Date*

Project End Date*

What is the geographical reach of your project?* Global One Country One Region

A global reach is one in which those that directly participate and benefit from your programs are in multiple regions. A regional reach involves work across several countries that are part of the same single global region. A national reach that is specific to a country will focus work in one country only.

Which theme does your application fall under?* The Internet Economy A Trustworthy Internet Greening the Internet Decolonising the Internet
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Project Summary:*

The scarcity of accessible and reliable healthcare information, especially regarding antenatal and postnatal care, exacerbates health risks for mothers and infants in regions without internet access located in Jalgaon, Maharashtra. An alarming 52% of pregnant women in India are anemic (65% in Jalgaon), a condition that could be significantly mitigated through proper intake of iron supplements post-pregnancy; most miss antenatal care check-ups increasing the risk of complications. Despite a 70% female literacy rate, most do not have access to information about the importance

of postnatal nutrition, resulting in 37% children under the age of 5 being stunted and underweight, while 85% are anemic (National Family Health Survey). There is no reason this should be the case since the solutions are cheap, within reach, and involve trivial changes to their diet. And yet this disparity continues to affect thousands of lives. At SimPPL, we seek to address this information gap by deploying a localized healthcare information network utilizing Wi-Fi Direct technology to deliver information to their smartphones, without internet access. The network aims to deliver essential healthcare information in Marathi and local languages using an open-access natural language engine, circumventing the barriers of limited internet connectivity. Access to our system is complemented by in-person workshops to improve its usage.

Beyond anemia, other avoidable health issues stemming from inadequate healthcare information include low immunization rates among newborns, high instances of home births without skilled health attendance, and insufficient breastfeeding practices. These issues not only endanger the health of mothers and infants but also place a considerable strain on the healthcare system. By providing timely and culturally relevant healthcare information through the proposed network, we aim to empower women with the knowledge to make informed decisions regarding their health and that of their children. SimPPL's project will be in partnership with a local Indian NGO, Aadhar Bahuddeshiya Sanstha, that operates a network of 115 health workers, 5 public health centers, and has served 40,000+ women, HIV-positive individuals, and sex workers in 100+ villages in this district over the past decade. We have a year-long collaboration history and built a healthcare data collection system for their health workers in the past 4 months.

What is the main research question you hope to test in this project?*

Additionally, describe the expected contribution to the field of internet studies.

1. Does the use of offline healthcare information systems in regions without internet coverage improve maternal and child health outcomes?

Given that there is a sufficiently high female literacy rate and the freely accessible information, we expect that among the active users of these systems, there will be an increase in knowledge and adherence to maternal and child healthcare guidance. We focus on antenatal and postnatal health literacy and immunization rates in children below the age of 5 years given a historical deficit on these indicators in the target villages, and the existence of cost-effective solutions (minor dietary changes, timely physician visits). The system will provide culturally-sensitive, accurate, and verified healthcare information curated by medical professionals in the region in partnership with the NGO in Jalgaon. It will not aim to answer general healthcare queries beyond its predetermined scope, redirecting users to the local healthcare center instead.

2. Does a shared governance model with local experts and community leadership improve trust in technologically-aided healthcare information?

Community leaders have successfully advocated for trust in technology for short-term digital literacy interventions in at least two instances in North India, but there are far fewer examples of post-COVID, long-term evaluation of healthcare literacy efforts particularly targeting females who are direct beneficiaries of the information. Will they trust the information received from a querying system or dismiss it? What are the factors that will increase their belief in the system? Given anecdotal evidence from our NGO partners motivating our hypothesis, we anticipate a strong effect and improved trust since our setting is more conducive to a successful experiment.

We hope to show that even in regions without internet access, local healthcare information access can drive potentially life-changing improvements in maternal and child care. Our project uniquely combines an open-access solution on commodity devices with wide-ranging healthcare infrastructure and local experience to deliver a successful outcome. In addition to observational data, we aim to validate the behavioral change induced through information access using anonymized healthcare biomarkers, immunization records, and primary-care check-in data.

For many local organizations working in remote regions, it is challenging to conduct studies without significant technical expertise such as that required for the delivery of our proposed digital system. Through this project, we additionally hope to show that local student researchers are extremely valuable resources to advance socially beneficial outcomes within their own communities. As an example, our students have deployed internet and information integrity projects for Mongolia's only IFCN-verified fact-

checkers, UN Peacekeeping Operations, NY Public Radio, and others, after only a year of training, and the contribution to the field is to share a replicable model to empower local communities to drive the change they require in improving trustworthy information on the internet.

What is your research project's methodology?*

Describe how you will gather data (interviews, surveys, data mining, desk research, etc.) and perform data analysis (descriptive, exploratory, predictive, causal, etc).

We will employ a quasi-experimental design to study the comparative effects of providing local information access mechanisms on the short and long term healthcare outcomes of individuals such as the frequency of vaccinations and monthly healthcare indicators for women and children in the villages that do not have easy access to healthcare and lack internet coverage.

We will sample 6 “treated” sites (villages) to deploy our offline querying system to at least 40 women with access to smartphones including pregnant women and new mothers, and compare the average treatment effect on their healthcare outcomes. We will spend a 2-week period at each site to support community usage of the system. Focus groups will be conducted in treatment and control villages with support from the NGO partners to measure the individual features driving user participation and user trust in online information among these communities. Continuous monitoring will be conducted to ensure availability and quality of service is maintained. In-person workshops will help streamline the system deployment locally.

The pre and post-treatment surveys will indicate trustworthiness of the system and its efficacy at an individual level. Digital trace data will be gathered from the querying engine usage by individual users in local communities revealing the relevance of this system to their healthcare

journey in parallel with its deployment. Data collection will be IRB-compliant, anonymized, and limited to encrypted storage with local access only, similar to an approved IRB we have utilised to deploy and collect data for our WhatsApp-based health literacy chatbot (<https://sakhi.simppl.org>) in Bangladeshi villages, and our Indian health data collection system deployed in Jalgaon (<https://bit.ly/aadhar-healthworker-app>).

How do you plan on making your intended research be applicable for decision-making either by industry or government?*

By designing a scientifically rigorous study with replicable components we will ensure our system is possible to deploy in different locations. We have secured letters of support for our past work from the former CEO of the Natl. Health Authority of India, reputed Indian Police Services Officers, and collaborate with a number of academics undertaking field research in India. We are in touch with four other Indian nonprofits who have provided telemedicine services and camps to over 50,000 members of rural populations. Dr. Mehta is a Board of Studies Member at D.J. Sanghvi College of Engineering, and works with Shri Vile Parle Kelavani Mandal, an FCRA-compliant charitable trust running 50+ educational institutions and notably a 600-bed specialty hospital near Jalgaon, serving a large number of local towns and villages creating a conducive situation to disseminate and deploy our experiment at scale, if our findings validate the hypotheses. Finally, we have presented our work globally to the UK, Swiss, Danish, and Finnish embassies in the US and have members of these embassies on the Board of Directors at SimPPL, allowing us to offer a relevant Global South perspective to their roundtable discussions where we are frequent participants. Dr. Mehta is also a Community Leadership Council Advisor to the Integrity Institute comprising global trust and safety professionals allowing the project to find partners across industry and civil society for privacy and integrity professionals.

Please describe the expected deliverables for this project.*

1. Research output: 5 papers and talks (at conferences, workshops, and invited talks to policymakers, academic faculty)
2. Dissemination to Audiences: 500+ combined attendees of our talks, site visitors, sign-ups to our newsletter, and viewers of our presentations.

3. (optional) Collaborations: 2+ follow-up conversations and industry collaborations with NGOs and nonprofits aligned with the system.

4. (optional) Reusable technical system: Creation of an open-access offline-querying system possible to deploy by industry partners in remote villages, conversing multilingually about specific and hand-curated healthcare topics.

Indicators and Measurements Section

What specific indicators will you track and measure along the way?

Please select at least 1 indicator (maximum of 3) and provide your target number and data collection method for each.

Select Indicator 1:* **Number of research findings disseminated to academics, policymakers, technologists, or other stakeholders**

Indicator 1 - Target:* 500

Indicator 1 - Data Collection Method:*

How and at which frequency will you collect data for this indicator (please describe which data collection method(s) you will use: e.g. focus group, interview, survey, participant list, form, observation, etc and ensure that this is in line with what you've put in your proposal)

Research findings will be disseminated through blog posts and talks that we will deliver about our work to a civil society audience, and members of academia and industry. Success in engaging with audiences will be measured from the count of SimPPL website visitors, newsletter sign-ups, social media engagement, system access requests, and follow-up meetings as a result of our work.

Select Indicator 2: (Optional) **Number of research products [papers, talks, conferences, workshops] developed in the duration of this grant**

Indicator 2 - Target 4

Indicator 2 - Data Collection Method

How and at which frequency will you collect data for this indicator (please describe which data collection method(s) you will use: e.g. focus group, interview, survey, participant list, form, observation, etc and ensure that this is in line with what you've put in your proposal)

We will present research products described in the workplan in 2 global north and 2 global south focused conferences. We will aim for intersectional venues with diverse policy and healthcare audiences that include the Stanford Trust and Safety Research Conference (we presented earlier in 2022), Machine Learning for Healthcare (ML4HC), and demo tracks for larger venues such as Conference on Healthcare Inference and Learning (CHIL).

Select Indicator 3: **(Optional)** **Number of collaborations with academics, industry partners and / or other researchers evidenced by co-creation, resource pooling, interdisciplinary approach** Other

Indicator 3 - Target:

Indicator 3 - Data Collection Method

How and at which frequency will you collect data for this indicator (please describe which data collection method(s) you will use: e.g. focus group, interview, survey, participant list, form, observation, etc and ensure that this is in line with what you've put in your proposal)

Soliciting industry collaborations through publication of at least one blog post (e.g. Tech Policy Press) and report to civil society orgs. and policymakers at the embassies of Denmark and UK (we started working with the United Nations in a similar manner, and have presented to all these embassies before). Talks at universities in India (Mumbai University, Indian Institute of Science) and the US (MIT, Boston University) will help identify academic collaborators (we are presenting our healthcare work in Bangladesh to the World Bank, similarly from an academic event). We expect these channels will improve our dissemination of findings and increase the collaborations developed out of this project.

	<p>Funding Information</p> <hr/> <p>Do you have other funds secured or requested for this project?* Yes No</p> <p>Are you currently receiving or have you in the past received any other funding from the Internet Society or Internet Society Foundation?* Yes No</p> <p>Person Person Person</p>
Cc	Person
Bcc	Person
Subject	

Awards for the SimPPL project (<https://simppl.org>) fiscally sponsored by One Fact Foundation (OFF); Dr. Swapneel Mehta (founder, SimPPL) and Dr. Jaan Altosaar (CEO, OFF).

Mozilla / USAID Responsible Computing Grant India - USD 25,000 (2024)
MIT Delta V - co-lead Dr. Swapneel Mehta, upto USD 20,000 (2024)
MIT PKG IDEAS Innovation Challenge - co-lead Dr. Swapneel Mehta, USD 12,000 (2024)
Goethe Institut AI2Amplify Award - co-lead Dr. Swapneel Mehta, EUR 15,000 (2023)
Google Research exploreCSR Award - co-PI Dr. Swapneel Mehta, USD 32,000 (2023)
Patient Rights Advocate Inc. Award - PI Dr. Jaan Altosaar, USD 100,000 (2023)
ADL Belfer Fellowship - PI Dr. Swapneel Mehta, USD 40,000 (2023)
Wikimedia WikiCred Award - lead Swapneel Mehta, USD 10,000 (2022)
NYC Media Lab AI and Local News Challenge - lead Swapneel Mehta, USD 7500 (2021)

<https://cloud.google.com/blog/topics/public-sector/new-google-research-innovators-tackle-wide-range-challenges>
<https://www.goethe.de/prj/aia/en/program/wt/aig.html>
<https://misinfocon.com/introducing-arbiter-auditing-the-spread-of-news-in-online-information-ecosystems-5ba39af5789c>
<https://www.wikicred.org> (search for arbiter)
<https://engineering.nyu.edu/news/nyc-media-lab-announces-inaugural-cohort-ai-local-news-challenge>
<https://www.adl.org/belfer-fellows>

Dr. Swapneel Mehta (SM), Founder, SimPPL.
Dr. Jaan Altosaar (JA), CEO, One Fact.

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<https://cloud.google.com/blog/topics/public-sector/new-google-research-innovators-tackle-wide-range-challenges>
<https://www.goethe.de/prj/aia/en/program/wt/aig.html>
<https://misinfocon.com/introducing-arbiter-auditing-the-spread-of-news-in-online-information-ecosystems-5ba39af5789c>
<https://engineering.nyu.edu/news/nyc-media-lab-announces-inaugural-cohort-ai-local-news-challenge>
<https://www.adl.org/belfer-fellows>

Please demonstrate your organization's equivalency to a U.S. 501c3 charitable organization.*

Details on how to demonstrate eligibility can be found [here](#). In addition to demonstrating that you are organized for exclusively charitable purposes, please ensure you describe 1) whether you engage in lobbying; and, 2) how your governing documents address the usage of your organization's assets upon dissolution, and whether your activities benefit private persons or non-charitable organizations. If you are uploading a copy of your governing documents, please indicate the relevant sections that we should refer to.

IRS 501(c)(3) designation and governing documentation is provided in the attachment. We do not engage in lobbying.

One Fact Foundation is organized exclusively for charitable, educational, and scientific purposes, namely to reduce disparities in health outcomes for marginalized populations and improve overall patient health. The Foundation will achieve its charitable, educational, and scientific purposes by developing accessible tools and resources for use by healthcare professionals, patients, and health policy researchers seeking to identify and address the causes of healthcare inequities. The Foundation's goal is to empower patients by making healthcare information freely-accessible, easy to understand, and transparent. The Foundation's activities are conducted year-round in the United States by its officers, directors, employees, and volunteers, and are funded by foundation and university grants and individual donations.

Please describe how most of your organization's purpose and activities are focused on or related to the Internet.*

A safer and secure internet should be accessible to one and all, in their preferred language, delivering trustworthy information. Healthcare information in particular has a direct impact on the quality of lives, and is an organizational priority for us. One Fact Foundation has fiscally sponsored SimPPL since 2022. Through their collaboration, OFF and SimPPL help marginalized communities access healthcare information in a safe and secure manner. We advance trust in online information and measure the factors that impede internet access with the specific focus on healthcare and misinformation. SimPPL operates in India identifying and supporting partner nonprofits to advance their healthcare contributions through technological enhancements. In line with One Fact's mission of advancing transparency in healthcare, SimPPL has developed an open-access system to enable Indian and Bangladeshi women access menstrual health and hygiene information launched as a WhatsApp chatbot called Sakhi. This system won awards and support from MIT and is scheduled for presentation to the World Bank, as it launches two pilots in Bangladesh. SimPPL collaborates with Aadhar Bahuddeshiya Sanstha in India to improve the daily lives of healthcare workers who travel physically to remote villages, collecting handwritten

census and healthcare information from target audiences, with up to 17 pages of documentation per home. By replacing this with an offline-friendly digital forms application developed by SimPPL, the nonprofit will achieve an order of magnitude speedup and cost reduction in the efforts of healthcare workers, drastically improving the delivery of their services. SimPPL also works with a number of newsrooms in Germany, the US, Bangladesh, and Mongolia, supporting fact-checking professionals and information integrity efforts to mitigate misinformation and improve trust on the social internet. Notably, SimPPL is staffed entirely by undergraduate and graduate students from the Global South whom it has educated and trained in responsible computing and AI/ML for free over the past seven years, in India. It is led by Dr. Swapneel Mehta, supported by awards and grants from Google, Mozilla, Amazon, and others. The 15 team leads and 60 members at SimPPL are now spread across several countries globally.