AWARDS SCHEME FOR EXEMPLARY IMPLEMENTATION OF e-GOVERNANCE INITIATIVES

**NAME OF CATEGORY:** **USE OF ICT FOR DEVELOPMENT BY NON-GOVERNMENT INSTITUTIONS**

1. **Coverage – Geographical and Demographic** :-

(i) Comprehensiveness of reach of delivery centres,

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| The initiative is an innovative intervention based on mobile phone technology (called mHealth) to help community based health workers (called ASHAs) and Primary Health centre (PHC) staff improve coverage of life saving, community based maternal, newborn and child health (MNCH) services towards reducing maternal, newborn, and child, mortality and malnutrition and effectively managing morbidities in predominantly tribal and rural communities. The intervention makes this possible by improving performance of ASHAs through better supervision, motivation and support. The mHealth intervention is named ImTeCHO which stands for “Innovative Mobile-phone Technology for Community Health Operations” and it is a joint initiative between the Department of Health and Family Welfare (GoG) and SEWA Rural. SEWA Rural, a voluntary service organization is providing medical, health and education related services to the rural, poor and tribal population of Bharuch, Narmada and surrounding districts in south Gujarat for past thirty three years.  ASHAs and PHC staff are primary users who deliver services to citizens; hence, they are considered as delivery centres here. Comprehensive reach of delivery centres are as following (1) ALL pregnant women, newborn babies and children under the age of two years in project villages are enrolled through ImTeCHO mobile phone application and reached by ASHAs. Such highest level of reach is possible because each ASHA, being native of the village, have complete information about all pregnant women and children of the village. In a recent study to check comprehensiveness of reach of ImTeCHO, it was found that 100% of pregnant women and more than 95% of children were found to be enrolled in ImTeCHO in project area. (2) 98% of villages of project areas are covered under this project and there are functional delivery centres in each of above villages. (3) ImTeCHO application covers ALL community based maternal, newborn and child health services to be provided through ASHA and PHC staff. (4) ImTeCHO application has features relevant for all kinds of community based health workers including ASHAs, nurses, medical officer and other PHC staff.  Considering above facets, ImTeCHO project has quite a comprehensive reach through its delivery centres in form of ASHAs and PHC staff. Though at present only 110 health workers, including village based ASHAs and PHC staff are using ImTeCHO mobile phone application everyday in a pilot phase, there is a huge potential to scale up this innovation to cover about 45 lack mothers and children residing in all 18,000 villages of Gujarat through about 37,000 ASHAs using ImTeCHO mobile phone application in coming years. |

(ii) Number of delivery centres

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| At present, “ImTeCHO” initiative is being implemented as pilot in two PHCs (47 villages) in high focus taluka of Jhagadia in Bharuch district since May 2013. In addition, same project is also recently introduced in another 40 villages of Kaprada taluka in Valsad dist. Thus there are in total 110 delivery centres. (in form of 90 ASHAs, 8 emergency responders, two medical officers, 10 nurses) are in place at present. |

(iii) Geographical

(a)National level – Number of State covered

One ( Gujarat)

(b) State/UT level- Number of District covered

2 districts,(Bharuch and Valsad)

(c) District level- Number of Blocks covered

Two Blocks (Jhagadia and Kaparada)

Please give specific details:-

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| In about a year, total 6,500 clients (tribal pregnant women, newborn babies and children) have received services through this project until July 2014. ImTeCHO is currently being used by **90 ASHAs in 90 villages (population: 90,000) and three PHCs of two tribal districts (Bharuch and Valsad) of Gujarat**. |

(iv)Demographic spread (percentage of population covered)

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| All pregnant women, newborn and children below the age of 2 years are covered in project area. In a recent study to check comprehensiveness of reach of ImTeCHO, it was found that 100% of pregnant women and more than 95% of children were found to be enrolled in ImTeCHO in project area.  However, there is a huge potential to scale up this innovation to cover about 45 lack mothers and children residing in all 18,000 villages of Gujarat through about 37,000 ASHAs using ImTeCHO mobile phone application in coming years as mentioned earlier. |

2. Situation Before the Initiative (Bottlenecks, Challenges, constraints etc with specific details as to what triggered the Organization to conceptualize this project):

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| India has the highest burden of maternal, newborn and child mortality and malnutrition in the whole world and may not achieve Millennium Development Goals (MDG) four and five related to reduction in maternal and child mortality. Fortunately, there are now proven community based interventions available to improve mortality and malnutrition. However, the challenge is how to implement such proven interventions at scale with highest possible coverage and quality in near future so that Millennium Development Goals four and five can be achieved in India.  To facilitate implementation of the proven interventions, a new cadre of village based Community Health Workers, called Accredited Social Health Activist (ASHA), has been created under the aegis of the National Rural Health Mission (NHRM). Many of the community based maternal, newborn and child health (MNCH) interventions are expected to be delivered or facilitated by ASHA during her scheduled home visits.  Unfortunately, evaluations examining ASHA’s performance have noted that **coverage of selected MNCH interventions to be implemented by ASHA is suboptimal.** Some of the critical reasons for low coverage is **inadequate support and supportive supervision of ASHAs, inadequate information about performance, delay and insufficient payment of incentives, poor knowledge and skills of ASHAs, quality of training, and complexity of tasks to be performed** [Reference: (1) Columbia University. Improving the performance of Accredited Social Health Activists in India: Working papers series. Mumbai. 2011, (2) National Health Systems Resource Centre (NHSRC) and National Rural Health Mission (NRHM). ASHA: Which way forward...? New Delhi, 2011, (3) National Health Systems Resource Centre (NHSRC) and National Rural Health Mission (NRHM). An update on ASHA programme. New Delhi, January, 2013].  Also, timely identification of sickness / complications and risk screening among large numbers of maternal, newborn and child cases is much to be desired and many do not reach to appropriate health facility. **The non-availability of real time information** about such cases to respective Auxiliary Nurse Midwife (ANMs) and medical officers has limited their ability to respond; hence, such complicated cases at home tend not to receive appropriate care.  Above challenges resulting in **sub optimal performance of ASHAs and health workers are some of the important reasons for high rates of maternal, newborn and child mortality and malnutrition in India.** |

**3. Scope of Services/Activities Covered**(Extent of computerization in terms of number of services computerized, Process that have been re-engineered, Services which depends on these processes, Analysis/re-design of process workflows –before (as is) and after (To be) reengineering , level of automation (number of services computerized) #

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| This project, called ImTeCHO, covers following maternal, newborn and child health services to be delivered through ASHAs, nurses and staff of Primary Health centre (PHC) within government system.   1. All preventive and curative services to be provided to pregnant and post partum women at community level 2. All preventive and curative services to be provided to newborn babies at community level, including treatment of premature babies and serious infections. 3. All preventive and curative service provided to young children under the age of two years at community level, including treatment of diarrhoea and pneumonia 4. All services aimed at reducing malnutrition among young children at community level.   **Relevance of application for e-governance:**  ImTeCHO project uses mobile phone technology to **improve delivery of maternal, newborn and child health services** to be provided by ASHAs and PHC staff. It assists block, district and state level health officials to effectively monitor community level health workers.  **G2C**: ImTeCHO improves coverage and quality of health services to be received by citizens.  **G2G:** ImTeCHO provides support (job-aid) to all ASHAs, PHC staff and higher level health officials to make their respective job easier and effective. |

4. Strategy Adopted

(i) The details of base line study done,

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| There have been 2 large evaluations of ASHA program since its initiation. Following findings are based on these evaluations and SEWA Rural’s three decades of grassroots experience; both these resources were extensively used for developing problem statement and subsequent mobile phone application.  **Problem-statement one: Low coverage of maternal, newborn, and child care interventions to be delivered or facilitated by ASHAs**.,[[1]](#footnote-1) [[2]](#footnote-2)  Coverage of selected interventions among post-partum women as per ASHA evaluations were: at least three ANC visit (58%), counselling for postpartum care (34%), escorting to hospital for delivery (31%), visit on the day of birth (34%), assisting with early breastfeeding (28%), and identifying sick newborn (39%) (Table 1 in Annex-1).1 Coverage of interventions is even worse for rural and tribal area.[[3]](#footnote-3),[[4]](#footnote-4)  National Health Systems Resource Centre (NHSRC) and National Rural Health Mission (NRHM). ASHA: Which way forward...? New Delhi, 2011.  2 Columbia University. Improving the performance of Accredited Social Health Activists in India: Working papers series. Mumbai. 2011  3 District Level Health and Facility Survey-3 (DLHFS-3), Gujarat  4 SEWA Rural. Report on Family Centered Safe Motherhood and Newborn Care Project. Jhagadia, 2011  Reasons are:  1. Inadequate supervision and support.**Error! Bookmark not defined.**  2. Poor skills and training of ASHAs**Error! Bookmark not defined.**- for counselling, identifying and overcoming barriers for behaviour change.  3. Inadequate understanding about ASHA’s roles.**Error! Bookmark not defined.**  **Problem-statement two: Low coverage of care among complicated maternal, newborn and child cases**  Large proportion of neonates and pregnant women with complications do not seek care at health-facility. 3,[[5]](#footnote-5),[[6]](#footnote-6),[[7]](#footnote-7) 60% of women with any antenatal or postnatal complications sought care in Gujarat in 2007.3 46% of newborns with complications did not get any care in a study conducted at Wardha.[[8]](#footnote-8) Large numbers of complicated cases who stay home do not receive any care due to non-availability of qualified health-personnel.8  Reasons are:   1. Various barriers for care-seeking at household level, such as insufficient advanced planning to deal with complications, knowledge about danger signs, etc.5,6,[[9]](#footnote-9),[[10]](#footnote-10) 2. Difficult for ASHA to identify, triage, and manage complicated cases that are unable to go to health-facility.**Error! Bookmark not defined.** 3. ANMs do not receive real-time information about cases with complications.   Potential mHealth-solutions to mitigate causes related to problem-statement one and two are:   1. Automated schedule, task-list and home-visit forms on mobile-phone based on existing roles. 2. Mobile-phone based home-visit forms with in-built checklists to address barriers for behaviour-change (e.g. birth-preparedness) and algorithms that would provide diagnosis, risk-stratification and management guidelines.   5 Bang AT, Bang RA, Morankar VP, et al. Pneumonia in neonates: can it be managed in the community? *Arch Dis Child* 1993; **68:** 550–56.  6 Sutrisna B, Reingold A, Kresno S, et al. Care-seeking for fatal illness in young children in Indramayu, West Java, Indonesia. *Lancet* 1993; **342:** 887–89.  7 Bhandari N, Bahl R, Bhatnagar V, Bahn MK. Treating sick young infants in urban slum setting. *Lancet* 1996; **347:** 1174–75  8 Dongre AR, Deshmukh PR, Garg BS. Perceptions and health care seeking about newborn danger signs among mothers in rural Wardha. Indian J Pediatr 2008;75:325-329.).  9 Kumar R, Jaiswal V, Tripathi S, Kumar A, Idris MZ. Inequity in health care delivery in India: the problem of rural medical practitioners. Health Care Anal 2007;15:223-233.  10 Save the children, 2008. http://www.savethechildren.org.uk/news/2008/02/the-life-or-death-lottery-inequality-and-injusticein-the-fight-to-save-childrens-lives (accessed November 29, 2011).   1. Multimedia to improve counselling for health-promotion and danger-sign recognition. 2. Automated-alert would go to an ANM instantly if a complicated case is identified by ASHA during home-visit.   **Problem-statement three: Inadequate supervision and support to ASHAs.**Error! Bookmark not defined.**,**1  There is a lack of regular and reliable supervision.**Error! Bookmark not defined.** 87% of ASHAs reported that there was lot of delay in payment of incentives and 25% of ASHAs felts that they are not incentivized enough.**Error! Bookmark not defined.**,[[11]](#footnote-11) Replenishment of supplies is often erratic.**Error! Bookmark not defined.**,1  Reasons are:   1. Lack of clear understanding about how ASHAs’ performance will be recorded, tracked and reviewed.**Error! Bookmark not defined.** 2. Manual process of managing supplies and calculating and disbursing performance-based-incentives to ASHAs is difficult.**Error! Bookmark not defined.**,1,11 3. Inadequate information to track complicated cases.   Potential mHealth solution is a web-interface for medical-officer which will have:   1. Compiled reports regarding performance, incentives, and supplies based on completed task recorded by ASHAs on mobile-phone. 2. Tools to manage incentives and supplies.   Information about high-risk cases daily. |

(ii) Problems identified

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| Following table lists problems identified, and solutions offered by ImTeCHO to overcome these problems.   |  |  |  | | --- | --- | --- | | **No** | **Problems identified and its reasons** | **mHelath solutions offered by ImTeCHO** | | A. Low coverage of MNCH interventions to be provided or facilitated by ASHAs. | | | | 1 | Poor skills of ASHAs ( Do not remember the algorithm, triage system , poor counseling skills, inadequate training) | Use of checklist, images, videos (for common counseling subjects), algorithms, automated risk stratification. | | 2 | Inadequate understanding about ASHA’s roles and responsibilities | Automated scheduling and reminder alerts based on prescribed roles and responsibilities | | 3 | Poor motivation due to inadequate incentives considering work done by ASHAs | Records of services provided by ASHA is be automatically stored, which is used to calculate incentive she deserves on time. | | 4 | Irregular supplies | Automated supply management | | The solution exchange for maternal and child health community. Payment of incentives to ASHAs- bottlenecks and good practices. Available from [*ftp://ftp.solutionexchange.net.in/public/mch/cr/cr-se-mch-06071201.pdf*](ftp://ftp.solutionexchange.net.in/public/mch/cr/cr-se-mch-06071201.pdf) *(*Accesses on 12 September, 2012) | | | | 5 | Barriers to behavior change at household level | Checklist to assess barriers and reminder to address those barriers | | B. Low coverage of care among complicated maternal, newborn and child cases | | | | 6 | Difficult for ASHA to identify and triage complicated cases | Mobile phone equipped with algorithms provides diagnosis and risk stratification based on information entered by ASHA | | 7 | Presence of various barriers (such as lack of knowledge about seriousness of morbidity, advanced planning to deal with complications etc) reduces the chances of referral of complicated cases to health facility | Counseling videos about danger signs is available in mobile phone to increase knowledge about complications  Use of checklist to encourage households to plan for complications (complication readiness) | | 8 | Difficult for ASHA to manage selected complicated cases at home (who refuse to get referred), especially complicated newborn cases due to complexity of algorithms **Error! Bookmark not defined.** | Mobile phone equipped with algorithms (based on ASHA modules) provides management guidelines to ASHA for selected newborn and maternal complications | | 9 | ANM and medical officer do not know in real time about mothers and newborns with complications | Automated alert goes to an ANM and medical officer instantly if complicated case is identified by ASHA during home visit; thus, ANM can plan to visit such cases in near future | | C. Inadequate supervision and support to ASHAs | | | | 10 | Effort intensive process of managing supplies and calculating and disbursing incentives to ASHA | System sends supply alerts to ASHAs and sends information to PHC staff to re-supply stocks when necessary. Electronic record of ASHA’s performance along with automated calculation of incentives reduces efforts required at PHC staff level. | | 11 | Lack of real time information about complicated cases | List of complicated cases is available on web interface as soon as complicated case is diagnosed by ASHA or ANM | |

(iii) Roll out/implementation model,

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| actively facilitating. The delivery of intervention is made possible by team consisting of following individuals.  Every existing ASHA (within government system) is given a low cost phone (costing approximately Rs. 4,500) which is General Packet Radio Service (GPRS) enabled and have multimedia feature available. The ImTeCHO mobile-phone application will be downloaded on the mobile which have various home-visit forms which are described below. ASHA will login the mobile-phone application everyday and start making home-visits based on the schedule indicated through ImTeCHO application. ASHA fills out forms on her mobile during home visits. Data is sent using GPRS network to a server where data is stored. In case GPRS is not available, data is stored in mobile-phone and it is sent to server when GPRS becomes available. Data entry time is “time stamped” to ensure accountability.  ASHAs use mobile phone as job aid to perform her already assigned responsibilities to effectively deliver antenatal, intrapartum, and postpartum care to mothers as well as essential new born care, neonatal, infant and child care alongwith counselling and promoting healthy behaviors and managing cases with complications. ASHAs will come to PHC for monthly review meetings. She will report any technical problem to mHealth facilitator.  The job-aid components incorporated into mobile phones which include scheduling, Behavior change communication (BCC), Diagnosis and patient management will assist ASHAs to effectively carry out her responsibilities. Every year, her clients includes 10-15 pregnant women, 10-15 newborn babies and 20-30 children under the age of two years considering average population of 1,000.  ASHAs will be supervised by ASHA facilitators (AF) and ANMs who will use information available at web interface at PHC Head quarter as job-aid to supervise and support ASHAs. Each AF facilitates 10-12 ASHAs by supervising and providing logistic supports them. Each ANM oversees 4-6 ASHAs and provides patient care support. ANMs will receive active assistance from respective ASHAs during the conduction of monthly VHND so that appropriate MCH services are delivered to all the eligible beneficiaries. In addition ASHA will also enter into her mobile information about blood pressure, haemoglobin, per abdominal examination, weight and urine examination as recorded by the ANM.  Each ANM will receive SMS every morning based on complicated cases identified by ASHAs over last 24 hours through the diagnosis and patient management component available in mobile. ANM will make home visits for cases with severe complications, confirm diagnosis, assess the status of the patient and try to convince household to refer the case a health facility. In case the family is unable to go to health facility then ANM will provide treatment on the spot. Such treatment would include providing counseling, giving drugs, including approved antibiotics.  Medical officers will be responsible for tracking of high risk cases on daily basis in addition to presiding over routine monthly ASHAs meeting using various reports made available through ImTeCHo web interface. Monitoring of selected indicators by higher level of program managers (at block, district, and state) will also be possible. The medical officer will assess performance of ANMs and ASHAs during these meetings in addition to supporting them in form of addressing any supply issues and payment of incentives. Complicated cases will be discussed during these meetings.  PHC support staff will use web interface to manage incentives and supplies. The staff will review and edit monthly ASHA activity report which will be used by ImTeCHO to automatically calculate incentives. The staff will enter information in web interface about payments made to ASHAs. Similarly, information about status of supplied and any “stocked out” items will be readily available on web. PHC clerk is usually the nodal person for incentive management for ASHAs, while a medical officer is over-all in-charge of clinical, and administrative matters at PHC level.  **Facilitation by SEWA Rural team:** SEWA Rural will train and empower entire PHC staff including ASHAs and FHWs with appropriate training in use of mobile phone technology and hand holding in the beginning. It is expected that eventually, the medical officer of respective PHC will be able to lead the project and successfully implement in his / her area on ongoing basis.    SEWA Rural staff will be available to facilitate and coordinate smooth implementation of the project by existing government staff and will primarily look after systematic conduction of Implementation Research. Various house-keeping functions have been identified for optimal delivery of this technology-intensive intervention. Such housekeeping functions includes troubleshooting with mobile phone application and web-interface, assisting users to utilize data for facilitating their responsibilities, and identify critical step break-down and correct it. These housekeeping functions are carried out by a new cadre of worker, named ImTeCHO facilitator who is a SEWA Rural employee. He (IF) will be first contact for ASHAs and other users to report any problem with mobile phone/application. IF will be based at block level but will NOT be involved in patient care or monitoring tasks and will not get in existing working arrangement within the PHC system.  Some of the specific tasks that SEWA Rural’s IF will undertake are:   * First contact person in case of any technical problems encountered by any users (ASHA, PHC staff) * Add manage migration/duplicate cases/append appending data, managing users, managing multimedia etc * Attend PHC meetings for a brief time to troubleshoot any problems with mobile phones. * Remote supervision of ASHAs through phone. * Occasional field visit to those ASHAs whose performance parameters within ImTeCHO is consistently poor. * A call center will assist ASHAs to manage high risk cases over phone. SEWA Rural’s staff will NOT conduct field visit to manage high risk cases.   SEWA Rural’s technology partner - Argusoft India Ltd, provides required support for trouble shooting and maintenance.  **Change management** is an important part of delivery of intervention. “Change management is an approach to transitioning [individuals](http://en.wikipedia.org/wiki/Individual), [teams](http://en.wikipedia.org/wiki/Team), and [organizations](http://en.wikipedia.org/wiki/Organization) to a desired future state”[[12]](#footnote-12). We anticipated resistance among ASHAs and PHC staff towards use and uptake of ImTeCHO because it involved a significant change in their working environment due to use of technology; hence, efforts required to reduce and manage resistance would be required. Factors which motivate ASHAs were identified and processes were established to influenze these factors so that ASHAs and PHC staff realize value for using ImTeCHO. Most importantly, benefits of using ImTeCHO need to be communicated to ASHAs and PHC staff repeatedly. Their participation towards implementing and refining ImTeCHO through iterative process make them partners in bringing the “change”. This coupled with encouragement from higher and local health administration for which close coordination with them was needed.  The intervention is rolled out in three phases:  Phase 1: Preparations for training and subsequent implementation  A detailed checklist is prepared and used to guide preparations; the checklist includes important preparatory tasks that must be completed for conducting training and implementation. This include mapping of intervention area for GPRS connectivity, obtaining data about all health workers to  Kotter, J. (July 12, 2011). ["Change Management vs. Change Leadership -- What's the Difference?"](http://www.forbes.com/sites/johnkotter/2011/07/12/change-management-vs-change-leadership-whats-the-difference/). *Forbes online*. Retrieved 9/3/2014  create user profile in ImTeCHO system, orienting all local level staff along with community leaders about ImTeCHO, procuring mobile phones with SIM cards, preparing mobile phones (downloading application, videos, installing vernacular fonts etc), getting training site ready (mobile connectivity, logistics such as meals, lodging etc) etc.  Phase 2: training and on-the-field mentoring of ASHAs and PHC staff  ASHAs receive refreshers training for three days (ASHA module 6 and 7), followed by five days training for use of ImTeCHO mobile phone application; class-room training would be followed by on-the-field mentoring by trained mentors. Every ASHA is given a low cost phone (costing Rs. 4500/) which will be General Packet Radio Service (GPRS) enabled. A separate training application will be used for practice. Mentoring is guided by another checklist and each ASHA would require two to four mentoring visits. Every ASHA undergo a certification test to assess her capacity to use ImTeCHO application. PHC staff receive two days training once ASHAs are accustomed to using ImTeCHO application.  Phase 3: stabilization and maintenance of delivery of intervention by ASHAs and PHC staff with facilitation by ImTeCHO facilitator whose role has been described above. The call center contacts and manages all high risk cases identified by ASHA through ImTeCHO application. All other SEWA Rural staff withdraw from delivery of intervention except attending review meetings, performing administrative functions (managing migration, multimedia, users etc) and facilitating any inputs required by IT provider to keep application running (eg. application updates etc). |

(iv) Communication and dissemination strategy and approach used.):

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| Communication with community: Community support is vital for community based projects such as ImTeCHO. Pamphlets were created and distributed among project villages. Details of the project was shared with community advisory board of SEWA Rural which is made of local leaders. A “Husbands’ get to gather” was organized to take ASHAs’ spouses’ confidence.  Communication with ASHAs, PHC staff: An orientation meeting with PHC staff was organized before initiating the project to show how ImTeCHO would assist them. ImTeCHO facilitator attends monthly PHC meeting to coordinate with PHC staff. ImTeCHO’s “Announcement” feature enalbles mass communication to ASHA as well. Users can upload important announcements and share with other ASHAs. A monthly newsletter is produced and distributed among all users and district level officials to highlight positive case studies.  Communication with district and state level government officials: Regular meetings are organized with district and state level officials, including commissioner of health, MD- NRHM, officials at commissioner’s officer, district development officers, collectors, district health officer etc. monthly emails are used to share performance reports.  Communication with Voluntary sector and Civil Service Organisations: Details about ImTeCHO has been shared with other NGOs and Civil Service Organisations during the annual meeting of Jan Swasthya Abhiyan – Gujarat held at Ahmedabad.  Communication scientific community: **An Advisory Committee consisting of scientific community, government officials, and representatives from SEWA Rural has been formed. Salient features of the ImTeCHO initiative was shared in the first meeting and suggestions were sought.** Scientific research studies are conduced and documented to share with scientific community. Presentations have been made at the Harvard University/World Health Organization at Boston, Center for Innovation in Public Services (CIPS) at Raipur, Chhattisgarh.  Dissemination among general population: Press-notes are published in newspapers and magazines. Article highlighting the achievements of ImTeCHO initiative with positive comments from different stake holders has been recently published gujarati in the 11th Aug. issue of Chitralekha. |

5. **Technology Platform used-**

1. Description,

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| The ImTeCHO mobile phone application is powered by ArguSoft India Ltd's mAID platform. It was customized for SEWA Rural and further extended with collaborative domain knowledge inputs from SEWA Rural experts. Argusoft India Ltd has a long history of providing effective and scalable mHealth solutions in India and abroad. The mAID platform is one of their time tested and proven platforms for mobile based public health initiatives  The Web application uses PostgreSQL version 8.4 on the server side. The Mobile module runs on any Android Device (ver 2.0 and above) and uses ORMLite for local data persistence on the mobile device and GPRS for encrypted data transfer between the mobile and the central server. All databases used are in the are open-source domain RDBMS. The Database for the web-application is mounted on a Linux Server – Ubuntu Version 12.04 (Long term support version). The Webserver used for the Web Application is Glassfish v3.0. PostgreSQL 8.4 is used as the database on the server This is a production quality Java application-server that is in the Open Source. The Web-application is accessible thru the internet while the Mobile Devices use 2G GPRS network for data synch. |

1. Interoperability

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| The web applications expose web services for interoperability with the mobile application module. The system is built on a modular architecture with well-defined interfaces that are extensible and interoperable with other systems for data exchange |

1. Security concerns

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| Spring Security secures the application layers in the web module. All sensitive data that are stored and transmitted are encrypted. The application login is protected by a password mechanism and application install follows a full handshake PIN verification system. |

1. Any issue with the technology used

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| The application software has been used since the project inception in May 2013. There has not been any performance or reliability issue that was faced with the technology solution. |

1. Service level Agreements(SLAs) (Give details about presence of SLA, whether documented, whether referred etc. #)

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| No SLA has been documented at this point of time nor has any need arisen to refer to such terms. |

**6. Adherence to Service Level Agreement (SLA)** – Give details about presence of SLA whether documented, whether referred etc, certificate from user department is mandatory #)

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| No SLA has been documented at this point of time nor has any need arisen to refer to such terms. |

**7. Citizen Centricity** (Give specific details on the following#)

(i)Impact on effort, time and cost incurred by user,

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| Citizens (pregnant women, children) receive essential maternal and child care related services including counseling through multimedia from ASHAs at no cost to them. It is **free** evidence based **service available at door steps to citizens** through ASHAs, nurses and doctors with the help of innovative mobile phone based ImTeCHO technology. . |

(ii) Feedback/grievance redressal mechanism,

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| A **call center** has been established at SEWA Rural to address concerns of ASHAs and other users. A call log is maintained at ongoing basis and the issues are addressed immediately. The register is reviewed periodically by program manager. |

(iii) Audit Trails,

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| Two kinds of audit trails are kept (1) to keep **track of services provided by ASHAs and PHC staff.** The ImTeCHO system records and compiles services provided to every citizen with details of time and name of service provider in a dynamic beneficiary case file. A random checking is done by a auditor to check truthfulness of information entered by users. (2) **Financial audit trail:** ImTeCHO contains a feature on web interface to record and track financial transaction towards payment of incentives to ASHAs. It records payment according to PHC and ASHAs as separate file to detect any discrepancy and to ensure accountability of PHC staff. |

(iv) Interactive platform for service delivery,

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| ImTeCHO is an interactive platform to provide MCH related health services to respective beneficiaries at their door steps. The system is developed in such a manner that relevant information is shared among appropriate authority. For an example, once ASHA diagnosis a high risk case, immediately relevant medical officer and ANM is notified about this case. Similarly information about death, short supply and incentive management are also uploaded on web interphase in real time basis. |

(v) Stakeholder consultation

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| State holders include citizens, pregnant women, children, ASHAs, PHC staff, district/state level health officials, community members, SEWA Rural team. Details of consultation is noted above in Section 4(iv) Communication and dissemination strategy and approach used.  A qualitative study has also been conducted to assess the feasibility, acceptability and adaptability of ASHAs in using smart mobile phone with the new software. Similarly qualitative interviews and focus group discussion were also made with the mothers, family members and community to assess whether the content and messages depicted in multimedia were reaching satisfactorily or not. The results of both the studies are quite encouraging and appropriate modifications have also been incorporated as per their comments and suggestions. |

**8. User convenience** (Give specific details about the followings #)

1. Service delivery channels (Web, email, SMS etc.)

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| ImTeCHO is a mobile phone application which used GPRS connectivity to transfer data. Every ASHA will be given a low cost smart phone (costing approximately Rs.4, 500.) which will be General Packet Radio Service (GPRS) enabled and have multimedia feature available. The ImTeCHO mobile-phone application will be downloaded on the mobile which will have various electronic home-visit forms. ASHA will login the mobile-phone application everyday and start making home-visits based on the schedule indicated through ImTeCHO application. ASHA will fill out forms on her mobile during home visits. Data ill be sent using GPRS network to a server where data will be stored. In case GPRS is not available, data will be stored in mobile-phone and it will be sent to server when GPRS becomes available. Data entry time will be “time stamped”. |

1. Completeness of information provided to the users,

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| All clients are given complete information about all pertinent aspects of pregnancy and child care through nine videos.  All ASHAs and PHCs staff undergo five days training to receive complete information about the application and how to use it. |

1. Accessibility (Time Window),

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| ASHAs are available in clients’ village all the time and services of ImTeCHO is accessible 24x7, seven days a week, 365 days a year. |

1. Distance required to travel to Access Points

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| less than 10 minute walk as ASHAs are available in the same village as the clients. |

1. Facility for online/offline download and online submission of forms,

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| GPRS is required for online submission of data. Currently, more than 95% of villages have reliable GPRS availability. In case GPRS is not available, data will be stored in mobile-phone and it will be sent to server when GPRS becomes available. |

1. status tracking

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| Each scheduled task can be tracked by supervisors. Supervisrs can see list of pending tasks and details of tasks completed including time and duration of tasks. This is used for supervision and monitoring health workers. |

9**. Cost to user** (Give details about impact on Service charge paid, travel cost, indirect cost incurred by the user, number of payment channels, etc. #)

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| There is no cost incurred by direct beneficiaries of this initiative ie. Mothers, children and family members at large. ASHAs who are utilising this technology infact receive extra incentives for effectively making use of this new mobile phone technology in delivering the services. |

**10. Efficiency Enhancement** (Give specific details about the following #)

1. Volume of transactions processed,

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| Within a year, about 6,500 clients (tribal pregnant women, newborn babies and children) have received services through this project until June 2014. ImTeCHO is currently being used by 90 ASHAs in 90 villages and three PHCS of two districts of Gujarat. Each client received approximately 3 services from health workers through use of ImTeCHO mobile phone application and about 10 transactions per visit: So in total nearly 20,000 transactions have taken place during this period. These services include treatment for high risk conditions, health education to prevent serious diseases, vaccinations, and pre-natal check up.  However, there is a huge potential to scale up this innovation to cover about 45 lack mothers and children residing in all 18,000 villages of Gujarat through about 37,000 ASHAs using ImTeCHO mobile phone application in coming years. |

1. Coping with transaction volume growth

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| Coping with transaction volume growth needs technology and human resource preparedness. Fortunately, ImTeCHO is delivered through existing government health workers and no new addition is needed to be made towards it. However, significant preparedness is required for training and supporting large number of health workers using mobile phone application. SEWA Rural has already prepared team of trainers and implementation facilitators to cope up with volume growth.  Technology is developed in such a manner that it can support large number of users, including thousands of ASHAs. The reporting mechanism is built in such a way that it has been separated from the operational data and hence operational efficient is maintained. Appropriate use of Queues in the architecture ensures that the hardware does not crash in cases of simultaneous high request scenarios. |

1. Time taken to process transactions,

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| Here, we define transactions as a home visit by ASHAs to clients. Each home visits take about 12 minutes on an average to complete. ASHA has to complete the scheduled task by a predefined due date. Due date depends on priority of the task to be completed. Certain urgent tasks are completed on the same day and non-urgent task could be completed within 4 to 5 days. The collected data is immediately transferred to a server, if signal is available.  The actual transmission and processing time for the transactions is in the order of milli seconds since the data is completely coded. |

1. Accuracy of output,

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| More then 85% of diagnosis made by ASHAs using ImTeCHO are accurate, according to a recent study by SEWA Rural. Overall 80% of assigned tasks were completed by ASHAs. 75% of assigned PNC visits were completed by ASHAs. Average login rate (number of days ASHA logged in ImTeCHO (against expected) was approximately 90%. In a recent study, it was found that more than 90% of information entered by ASHAs regarding the condition of client was correct. |

1. Number of delays in service delivery

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| 70% of scheduled tasks are completed on time by ASHAs. The implementation team tracks delay in service delivery and provides appropriate feedback to ASHAs so that the delays could be prevented in future.  ASHAs fill out forms on her mobile during home visits. Data is instantly sent using GPRS network to a server where data is stored on real time basis. In case GPRS is not available, data is stored in mobile-phone and it is sent to server when GPRS becomes available. Data entry time is “time stamped”. |

**11. Problem Resolution and Query Handling**(Give details about availability of help desk, query resolution mechanism, single window resolution, interactive interface etc. #)

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| The ImTeCHO mobile phone application is powered by ArguSoft India Ltd's mAID platform. It was customized for SEWA Rural and further extended with collaborative domain knowledge inputs from SEWA Rural experts. Argusoft India Ltd has a long history of providing effective and scalable mHealth solutions in India and abroad. The mAID platform is one of their time tested and proven platforms for mobile based public health initiatives  The Web application uses PostgreSQL version 8.4 on the server side. The Mobile module runs on any Android Device (ver 2.0 and above) and uses ORMLite for local data persistence on the mobile device and GPRS for encrypted data transfer between the mobile and the central server. All databases used are in the are open-source domain RDBMS. The Database for the web-application is mounted on a Linux Server – Ubuntu Version 12.04 (Long term support version). The Webserver used for the Web Application is Glassfish v3.0. PostgreSQL 8.4 is used as the database on the server This is a production quality Java application-server that is in the Open Source. The Web-application is accessible thru the internet while the Mobile Devices use 2G GPRS network for data synch.  The web applications expose web services for interoperability with the mobile application module. The system is built on a modular architecture with well-defined interfaces that are extensible and interoperable with other systems for data exchange.  Spring Security secures the application layers in the web module. All sensitive data that are stored and transmitted are encrypted. The application login is protected by a password mechanism and application install follows a full handshake PIN verification system.  The application software has been used since the project inception in May 2013. There has not been any performance or reliability issue that was faced with the technology solution. |

**12. Innovation**(Give details on extent to which the service is unique compared to other similar services, impact on number of steps required, identification and removal of bottlenecks/irrelevant steps etc. #)

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| |  | | --- | | The project uses and implements mobile phone technology in three ways as following. **Mobile-phone as job-aid to ASHAs to increase coverage of maternal, newborn and child care** Every ASHA is given a low cost phone (costing approximately Rs. 4,500) which is General Packet Radio Service (GPRS) enabled and have multimedia feature available. ImTeCHO mobile-phone application have various home-visit forms which are described below. ASHAs fill out forms on her mobile during home visits. Data is sent using GPRS network to a server where data is stored. In case GPRS is not available, data is stored in mobile-phone and it is sent to server when GPRS becomes available. Data entry time is “time stamped”.  ImTeCHO mobile application have following features (see following figure):   * Scheduled alerts remind ASHAs to make recommended home-visits. * Home-visit forms having checklist based on existing forms and jobs that ASHAs need to complete. The checklists have reminders and algorithms to assess and address barriers to behaviour change of families (e.g. birth preparedness, complication readiness). * Multimedia (short video clips etc) helps ASHAs to improve quality of counselling. * Log cases to report un-expected events such as death, migration, early termination of pregnancy etc. * Administrative forms to streamline payment of incentives and supply management.  1. **Mobile-phone as job-aid to ASHAs and ANMs to facilitate care of cases with complications**   The ImTeCHO mobile-phone application is used in following ways.   * Mobile as diagnostic tool and risk stratification with help of checklist and In-built algorithms. * Tool to facilitate referral to health-facility (for calling emergency transport) * Notification alert is sent to ANMs once complicated case is identified by ASHA. * Tool to provide care by ASHA/ANM: By displaying customized management guidelines based on diagnosis to help ANM and ASHA manage complicated cases at home that are unable to go to health-facility. * Reminder to revisit complicated cases to ensure compliance with advised management.  **Web-interface as job-aid to medical-officer for supervising and supporting ASHA program** Web-interface is a computer screen where compiled data is available for medical officer. The system automatically organizes raw data received from ASHAs’ mobile-phones in to useful information (based on predefined logic). Computers with internet access are already in place in all PHCs in Gujarat which is used for accessing web-interface. The web-interface has following features.   * Monthly performance reports. * Tools to manage incentives and supplies. * Sending important announcements. * Tracking of complicated cases. * Individual case record.   **Components of ImTeCHO intervention**  **Mobile-phone as job aid to ASHA to increase coverage of MNCH interventions**   * Schedule reminder to ASHAs to make home visit * Home visit forms having checklist to remind scheduled tasks * Multimedia (embedded short videos, images etc) to improve counseling * Checklists to assess and address barriers to behavior change of families (e.g. birth preparedness, complication readiness) * Checklist to remind tasks to be performed during Village Health and Nutrition Day (VHND) * Log cases for un-expected events such as death, migration, early termination of pregnancy   **Mobile-phone as job aid to ASHA and ANM to facilitate care for mother, newborn and children with complications**   * Diagnostic tool: Checklist and In-built algorithms to identify mother or newborn with complications and automatic risk stratification * Tool to facilitate referral to functional referral facility (for calling 108/emergency transport etc) * Notification alert and schedule home visit for ANM once complicated case is identified by ASHA * Manage morbidity by displaying customized management guidelines on mobile-phone based on diagnosis to help ANM and ASHA manage complicated cases at home who refuse get referred to health facility * Checklist for ASHAs to identify minor morbidity and in-built algorithm to manage such morbidity (anemia, breast-feeding issues, LBW mgmt)   **Web interface for medical-officer to facilitate supervision and support to ASHAs**   * Performance reports * Monthly reports regarding outcomes, incentives and supplies * Supply management * Calculation and timely payment of performance based incentive to ASHAs * Sending bulk announcements * Daily follow-up of selected high risk cases   ImTeCHO | |

**13. Sustainability** (Give details about Self sustainability of these w.r.t Organization (hiring trained staff, training etc.), financial (Scope for revenue generation , Cost benefit analysis of the project etc. #)

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| **Technology used**  The full technology stack that has been used in the mobile as well as the web components are built on reliable open source and popular technologies. Community feedback as well as expert support is available for all the technologies that are used in the development of the mobile platform.  The ImTeCHO mobile phone application is powered by ArguSoft India Ltd's mAID platform. It was customized for SEWA Rural and further extended with collaborative domain knowledge inputs from SEWA Rural experts. Argusoft India Ltd has a long history of providing effective and scalable mHealth solutions in India and abroad. The mAID platform is one of their time tested and proven platforms for mobile based public health initiatives  The Web application uses PostgreSQL version 8.4 on the server side. The Mobile module runs on any Android Device (ver 2.0 and above) and uses ORMLite for local data persistence on the mobile device and GPRS for encrypted data transfer between the mobile and the central server. All databases used are in the are open-source domain RDBMS. The Database for the web-application is mounted on a Linux Server – Ubuntu Version 12.04 (Long term support version). The Webserver used for the Web Application is Glassfish v3.0. PostgreSQL 8.4 is used as the database on the server This is a production quality Java application-server that is in the Open Source. The Web-application is accessible thru the internet while the Mobile Devices use 2G GPRS network for data synch.  **User privacy, security of system and personal medical information**  Individual medical information is collected using mobile phone and is stored on server. This requires strict confidentiality of medical information. The application contains medical information of individuals and hence protected by high levels of data security. In view of this, the application accepts, transmits, processes and stores data using prudent security and data encryption practices as described below.   * 1. All data that is transmitted using GPRS from the Mobile Phone to the server and vice versa is encrypted. In addition, the data shall is also codified before encryption to provide an additional layer of obfuscation.   2. A high level of security is applied at the database level. The database server is protected by a firewall with strict access permissions such that there is no direct access to the database. Only the designated web application can connect to the database using a secured connection.   3. A web application firewall is used to protect the site against cross-site scripting vulnerabilities and web site vandalism. It also protects the data from SQL injection attacks as well   4. All sensitive data elements is encrypted and stored in the database. Also a level of indirection in the form of encrypted user identities is also present so that a person's personal information and their medical information can never be co-related other than through the web application.   5. Web interface is protected by password; hence, only authorized personnel will be able to access the information.   6. The database server is also configured behind the firewall and shall have network access only to the webserver. Only the application is able to access the database server to prevent any other application or system to try and break into this data.   7. The database server as well as the web application is installed at a Tier 1 high security data centre to prevent unauthorized physical access to the webservers and the database servers.   **Organization**  As mentioned above, most of the implementation is done through existing staff of the health department, including ASHAs and PHC staff; this will remain same in case of potential scale up. A team of trainers is now available at SEWA Rural. it might be possible to arrange ToT for government’s district level training team at SEWA Rural in case of scale up. A new cadre of ImTeCHO facilitators will need to be trained as well. |

**14. Adaptability Analysis**

1. Measures to ensure adaptability and scalability

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| 1. Open source code make it possible to adapt in future, is required. 2. Supports UTF and hence all Indian Scripts languages of India can be included in the user interface. 3. Content of application, such as texts, multimedia, can be changed easily from web interface. 4. New users and organization hierarchy could be created by administrator. 5. The software application does not have any hard limits on number of users or number of records. Within a year, about 6,500 clients, including pregnant women, newborn babies and young children each have received approximately 3 visits and about 10 transactions per visit: So in total nearly TWO LACs transactions have taken place during this period. |

1. Measures to ensure replicability

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| 1. There is strong commitment from the Department of Health and Family Welfare, Government of Gujarat which is reflected in readiness to become partner in this study, appointing a steering committee and designating a senior health official (Deputy-director in health department) as a nodal person. 2. The mobile-phone applications, implementation-plan, checklists, training-modules, and videos are ready to be used in other states (after translation) immediately as these will be based on existing ASHA-program in the government. 3. Robust research is underway to assess level of effectiveness and cost-effectiveness which would be important information for replicability. 4. Dissemination of research in scientific journals is an important advocacy tool. |

1. Restrictions, if any, in replication and or scalability

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| There are about 37,000 ASHAs in Gujarat. One of the important challenge for scale up is how to train large number of health workers for using ImTeCHO application in a short time. However, there is heath training team from the government in each district. SEWA Rural may provide ToT to these teams who can train workers in their own areas in phase wise manner.  ImTeCHO application requires transfer of data at least every 2-3 days. ImTeCHO application may not be useful in those areas (such as forest reservations without mobile infrastructure/towers etc) where GPRS is not available at all throughout the year. |

1. Risk Analysis

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| 1. It is important that the health workers remain interested in using ImTeCHO application. To make this happen, a steering committee made of state and district level health officials has been created to monitor implementation. To sustain interest of health workers, various measures have been taken to motivate (eg. extra monetary incentives) and supervise (eg. monitoring login rate) them. Implementation facilitators from SEWA Rural will provide initial intensive support. 2. Individual medical information will be collected using mobile phone and will be stored on server. This raises a concern regarding confidentiality of medical information. The proposed application shall contain medical information of individuals and hence demands high levels of data security. In view of this, the application shall accept, transmit, process and store data using prudent security and data encryption practices as described below.  * Any data that is transmitted using GPRS from the Mobile Phone to the server and vice versa shall be encrypted. In addition, the data shall also be codified before encryption to provide an additional layer of obfuscation. * A high level of security measures shall also be applied at the database level. The database server shall be protected by a firewall with strict access permissions such that there is no direct access to the database. Only the designated web application can connect to the database using a secured connection. * A web application firewall shall be used to protecting the site against cross-site scripting vulnerabilities and web site vandalism. It shall also protect the data from SQL injection attacks as well * All sensitive data elements shall be encrypted and stored in the database. Also a level of indirection in the form of encrypted user identities shall also be introduced so that a person's personal information and their medical information can never be co-related other than through the web application. * Web interface will be protected by password; hence, only authorized personnel will be able to access information. * The database server shall also be configured behind the firewall and shall have network access only to the webserver. The application shall be able to access the database server to prevent any other application or system to try and break into this data. * The database server as well as the web application shall be installed at a Tier 1 high security data centre to prevent unauthorized physical access to the webservers and the database servers. |

**15. Privacy & Security Policy** - (Give details about security technique deployed , use of digital signature, encryption etc #)

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| Spring Security secures the application layers in the web module. All sensitive data that are stored and transmitted are encrypted. The application login is protected by a password mechanism and application install follows a full handshake PIN verification system. |

**16. E-inclusion**( Give details about availability of local language interface, Online submission of forms, length and breadth of services made available online, universal accessibility of the application ).

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| ImTeCHO project is scalable and adaptable due to following reasons:   1. The intervention is designed and implemented within government-run ASHA-program based on existing roles of all stakeholders; hence, its finding can be generalized and scalable to whole country, especially its rural and tribal areas. 2. The project leverages upon existing human resources of the health department and is delivered largely through them. 3. ImTeCHO application is currently available in Gujarati. The application has full UTF compatibility and can support any other Indian language as well. 4. Content of the application text, videos etc) can be modified from web interface; therefore, application is quite dynamic and adaptable. 5. A qualitative study has also been conducted to assess the feasibility, acceptability and adaptability of ASHAs in using smart mobile phone with the new software. Similarly qualitative interviews and focus group discussion were also made with the mothers, family members and community to assess whether the content and messages depicted in multimedia were reaching satisfactorily or not. The results of both the studies are quite encouraging and appropriate modifications have also been incorporated as per their comments and suggestions. 6. ImTeCHO application can be operated in areas without GPRS signal as well. ASHAs can login and complete their task even without GPRS signal. The application will send and receive data automatically when GPRS becomes available. 7. During our last one year of implementation, the ASHAs, and PHC staff found ImTeCHO application quite acceptable, feasible and useful. This acceptability form end users is important reason for rapid uptake in other areas. 8. The application is presently hosted at a private data centre. But can be hosted in any government data centre as well. All the technologies are based on open source platforms and tools. The code is also available to SEWA Rural for modification (subject to terms) 9. The Application does not have any limits on the number of users and records. The hardware resources can be easily scaled to match the load projections for state wide / country wide implementation of ImTeCHO 10. Efforts are on to develop interphase so as to integrate ImTeCHO with existing government systems like E Mamta and MCTS. |

17. **Result Achieved/ Value Delivered** to the beneficiary of the project-(share the results, matrices, key learning’s, feedback and stakeholders statements that show a positive difference is being made etc):

1. **To organization**

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| Health workers receive support and supervision in form of ImTeCHO mobile phone application to make their work effectives and easier. ImTeCHO helps to improve performance, supervision, support and motivation of health workers leading to better performance of organization.  Few quotations: Medical officer from a PHC “timely information from field due to ImTeCHO now helps me to supervise my staff from my office”,  An ASHA “My prestige have increased in my village because now I use mobile phone” |

1. **To citizen**

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| Reduction of rate of maternal, newborn and child deaths due to timely detection of high risk conditions and treatment.  Some quotations from beneficiaries: “ Now, we receive timely services at our doorsteps”, “I came to know about so many new information due to videos in mobile which will keep me and my child healthy” |

1. **Other stakeholders**

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| mHealth expert from Harvard university describing “ImTeCHO as one of most comprehensive intervention in the domain of mHealth and MNCH”.  Article highlighting the achievements of ImTeCHO initiative with positive comments from different stake holders has been recently published Gujarati in the 11th Aug. issue of Chitralekha. |

18. Extent to which the Objective of the Project is fulfilled-(benefit to the target audience i.e.G2G, G2C, G2B, G2E or any other, size and category of population/stakeholder benefited etc):

Total 6,500 clients (tribal pregnant women, newborn babies and children) have received services through this project until June 2014. ImTeCHO is currently being used by 90 ASHAs in 90 villages and three PHCS of two districts of Gujarat. Each client received approximately 3 services from health workers through use of ImTeCHO mobile phone application. Hence, 19,500 services were provided to above clients until March, 2014. These services include treatment for high risk conditions, health education to prevent serious diseases, vaccinations, and pre-natal check up.

However, there is a huge potential to scale up this project to cover about 45 lacs MCH beneficiaries residing in all 18,000 villages of Gujarat through 37,000 ASHAs using ImTeCHO mobile phone application in coming years.

* 90 ASHAs in 90 project villages belonging to three PHCs have been trained and all ASHAs are using ImTeCHO confidently and enthusiastically since May, 2013.
* 2,500 pregnant women and 4,000 children under the age of 2 years were registered by ASHAs using ImTeCHO and were benefitted from this project in about one year.
* Every month, approximately 1500 forms (for home visits, VHND, migration, death reporting etc) were completed by ASHAs using mobile phone.
* Overall 80% of assigned tasks were completed by ASHAs. 75% of assigned PNC visits were completed by ASHAs. Average login rate (number of days ASHA logged in ImTeCHO against expected) was approximately 90%.
* All ASHAs are now regularly entering information about services provided during VHND in accurate and timely manner.
* High risk cases, including those suffering from malnutrition, are now accurately identified by ASHAs using ImTeCHO and appropriate care is provided. Nutritional surveillance is now possible. 643 morbidities have been identified so far.
* There is 100% death reporting by ASHAs using ImTeCHO.
* PHC staff has started using web interface to track high risk cases and manage ASHAs’ incentives.

An operational plan with all required tools including training tools have been now developed and field tested. A role out plan is now ready for scaling up ImTeCHO outside Jhagadia.

19. Comparative Analysis of earlier Vs new system with respect to the BPR, Change Management, Outcome/benifit, Change in legal system, rules and regulations

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| |  |  |  | | --- | --- | --- | | **No** | **Earlier system** | **New system** | | A. Low coverage of MNCH interventions to be provided or facilitated by ASHAs. | | | | 1 | Poor skills of ASHAs ( Do not remember the algorithm, triage system , poor counseling skills, inadequate training) | Use of checklist, images, videos (for common counseling subjects), algorithms, automated risk stratification. | | 2 | Inadequate understanding about ASHA’s roles and responsibilities | Automated scheduling and reminder alerts based on prescribed roles and responsibilities | | 3 | Poor motivation due to inadequate incentives considering work done by ASHAs | Records of services provided by ASHA is be automatically stored, which is used to calculate incentive she deserves on time. | | 4 | Irregular supplies | Automated supply management | | 5 | Barriers to behavior change at household level | Checklist to assess barriers and reminder to address those barriers | | B. Low coverage of care among complicated maternal, newborn and child cases | | | | 6 | Difficult for ASHA to identify and triage complicated cases | Mobile phone equipped with algorithms provides diagnosis and risk stratification based on information entered by ASHA | | 7 | Presence of various barriers (such as lack of knowledge about seriousness of morbidity, advanced planning to deal with complications etc) reduces the chances of referral of complicated cases to health facility | Counseling videos about danger signs is available in mobile phone to increase knowledge about complications  Use of checklist to encourage households to plan for complications (complication readiness) | | 8 | Difficult for ASHA to manage selected complicated cases at home (who refuse to get referred), especially complicated newborn cases due to complexity of algorithms **Error! Bookmark not defined.** | Mobile phone equipped with algorithms (based on ASHA modules) provides management guidelines to ASHA for selected newborn and maternal complications | | 9 | ANM and medical officer do not know in real time about mothers and newborns with complications | Automated alert goes to an ANM and medical officer instantly if complicated case is identified by ASHA during home visit; thus, ANM can plan to visit such cases in near future | | C. Inadequate supervision and support to ASHAs | | | | 10 | Effort intensive process of managing supplies and calculating and disbursing incentives to ASHA | System sends supply alerts to ASHAs and sends information to PHC staff to re-supply stocks when necessary. Electronic record of ASHA’s performance along with automated calculation of incentives reduces efforts required at PHC staff level. | | 11 | Lack of real time information about complicated cases | List of complicated cases is available on web interface as soon as complicated case is diagnosed by ASHA or ANM | |

20. Other distinctive features/ accomplishments of the project:

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| 1. Completely made and funded by Indian organizations. SEWA Rural is an India based NGO, Jamsetji Tata Trust funded this project, the health department is implementing this project. The ImTeCHO mobile phone application is powered by ArguSoft India Ltd's mAID platform. It was customized for SEWA Rural and further extended with collaborative domain knowledge inputs from SEWA Rural experts.   2. ImTeCHO is designed for ultimate integration with another e-governance initiative called “e-Mamta”. E-Mamta is an e-health initiative of the Government of Gujarat to track every pregnancy and its outcome. Real time and point of service data entry of ImTeCHO make it potentially complimentary to e-Mamta. Process of inserting common identifier into ImTeCHO is underway. Additionally, ADHAAR number is also being captured in ImTeCHO.  3. ImTeCHO was invited for a global consultation for maternal health arranges at Harvard University and World Health Organization at Boston, USA in April, 2014. ImTeCHO was judged one of the most comprehensive mHealth interventions.  4. Future plans:   1. ImTeCHO will be scaled up in seven high-focus, tribal talukas of Bharuch and Narmada district over next one year (2014-15). 2. After above scale up, ImTeCHO could be potentially scaled up in all high focus takulas of Gujarat. 3. A robust evaluation is planned for next year to examine effectiveness of ImTeCHO. 4. Apart from MNCH, other disease domains will be integrated into ImTeCHO. This includes management of mental illnesses, tuberculosis, malaria etc in community setting. This will be right step towards universal health care.   4.Article highlighting the achievements of ImTeCHO initiative with positive comments from different stake holders has been recently published gujarati in the 11th Aug. issue of Chitralekha. |

# This is just an indicative list of indicators, Applicant can add more information based on suitability of the project nominated.

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9. [↑](#footnote-ref-9)
10. [↑](#footnote-ref-10)
11. The solution exchange for maternal and child health community. Payment of incentives to ASHAs- bottlenecks and good practices. Available from [*ftp://ftp.solutionexchange.net.in/public/mch/cr/cr-se-mch-06071201.pdf*](ftp://ftp.solutionexchange.net.in/public/mch/cr/cr-se-mch-06071201.pdf) *(*Accesses on 12 September, 2012). [↑](#footnote-ref-11)
12. [↑](#footnote-ref-12)