

"Scaling CommCare to Deliver Community Impact"

Milestone 2 Report, 01 December 2012

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Overview

Dimagi has completed Milestone 2 the USAID Grant No. AID-OAA-F-12-00018 which contests of the following four elements:

- 500 CHWs are trained in Bihar
- All necessary Field Staff hired
- Study design with Harvard Business School completed
- Operational Processes to test are developed

Each element is described below. Additionally, Annex A provides an update on all metrics included in the PMP against stated targets.

Bihar Training

This section describes how over 500 ASHAs and Anganwadi workers were trained to use CommCare in Bihar, as part of the larger collaboration involving Dimagi. Note that this training was complete before Sept 2012, before the beginning of the contract AID-OAA-F-12-00018.

The CommCare application was developed through a careful process of iteration of supervised home visits, user testing, feedback sessions and consultation with all stakeholders, including CARE-India, Dimagi, Grameen Foundation, Thoughtworks, and most importantly the Front Line Workers (FLWs) themselves. The training of the FLWs was carried out using a cascade model in the following levels:

1. **Training of Master Trainers:** This first stage of training involved Dimagi preparing 8 field staff for the role of 'master trainer'.
2. **Training of Trainers:** The second stage of training involved Dimagi and the Master Trainers training 35 people for the role of 'trainers'.
3. **Training of FLWs:** The third stage of training involved the Trainers teaching one subcentre or about 15 FLWs in groups followed by one-on-one follow up visits over a two month period.

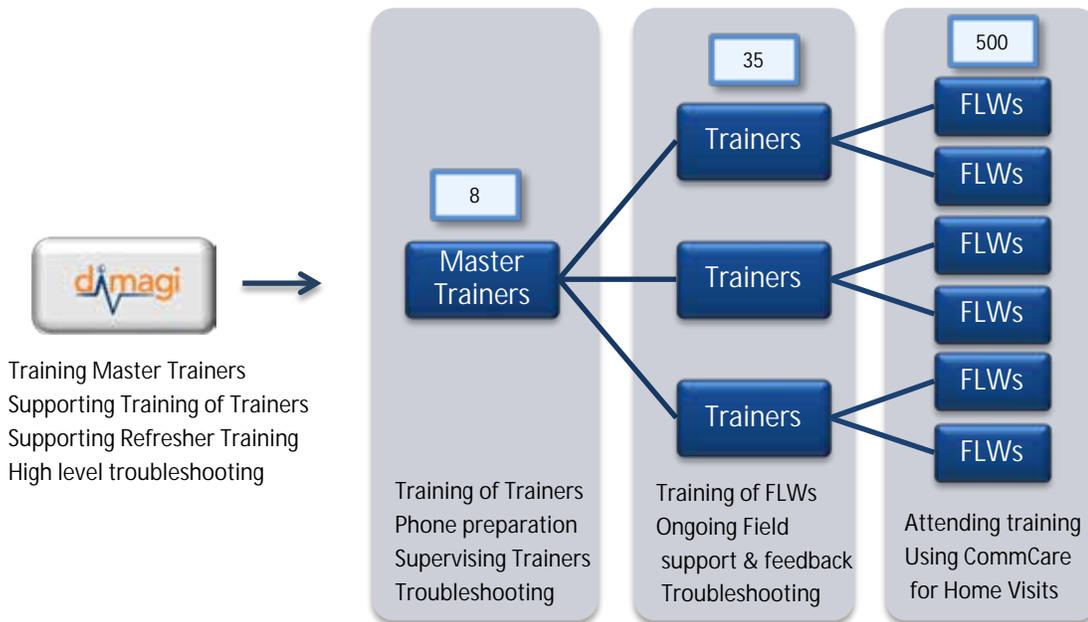


Figure 1. Cascade Structure of FLW Training and Key Responsibilities for Each Level

Training of Master Trainers

This 3-day training was conducted from April 9 to April 11, 2012 by two Dimagi Field Managers, Reena Gupta and Devika Sarin at the CARE Office in Saharsa. The session was attended by eight field staff who served the role of Master Trainer. Three of these staff had been ICT coordinators with CARE for 6 months; the other five were newly hired temporary employees. Additionally, two Project Managers were also present as observers.

Setup and Materials: In preparation for the training, a PowerPoint presentation was created in Hindi to serve as a visual aid with screenshots of the application and key points. Hard copies of the slides were also provided to the attendees so that they could follow along and use it as a reference guide. CommCare was loaded in advance on 8 Nokia C-2s, commonly used java-enabled phones with a familiar key configuration.

Day 1: Introduction to the Project, CommCare and Application Logic

As most of the Master Trainers were new hires, the first day of training began with an introduction to the Ananya Project. As they would not receive content training till later, they were also introduced to the concept of the Continuum of Care as it functions within the Home Visit Scheduler, one of the main features of the CommCare application. As all Master Trainers were familiar with these phones and their navigation, we were able to proceed directly to a discussion of CommCare, and provide an overview of the various modules as well as how each piece tied into the Continuum of Care. Using popular Bollywood actresses as examples of beneficiaries in different stages of their pregnancy, each trainer was

asked to create four new cases with predetermined input data, so that they could follow together and gain practical understanding. We went through the flow of the application as we discussed case management and sharing, syncing, the audio messages, image content and elaborated on any associated skip logic as the Master Trainers reviewed questions in each form of the Home Visits and Client Management sections in the application. In order to make the session more interactive, at the end of each module, Dimagi staff asked a series of questions posing as FLWs in order to reinforce concepts related to the content and logic of the forms.

Day 2: Training Practice, Phone preparation and Application Installation for FLWs

After a recap of the first day's activities, each Master Trainer was asked to come to the front of the room and re-teach a module using the PowerPoint slides as a guide. This was helpful, as it allowed them to practice speaking before a group audience as well as gain familiarity with appropriate training methods. Following this exercise, a second phone was handed out to each participant to simulate the proper practice of setting up a 'new phone.' This step was crucial as the Master Trainers (with help from Dimagi) were responsible for organizing and preparing the phones for all the trainers as well as the 500 FLWs. Phone preparation training involved a twenty-step checklist, wherein each step and its purpose were discussed, followed by a demonstration. The phones were then reset to factory settings and the Master Trainers were asked to individually repeat the phone preparation and application installation to cement their knowledge of the process.

Day 3: Troubleshooting, Question & Answer Session and Practice

The group of Master Trainers was split into teams of two and in a quiz competition-style they were asked several questions about common errors observed in CommCare, phone preparation, and phone settings. The objective behind this was to make sure that they had thoroughly understood the materials from the previous day. After a systematic review of application-specific issues, common technical problems seen in the field and troubleshooting, Dimagi staff created errors on Master Trainers' mobile phones and ask them to identify and solve the issues. By recreating real experiences, the participants had to apply all concepts learned in theory to the practical situation at hand. The last few hours of the session were set aside for practice and Dimagi staff walked through the room answering questions and providing support, allowing all participants to get familiar with CommCare at their personal pace, formulate questions on their own, and fortify their knowledge in areas in which they were uncertain.

A key takeaway from this training was that the 1:4 ratio of Dimagi staff to Master Trainer was extremely beneficial as each participant received one-on-one reinforcement, ensuring they were all on the same page throughout the training session. This also aided in building rapport, which was essential as the team would continue to work together for the duration of the project.

Training of Trainers

This 4-day training was conducted from May 7 to May 10, 2012 by Dimagi Field Managers, Reena Gupta, Sri Ranganathan and Sheel Shah in conjunction with the 8 previously trained Master Trainers. The plan was to train 35 Trainers who would be responsible for teaching one subcentre each in the areas of the Saharsa district that were a part of the pilot. There were 3 additional people who attended the session

as backups. The partner organization hired this entire group of trainers on a short term basis and recruited only women for the position, hoping they would connect well and put the FLWs at ease.

Setup and Materials: The Hindi PowerPoint presentation from the Master Trainers session was modified to incorporate a more detailed visual guideline to using the phone and navigating CommCare. In addition to a Nokia C-2 pre-loaded with CommCare, each trainer received a folder with a copy of the slides, a notepad, a trainer's guide to solving common issues and a list of Frequently Asked Questions.

Day 1: Introduction to the Project, Phone Navigation and Text Entry

Similar to the first day of the Master Trainers training session, this training began with an introduction to the project, the partners and a discussion of their roles as trainers. After this, the rest of the day was devoted to teaching phone fundamentals – though practically all the trainers had personal cell phones, most were only familiar with making and answering phone calls. Two Master Trainers covered the basic use of the phone including turning it on and off, navigation and the purpose of different buttons. Using an innovative chart that showed the phone keys as they correspond to the Hindi alphabet, the Master Trainers demonstrated how to enter text using the phone keyboard. They also held an extensive group practice session where different types of text were written on a whiteboard and everyone entered it into their phones under the supervision of the other Master Trainers. This was important as it was essential that the trainers gained confidence in using the phone and entering free text so that they could impart this knowledge to the FLWs who would then use the phones to register clients.

Day 2: Introduction to CommCare, Application Flow and Logic

The second day of training was initiated by explaining the concept of CommCare, CARE's application and the advantages of using it in the field. Once the attendees became familiar with locating CommCare on the phone and accessing the demo mode, they were introduced to the first half of form content and scheduling module logic based on the Continuum of Care. With the help of illustrations they were guided through the basic CommCare navigation and how to maneuver through the different screens (i.e. forms view, case list view, case detail view and entering a form). They were then taught to register a new client to increase familiarity with the forms and explore various question types. The trainers were made to apply their previous day's learning of text entry, once again using popular Bollywood actresses as clients they needed to register. In addition, their training was fortified through the use of role-play exercises with the Master Trainer acting as the client, providing the FLWs with more realistic experience in using the application.

Day 3: Client Management, Revision of CommCare forms and Application Installation

Day three of the training covered the second half of the form content, which largely focused on the Client Management features of the application. The concept of case management workflow was emphasized as Dimagi staff completed a comprehensive overview of the various forms for different stages in the pregnancy. After a detailed review of how to use and navigate the case lists they had created the previous day, members of the group were asked to come up to the whiteboard and explain key concepts from each of the modules. The next phase of the training was learning to install CommCare on a phone and to apply appropriate settings as required in the field. New "clean" phones were handed

out and the trainers followed the twenty-step process to set up phones, using instructions from their written materials.

Day 4: Frequently Asked Questions, Training and Practice

On the final day, the trainers went through a list of common issues faced in the field using a role-playing mechanism with one of the staff members acted as a FLW and called the trainer to ask a question or describe a problem. They were also asked to explain the steps they would take to solve errors they observed on phones and how they would escalate issues to supervisors if they were unable to resolve themselves. As training was a large component, a discussion was facilitated around good listening and questioning practices. Following this, attendees were asked to demonstrate ideas and methods they would employ to teach the FLWs what they had learned so far. At the end of the day, time was set aside for everyone to practice registering cases at different stages of their pregnancy, to sort through their case lists and have any doubts clarified or questions answered.

Follow Up Training for Trainers

A follow up session for the trainers was held on June 4 – 5, 2012, one month after the Training of Trainers. This was led by the Master trainers with support from Dimagi Field Manager, Devika Sarin. The purpose of this session was three-fold:

1. To refresh and reiterate the flow and logic of the various components in the application.
2. To ensure the trainers were ready for the application rollout the following week. A quiz was conducted for master trainers to review materials and training content to make sure everyone was adequately prepared for the deployment.
3. To introduce new Due List module and registration questions from updated application.

Training of FLWs

Training sessions for the FLWs were conducted by the previously hired Trainers and Master Trainers over the course of eight weeks beginning on June 11, 2012. As has been demonstrated by Dimagi's previous experiences, the size of the training class is key to ensuring each user understands the application content, the phone itself, and is comfortable using CommCare. Though it wouldn't be possible to achieve perfect ratios at this scale, it was recommended that the class size remain small, with fewer than 20 users. Thus given the structure of the Ananya pilot, the training of the 500 FLWs was carried out for the ASHA/AWW teams in the subcentres they belonged to. This limited each training group size to between 14 and 16 users, with one Trainer for each subcentre.

Prerequisite Knowledge: As was the case with the previous levels of training, this training process was solely focused on the use of the mobile phone and the software application as a tool to supplement preexisting FLW knowledge. This was dependent on the assumption that all the FLWs were fully trained on the pregnancy and newborn health protocols, and that the content within the CommCare application forms was familiar to them.

Schedule and Micro-planning: After the program inauguration, once the application was deployed, pre-prepared phones were distributed to each FLW. In order to facilitate an effective and consistent training, the Project Managers and Master Trainers put together a training schedule to be followed by each Trainer. The plan was to carry out the training in two components:

1. **Group Sessions:** Two weekly meetings for all the FLWs in the group held at their respective subcentres, taking place each Thursday and Saturday for the entire period of eight weeks. The purpose behind these meetings was to cover major topic areas.
2. **One-on-One meetings:** In addition to group training sessions, individual orientation and handholding support was extended for each FLW pair once a week, on non-group session days at their respective subcentres.

For the group sessions, Master trainers sent the trainers the weekly agenda and specific training topics by SMS to ensure that everyone was proceeding at the same pace and covering the same materials. Trainers used whiteboards and their phones to explain how best to leverage the multimedia content and skip logic in their work to the group, while the FLWs followed along using their phones.

The one-on-one meetings were intended to reinforce the subjects learned in the group sessions and to provide support for the low-literate and slower learners. As the weeks progressed, these meetings gradually evolved into supervised home visits, where trainers accompanied the FLW teams on their visits to beneficiaries and observed their use of CommCare.

Training Plan and Progress: The basic agenda covered the following fundamentals:

- Week 1: Basic Phone and Navigation Training
- Week 2: Registration Introduction, Concept of Pre-Registration and Registration
- Week 3: Introduction of Continuum of Care and Home Visit Scheduler, Registering Pregnancies
- Week 4: Understanding Birth Preparedness, Delivery and all Post Natal Care Forms
- Week 5: Client Management: Referral, Death, Abortion, Immunization and Migrate In/Out
- Week 6: Recap of everything and introduction to Due List and Tools
- Weeks 7 & 8: Overview of all training materials

Throughout the two months of training, the trainers were expected to keep track of attendance and performance for each FLW, and report this data to the Master trainers on a weekly basis. This step was undertaken to make sure that everyone was receiving adequate support and to ensure that extra time would be allocated to those having trouble learning or facing technical difficulties.



Dimagi Staff

Dimagi has recruited several staff to support the work for this grant, including:

- Sangya Kaphle was previously working for Dimagi and has been assigned to be a research assistant for this grant, to support the research in Bihar as well as well as the design and evaluation of the Call Center.
- Jeremy Wacksman was previously working for Dimagi and has been assigned to be a research assistant for this grant, to support the research in Kaushambi, Uttar Pradesh.
- Natasha Azad has accepted an offer from Dimagi to be a field manager and will start work in Delhi in January.
- Maxwell Izenberg has accepted an offer from Dimagi to be a field manager and will start work in Delhi in January.
- Shreemoyee Mukherjee has accepted an offer from Dimagi to be a field manager and will start work in Delhi in January.
- Sughanda Nagal has accepted an offer from Dimagi to be a field manager and will start work in Delhi in January.

Study Design

The Harvard Business School, in collaboration with Dimagi, Catholic Relief Services, and Maulana Azad Medical College, has finalized the study design for the Kaushambi-based research project supported by this grant. This design was part of the submission in early September for IRB approval from Maulana Azad Medical College, which was recently granted.

This study will rigorously evaluate the impact of providing performance feedback to CHWs through their mobile phones. Phone-based performance reports will summarize each CHW’s performance over time and will also compare the CHW’s performance with that of his or her peers. The project will employ randomized experimental methodologies to assess the impact of different types of performance feedback on CHWs’ subsequent performance, in terms of quantity and quality of household visits as well as client-level measures such as health knowledge and outcomes.

Experimental Design

Community health workers throughout the world routinely document their job activities, such as the number of households they visit and services they deliver during these visits, and they submit reports that summarize their activities. However, CHWs rarely receive feedback on this routine reporting, either in terms of tracking their own performance over time (absolute feedback), or in terms of how they measure against their peers (relative feedback).

The ASHAs in Kaushambi district currently use CommCare to facilitate the provision of health services to community members as well as communication with supervisors. This study will focus on how performance feedback delivered through the phone can improve the performance of ASHAs.

This project will employ an experimental design that examines how absolute and relative forms of feedback affect ASHA performance (summarized in the blue columns in table below).

Treatment #1: Control ~40 ASHAs	Treatment #2: <u>Absolute</u> feedback ~40 ASHAs	Treatment #3: <u>Absolute</u> + <u>Relative</u> feedback ~40 ASHAs
ASHAs receive status quo feedback regime (ad hoc feedback provided by supervisors)	ASHAs receive phone-based feedback about their own performance only	ASHAs receive phone-based feedback about their own performance as well as the performance of other ASHAs

This experiment will test three different treatment conditions: a control condition in which no performance feedback is provided (ASHA T1), a condition in which ASHAs receive feedback about their performance only (ASHA T2), and a condition in which ASHAs receive feedback about their performance as benchmarked against that of their peer group (ASHA T3). The ASHAs will be randomly assigned to one of the three groups. By comparing performance outcomes across the three groups, this project will shed light on the degree to which performance feedback, both absolute and relative, improves ASHA performance. The ASHAs in conditions ASHA T2 and ASHA T3 will have access to a secure, private website on their phones that will graphically summarize the performance of each individual ASHA as well as (in the case of ASHA T3) the average performance of all of the ASHAs in each program site.

Outcome Measurement

Measuring the performance outcomes of community health workers is a major aspect of this research project. As the ASHAs use CommCare, they routinely submit reports on their activities and the outcomes of their clients. The work that ASHAs do is centered on maternal health. For example, delivery at a health facility is a key policy objective, and ASHAs are trained to counsel pregnant clients on the importance of institutional delivery and help clients devise a birth plan so that they are prepared to travel to a health facility once in labor. Thus, the proportion of institutional deliveries will be one measure by which the ASHAs in the treatment conditions will be compared with one another.

For most outcome variables, we will rely on the self-reported activities of the community health workers. However, in order to more fully assure the validity of the outcomes data, it will be necessary to verify a subset of the reports that ASHAs submit. This is where direct interaction with households will occur. Over the course of the project period, clients of ASHAs will be randomly selected to be visited by research staff after key events, such as registration, antenatal home visits, and delivery. Upon receiving informed consent, research staff will interview selected mothers and pregnant women. During these interviews, research staff will ask whether activities reported as having been carried out by the client's ASHA (e.g., counseling on nutrition during pregnancy) actually did happen. Because ASHAs will not know in advance whether one of their clients will be selected for a verification visit, they will have an incentive to report their activities accurately. A high verification rate will suggest that the data that ASHAs record and collect are credible measures of performance.

The ASHAs will also be asked to participate in an extensive baseline and endline survey. The baseline survey is already in progress. It includes sections on ASHAs' work-related experience, work habits, family background, a technical aptitude exam, and a psychometric assessment. There will be additional qualitative research throughout the project in the form of structured interviews and field observations.

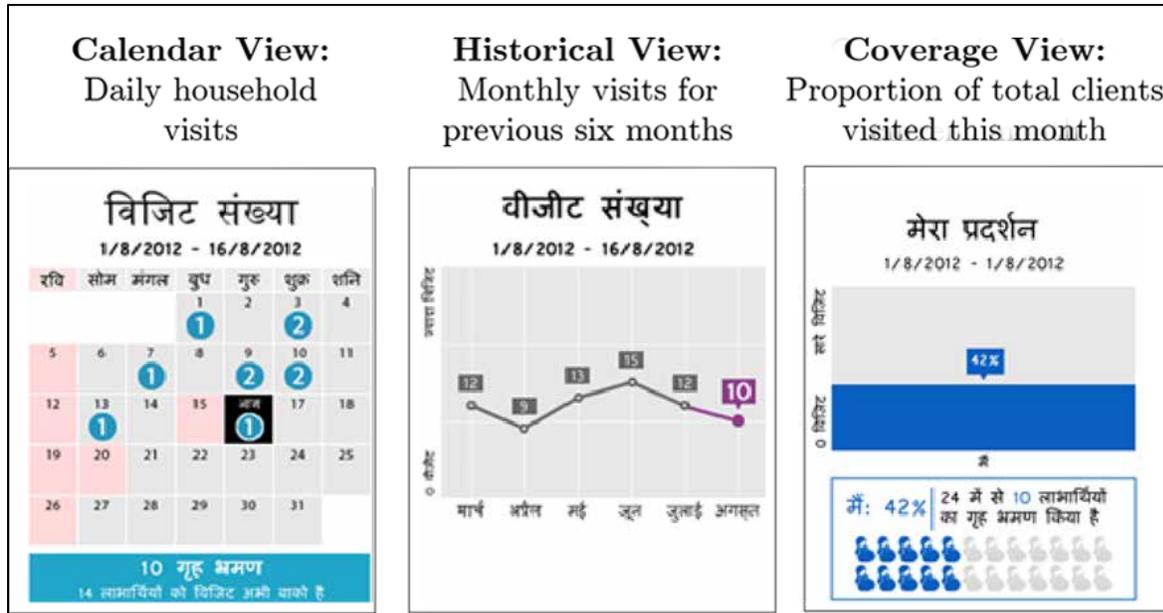
IRB Approval

On 25 October 2012, IRB approval was granted from Maulana Azad Medical College and Associated Hospitals' Institutional Ethics Committee. Dr. Nandini Sharma, Director Professor, facilitated this process as the primary involved person from the institute. Dr. Sharma and the College will remain involved in the research project going forward in a technical advisory capacity.

Operational Processes

The operational processes for delivering the absolute and relative feedback have been undergoing extensive testing and refinement, the last stages of which are currently ongoing.

After two months of iteration, the team settled on a series of graphic representations of performance that could be interpreted by ASHAs with minimal instruction:



The research team also developed and tested an infrastructure for dynamically updating the graphs and displaying them on the phones. This web-based interface is appropriately sized and configured to work on the ASHAs' phones, and features a password protected log-in screen similar in appearance to their CommCare log-in screens. The server records each instance of the ASHA logging in so that frequency of viewing graphs, and detail of which graphs are viewed, can be used in future data analysis. We have developed a standard SMS message in Hindi which contains a unique link to the log-in screen for the feedback tools.

Conclusion

Dimagi has completed Milestone 2 on time and is on track in regard to the other Milestones. We have also received a very enthusiastic response so far to our RFA (<http://www.commcarehq.org/div2/round1/>) to find new partners, and are increasingly excited by the opportunity provided by this grant to realize the full potential of community-based primary care as envisioned by the Government of India.

Annex A: Updated Metrics

Area	#	Indicator	Baseline (Sept 2012)	Nov-12	Aug. 2014 Target	Frequency of Data Collection	Data Source
Scale Up Monitoring	1	Number of new programs in India using CommCare	0	1	40	New programs reviewed monthly	Automatic from CommCareHQ after manual flag set
	2	Percent of new programs that try CommCare in India that are using it after one year	0% (0/0)	0% (0/0)	70%	New programs reviewed monthly	Automatic from CommCareHQ after manual flag set
	3	Number of new programs using CommCare in India that are scaling after 12 months	0% (0/0)	0% (0/0)	40%	New programs reviewed monthly	Automatic from CommCareHQ after manual flag set
	4	Number of new programs using CommCare in India for at least 12 months that are now at scale	0% (0/0)	0% (0/0)	30%	New programs reviewed monthly	Automatic from CommCareHQ after manual flag set
	5	Percent of BASIC CommCare programs in India	28% (5/18)	25% (5/20)	40%	New programs reviewed monthly	Automatic from CommCareHQ after manual flag set
	6	Percent of PLUS CommCare programs in India (includes POC packages)	61% (11/18)	60% (12/20)	50%	New programs reviewed monthly	Automatic from CommCareHQ after manual flag set
	7	Percent of FULL CommCare programs in India	11% (2/18)	15% (3/20)	10%	New programs reviewed monthly	Automatic from CommCareHQ after manual flag set
	8	Number of FLWs that have used CommCare in India	1,040	1,061	8000+current value	Real Time	Automatic from CommCareHQ
	9	Number of clients seen by FLWs using CommCare in India	69,094	89,267	200,000	Real Time	Automatic from CommCareHQ
	10	Number of FLWs trained in Bihar to use CommCare	519	519	500	Real Time	Automatic from CommCareHQ
	11	Number of FLWs trained in Kaushambi to use CommCare	116	122	285	Real Time	Automatic from CommCareHQ
Performance Monitoring	12	Percent of clients seen in last 60 days (proxy indicator for on time visit percentage)	74%	58%	70%	Real Time	Automatic from CommCareHQ
	13	Percent of clients seen in last 120 days (proxy indicator for percentage clients who are still active)	93%	95%	80%	Real Time	Automatic from CommCareHQ
Usage	14	Percent of new CommCare programs in India actively using ADM	0% (0/0)	0% (0/0)	n/a	New programs reviewed monthly	Automatic from CommCareHQ after manual flag set
	15	Percent of new CommCare programs in India actively using the Call Center	0% (0/0)	0% (0/0)	n/a	New programs reviewed monthly	Automatic from CommCareHQ after manual flag set
	16	Average number of clients seen by each FLW using CommCare in India	66	84	n/a	Real Time	Automatic from CommCareHQ
	17	Total forms submitted	227,511	417,120	n/a	Real Time	Automatic from CommCareHQ

"Scaling CommCare to Deliver Community Impact"

Milestone 3 Report, 25 April 2013

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Overview

Dimagi has completed Milestone 3 of the USAID Grant No. AID-OAA-F-12-00018, which consists of the following requirement:

- Launch eight new programs or reach 1,600 new extension workers using CommCare (whichever occurs first). This builds upon a baseline of 10 existing programs. Any new programs or extension workers not already included in these baseline figures can be counted toward this target.

The sections below describe the activities Dimagi has undertaken to complete this milestone, and the project descriptions of the first eight new programs in India launched with CommCare. The eight programs are summarized in Table 1 below.

Activities

Training of new Field Managers

Dimagi trained seven new Field Managers based in Mumbai, Bangalore, Calcutta and Delhi, bringing Dimagi's India team to a total of 17 staff. A week-long technical onboarding in Delhi in January was followed by an in-field orientation at an existing project site. Each new Field Manager was also supported by an experienced Field Manager during their first CommCare launch. The new Field Managers bring a diverse range of skills to the Dimagi team, including backgrounds in economics, public health, epidemiology, finance, and international development.

RFA for Proof of Concept Packages

In September 2012, Dimagi released and advertised a Request for Applications (RFA) for organizations in India to receive a Proof of Concept packages to use CommCare. The RFA is available online: <http://www.commcarehq.org/div2/round1/>. The CommCare Proof of Concept (POC) package is an opportunity for organizations to quickly and easily build, test, and deploy CommCare mobile applications for their community outreach program. Through this program, Dimagi provides 10 mobile phones to be used by community outreach workers, four weeks of remote support to design and build a prototype application with the organization, two weeks of field support to launch the application with the users and train the project team on how to use the system, and two weeks of remote support after the launch for technical support.

Dimagi received proposals from over 35 organizations interested in launching mobile applications for their interventions, and have solicited further proposals since the RFA deadline. Examples of program types include (but are not limited to) CommCare for use by Accredited Social Health Activists (ASHAs) or other Community Health Workers (CHWs), auxiliary nurse midwives, traditional birth attendants, counselors teaching sex education, agricultural extension workers, educational extension workers, supervisors, research studies, micro-entrepreneurs, etc.

We evaluated applications based on the following criteria: significance of the problem the intervention is addressing and gaps identified that can be resolved with CommCare; description of the quality of the CHW program that the technology was proposed to strengthen; proposed application design and technology fit and feasibility of developing a prototype in a limited amount of time; and experience and availability of the project team to support the project and follow-up with CHWs in the field.

To date, over 25 organizations have been awarded a POC package.

Launching Organizations with the Proof of Concept Package

After awarding selected organizations, we discuss the technology requirements, implementation plan, and expectations for rolling out the POC with each partner organization. Organizations can sign up on a first come, first server basis to schedule their field visit via an online doodle (<http://www.doodle.com/zhrx9d7q5sfaxiv7>).

Based on a standardized implementation plan, Dimagi schedules a series of milestones for each organization based on their tentative launch date. If key milestones are missed, organizations are moved onto a waitlist and lose the field block scheduled.

Dimagi builds the CommCare prototype and conducts a two-week field visit to train the project team on how to use, troubleshoot, and manage the mobile and web tools that are part of the CommCare system. Dimagi has developed a set of training resources that impart essential skills for an organization to learn in order to independently maintain the system once Dimagi Field Managers leave the field site. Dimagi and the organization work together to field test and train field level workers on how to use the CommCare application. After Dimagi leaves the field site, the organization is responsible for continuing field testing of the application and supporting the FLWs as required. Dimagi Field Managers continue to provide remote support to the programs, which may include technical support, application modifications, and weekly check-ins about the general progress of the project and feedback from the users and project staff.

BASIC, PLUS, and FULL Support

Dimagi helps organizations launch CommCare through three levels of support.

BASIC Support: With BASIC Support, an organization builds the CommCare application on their own and conducts training of FLWs with little to no field support from Dimagi. Dimagi provides training to the organization and technical assistance to build and deploy the CommCare project. In achieving Milestone 3, Dimagi supported SNEHA to launch a CommCare application, as described above, in addition to the distinct project that Dimagi supported with a POC Package.

PLUS Support: With PLUS Support, Dimagi builds the application, or the majority of it, and conducts or supports any FLW training. All organizations launched with a POC package are categorized as PLUS support. In achieving Milestone 3, Dimagi supported SNEHA, KGVK, WORLD RENEW/EFICOR, SWASTI, and AAROHI with PLUS support through a POC package.

FULL Support: With FULL Support, Dimagi builds the application and provides additional support, such as project management, Active Data Management, custom reports, or additional field time beyond what is included to launch PLUS projects. In achieving Milestone 3, Dimagi supported Catholic Relief Services and CARE with FULL Support.

Milestone 3 Launches

Table 1 below summarizes the new programs that have been launched with CommCare to achieve Milestone 3. For each launch, we provide the following information:

- **Organization:** Name of the partner organization that is implementing a CommCare project
- **Location:** District and state in India where the CommCare application is being deployed
- **When Launched:** When the CommCare application was launched
- **Sector:** Describes what development sector the CommCare application addresses (e.g. Health, Agriculture, Finance, etc.)

- **Focus Area:** Indicates what focus area within the sector the CommCare application addresses (examples within health include MNCH, sexual health, malaria, etc.).
- **Project Type:** Indicates whether the project was with BASIC, PLUS, or FULL support.

Contact information for the organizations listed in Table 1 is available upon request.

Table 1: Summary of First Eight CommCare Programs Launched

Organization	Location	When Launched	Sector	Focus	Project Type	CommCare User
1. Catholic Relief Services	Kaushambi, Uttar Pradesh	Sep. 2012	Health	Supervision	Full	Field Supervisors
2. CARE	Saharsa, Bihar	Nov. 2012	Health	Technical Support	Full	Technical Support Staff
3. SNEHA	Mumbai, Maharashtra	Nov. 2012	Health	Maternal Health	PLUS	Community Organizers
4. KGVK	Ranchi, Jharkhand	Feb. 2013	Health	Maternal Health	PLUS	Community Mobilizers
5. World Renew/EFICOR	Bangalore, Karnataka	Mar. 2013	Health	Maternal Health	PLUS	Saahiyas
6. Swasti	Sahibganj, Jharkhand	Mar. 2013	Health	Sexual Health	PLUS	Peer Educators
7. Aarohi	Nainital, Uttarakhand	Mar. 2013	Health	Maternal Health	PLUS	ASHAs
SNEHA	Thane, Maharashtra	April 2013	Health	Household Tracking	BASIC	Urban CHWs

Launch #1: Catholic Relief Services

CRS' CommCare application is designed for ASHAs' supervisors to track ASHAs' quality of service delivery (counseling, follow-up, interpersonal communication) to pregnant women during home visits. The application also includes a module to report technical issues experienced by ASHAs using the CommCare application and a module that tracks ASHAs' capacity to use basic and advanced features of the mobile system for ongoing training feedback. Based on data collected in this application, CRS is able to quickly and efficiently resolve technical issues reported by ASHAs, monitor the quality of follow-up provided by ASHA supervisors, and identify capacity building priorities for refresher trainings related to counseling and mobile competencies.

Launch #2: CARE

Dimagi developed a series of three applications to diagnose and track technical application issues (i.e. software bugs or phone configuration settings) for CARE. These applications can be used separately to report, track, and resolve technical issues experience in CommCare or in conjunction as part of a technical backstop framework for any CommCare deployment.

The first application is a web-based application designed for Call Center agents, who are prompted by the application to ask questions about the problems the CHW is experiencing. The application navigates through a technical issue diagnostic tree and eventually identifies the issue and proposes steps to resolve it. For some issues, the application will prompt the Call Center agent to escalate the issue to a field-level information communication technology (ICT) representative. The Call Center agents follow a call script while using this first CommCare application, which is available on the following website: (<https://confluence.dimagi.com/display/cctroubleshoot/CommCare+Troubleshoot+Guide+Home>). The second application is used by a field-based ICT representative, who can view issues that were escalated from the Call Center and require in-person support to resolve. This application runs on an Android tablet and contains the same diagnostic guide as the Call Center. The third application in this set is used by an Administrator who can enter follow-up notes as required and close any issue cases as they are resolved.

Launch #3: SNEHA

SNEHA utilizes three different CommCare applications to track inter-facility referrals of women with high-risk pregnancies. Two of the applications (that run on Android phones) are used on-site at facilities to record data from patient registry books, while a third web-based application edits and closes patient files. SNEHA's Maternal and Newborn Health Program recently launched new partnerships with three Municipal Corporations in Mumbai to scale-up its referral program, and expects to eventually reach an estimated 250,000 pregnant women per year. Given the anticipated surge in the data collection needs, there is no better time to implement a mobile-based solution.



A CommCare Training for SNEHA Staff

Launch #4: KGVK

KGVK's Community Mobilizers are deployed throughout 30 villages in Ranchi, Jharkhand where they collect pre-natal data, administer regular maternal check-ups, and recruit new candidates for institutional deliveries and other MNCH services. KGVK's CommCare application enables ten Community Mobilizers to better manage patients, collect data in the field, and motivate pregnant women to adopt better health practices during pregnancy and institutional deliveries. This project is testing CommCare with local field staff to demonstrate a model for Saahiyas, which is the name for ASHAs in the state of Jharkhand. Once the POC project is completed, KGVK is considering migrating their application from the Java phone version to an Android version and adding more outreach workers who can use the application.

Launch #5: World Renew/EFICOR

World Renew's application is used by Saahiyas to track essential medical services delivered to pregnant women and provide pregnancy and delivery counseling. These Saahiyas are working in the Sahibganj district's poorest block with support from the community health system. Through the application, each mother in the block will be registered and tracked throughout their prenatal period, postpartum period, and until their child is fully immunized. This project seeks to improve MNCH information dissemination, create demand for and improve health services delivery by sharing data with medical personnel, and reduce maternal and infant mortality by following-up with all pregnant and lactating women.



Saahiyas in Sahibganj register pregnant women into CommCare and reference the NRHM Maternal Health Card

Launch #6: Swasti

Swasti's peer educators, called "Jeevikas," work with sex workers to raise awareness about HIV prevention, violence against sex workers, alcohol de-addiction, preventing sexually transmitted infections (STIs), and condom use, and to generate demand for STI testing, counseling, referral services, and adoption of microlending services. In order to improve their outreach programs, Jeevikas use CommCare to track their outreach activities and provide counseling about safe sexual health practices through audio and visual messages. The project aims to reach 13,700 female sex workers in Bangalore.

Launch #7: Aarohi

Aarohi seeks to create a reproducible community-based health care delivery system to reduce maternal and child morbidity and mortality, and to improve the general health of the project area's population. Aarohi's ASHAs use the CommCare application to: 1) collect data and provide counseling messages geared towards pregnant and lactating women and children, 2) access post-partum counseling messages about breastfeeding, child nutrition, and immunizations, and 3) to monitor the health of children who are less than two years old. The application incorporates guidelines from Aarohi's Information Education Communication (IEC) materials. Each ASHA will reach an average of 300 individuals.



Community Organizers Learning to Use CommCare

Launch #8: SNEHA (BASIC)

After SNEHA created a CommCare application from the POC Model (Launch #3), SNEHA staff created their own household survey application to compliment their first application. The household survey is designed to help urban CHWs collect data about pregnant women, young children, and family planning practices, while also sharing counseling.

"Scaling CommCare to Deliver Community Impact"

Milestone 4 Report, 4 March 2013

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Overview

Dimagi has completed Milestone 4 of the USAID Grant No. AID-OAA-F-12-00018. This milestone consists of the following two elements:

- Baseline data collection in Kaushambi, Uttar Pradesh is complete
- Revision 1 of cost model and value in model in Bihar is complete

Each element is described below. Additionally, Annex A provides an update on all metrics included in the PMP against stated targets.

Baseline Data Collection in Kaushambi, Uttar Pradesh

In late December 2012, Dimagi, in collaboration with its research partners, completed the baseline survey of Accredited Social Health Activists (ASHAs) in the Manjhanpur block of Kaushambi, Uttar Pradesh in India. In total, 109 ASHAs completed the full baseline interview, resulting in a rich and robust data set. This data will be used to interpret the results of the performance feedback study. For example, the data will be used to evaluate how the impact of the performance graphs vary by the ASHAs' educational level or age. This data was also used do stratified/blocked randomization. The stratification variables were the number of visits conducted during an ASHA's first 90 days of work, subcenter, literacy, and population of village. Finally, this data set also represents a uniquely rich and robust source of information about ASHAs that we expect will be generally useful, even outside of this particular mobile health (mHealth) initiative.

Development of Survey Instruments

The questions that comprise the baseline survey were developed during a month-long period of field testing and iteration. Initial versions of the survey in English were brought to select ASHAs as an initial pilot to determine what types of questions were appropriate and how best to structure the survey. Special attention was paid to several participatory portions of the survey, such as incorporating a "bean game" in which the ASHA is asked to take a pile of beans and distribute them on cards proportionate to how she feels about what is written on the cards. For example, one of the questions asked which parts of being an ASHA she enjoys the most (i.e. vaccination days, home visits, writing reports, etc.). Initial testing results showed that the game needed to incorporate pictures and additional practice rounds for low-literate and illiterate ASHAs who were unable to read the cards.

During the training (described below) and piloting, Research Assistants (RAs) provided additional feedback regarding sensitive and inappropriate questions and language issues. The final questions were translated into Hindi by a professional translator, quality checked by the on-site team, and then back translated to ensure accuracy of translation.

Structure of the Baseline

The final structure of the baseline survey consisted of six modules:

1. **Personal and Household Background** – general questions about the ASHA’s home, family, and life; how the ASHA spends her time, indicators of wealth, etc.
2. **Social Capital** – questions that speak to the ASHA’s level of social connectivity
3. **Job Background and Motivations** – questions about the ASHA’s previous experiences and her opinions/feelings about working as an ASHA
4. **Social Network Tool** – questions about which other ASHAs or ANMs the ASHA knows best and characterization of those relationships in order to develop a social network map of ASHAs and ANMs.
5. **Psychometric Tool** – measurement of the ASHA’s general preferences and outlook on life
6. **Technical Knowledge Assessment** – measures the ASHA’s relevant health knowledge

Initially the baseline was to be carried out on a web-based version of CommCare on laptop computers, but the team switched to a tablet-based version of CommCare as a result of connectivity issues. The baseline was fully accessible on the tablet, in Hindi, and incorporated relevant skip logic and constraints to limit the entry of erroneous data. The collected data was submitted daily and its submission was verified via the secure, cloud-based CommCare website.

Data Collection

Data Collection Team

The data collection team consisted of seven local RAs who worked with one on-site Dimagi Research Coordinator (RC). The RAs were recruited through advertisements focused in Lucknow and Allahabad, two major cities in Uttar Pradesh. Close to 30 resumes and applications were received, and 20 candidates were interviewed following an initial screening. In early October 2012, the RC conducted the interviews with assistance from implementing partners CRS and Vatsalya. Eight applicants were invited to attend training on-site in Kaushambi and seven were selected for the final survey team, including one woman and six men. All seven RAs were fluent in Hindi and had some experience working with data and surveys. Although many efforts were made to recruit female RAs, it proved difficult to find women who were willing to live temporarily in Kaushambi.

Training and Preparation

Starting October 19, 2012, the RAs underwent a rigorous, five-day training on site in Kaushambi that was led by four members of the research team. The RAs were taught about methods and best practices for conducting in-depth interviews, read actual survey questions in detail, and had extensive opportunities to practice and critique each other. Following the training period, ASHAs were brought in from a nearby, non-study block so that the RAs could practice working with real ASHAs and conducting full-length interviews. Throughout this process the RAs were monitored by the research team and given feedback to ensure consistency among all RAs.



Left photo - Scott Lee of the Harvard Business School instructs RAs on some of the theory behind the baseline survey questions. Right photo - Two RAs assist with data entry and translations.

Daily Baseline Protocol

The team developed a daily operating schedule in order to maximize efficiency, ensure data validity, and minimize anticipated burden on the ASHAs. Two daily sessions were held at the implementing NGO's office - five ASHAs were interviewed in the morning and five in the afternoon. Five of the RAs were engaged in the interviews while two focused on managing logistics and monitoring the interviews. These responsibilities rotated daily. All ASHAs were provided with a private space for their interview to ensure confidentiality. Once the ASHAs arrived at the office, they were provided with an overview of the project and a description of the day's events, as well as an explanation of the consent process. Each ASHA then met her interviewer and after giving the consent, began the interview. Each interview lasted between three and four hours. All ASHAs were provided with lunch in addition to regular snack breaks. At the end of the interview, each ASHA was provided with compensation for their travel expenses.

At the end of each day all of the RAs met with the RC to discuss any issues or problems that had come up during the days' interviews. Careful notes were generated about each individual interview as well as general notes about confusing questions or other situations of note. The interviews began in early November 2012 and were completed by early December 2012.



Left photo – An RA guides an ASHA through the “bean game” portion of the job background and motivation module. Right photo - Each interview occurred in a semi-private space. A chair was always available for an RA “monitor” to come and listen in to the interview to ensure questions were being interpreted correctly.

Data Validation Methods

Throughout the baseline, the RAs in a monitoring role completed forms to report any confusion they witnessed over the interpretation of questions or other issues with how the baseline was being executed. The RC reviewed these notes daily and provided any necessary clarification and guidance. Additionally, the monitors often recorded the ASHAs’ responses to questions independently of the interviewer. This provided a rich data set to identify any confusion in coding of responses.

Following the end of the main survey period, several RAs remained in Kaushambi to carry out back checks. Nine ASHAs were asked to return to the office for an in-person review of the baseline. The ASHAs were asked several of the original questions again. Their answers were compared to the original answers to identify any questions that did not reliably produce consistent answers. An additional 20 ASHAs were contacted by phone for abbreviated back-checks and other specific data gaps were filled.

Preliminary Data Analysis

The figures and tables below present the data gathered for a select number of the questions asked during the baseline study. Table 1 presents the responses to five of the questions that had two possible answers (yes or no), and Figures 1-7 show the breakdown of responses to seven questions that had more than two answers.

Table 1: Basic findings about the 109 ASHAs surveyed in Kaushambi

Question	Yes	No
ASHA Illiterate	28%	72%
Has mud floor at home	27%	73%
Speaks some English	81%	19%
ASHA is main income earner in household	29%	71%
ASHA is Hindu (vs. Muslim)	97%	3%

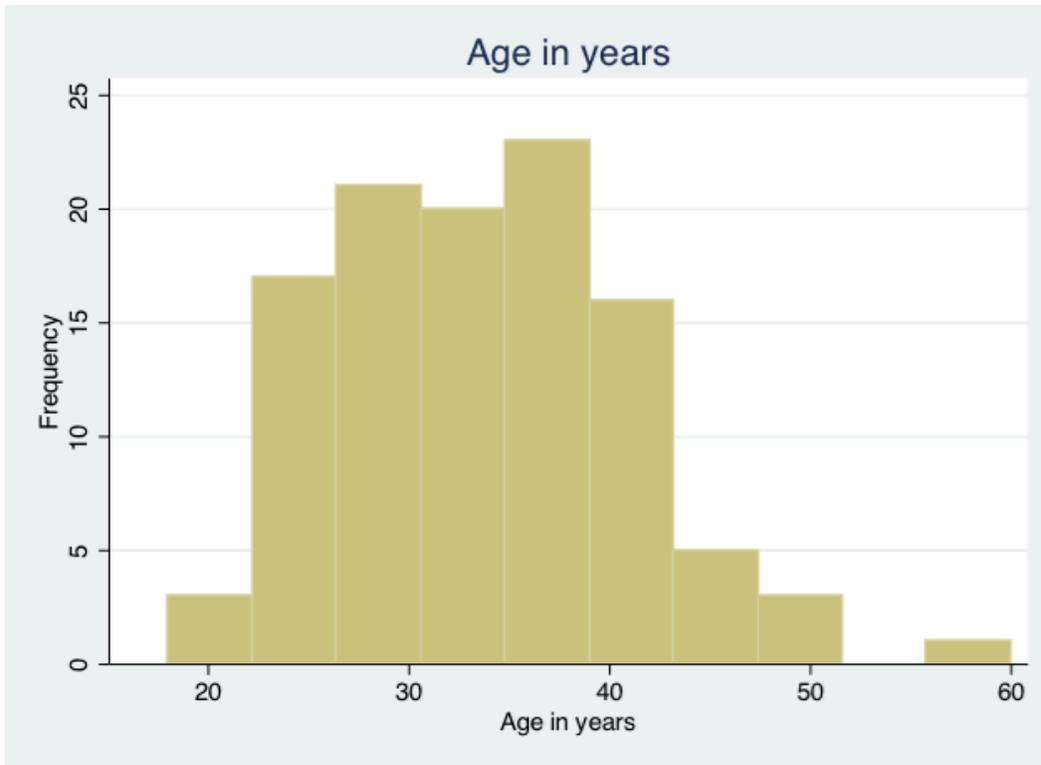


Figure 1: Age of ASHAs surveyed in Kaushambi



Figure 2: Motivation for becoming ASHA of ASHAs surveyed in Kaushambi

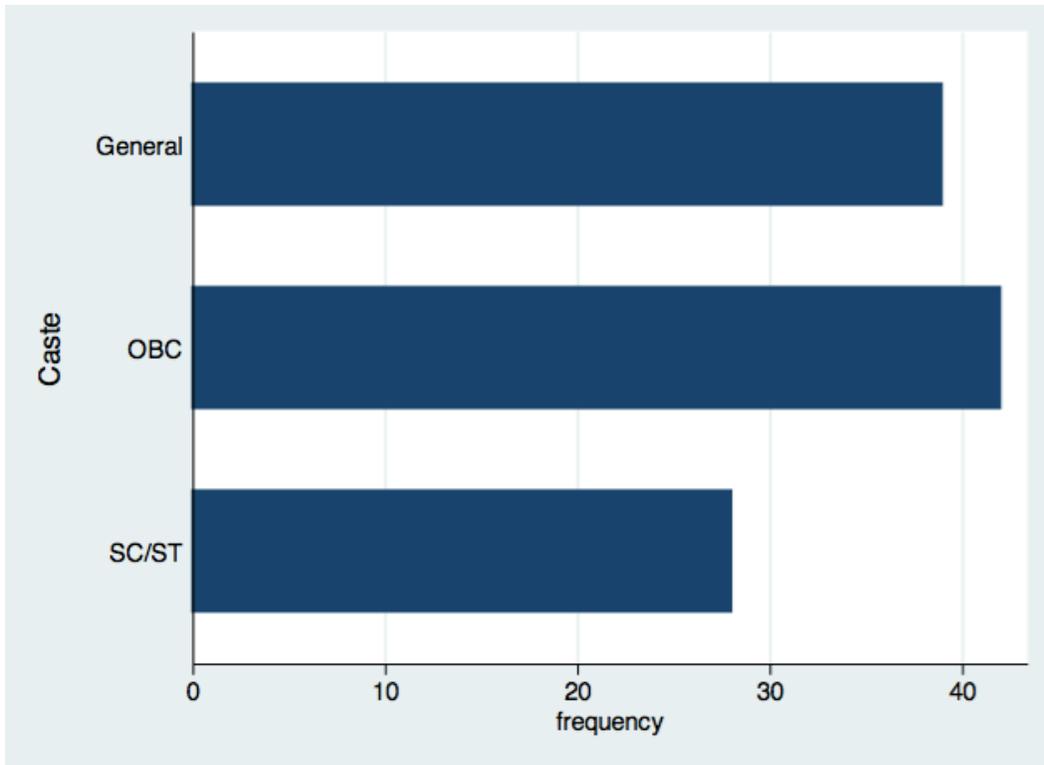


Figure 3: Caste of ASHAs surveyed in Kaushambi. Note that OBC is Other Backwards Castes, and SC/ST is Scheduled Caste/Scheduled Tribe. These represent historically oppressed segments of the population.

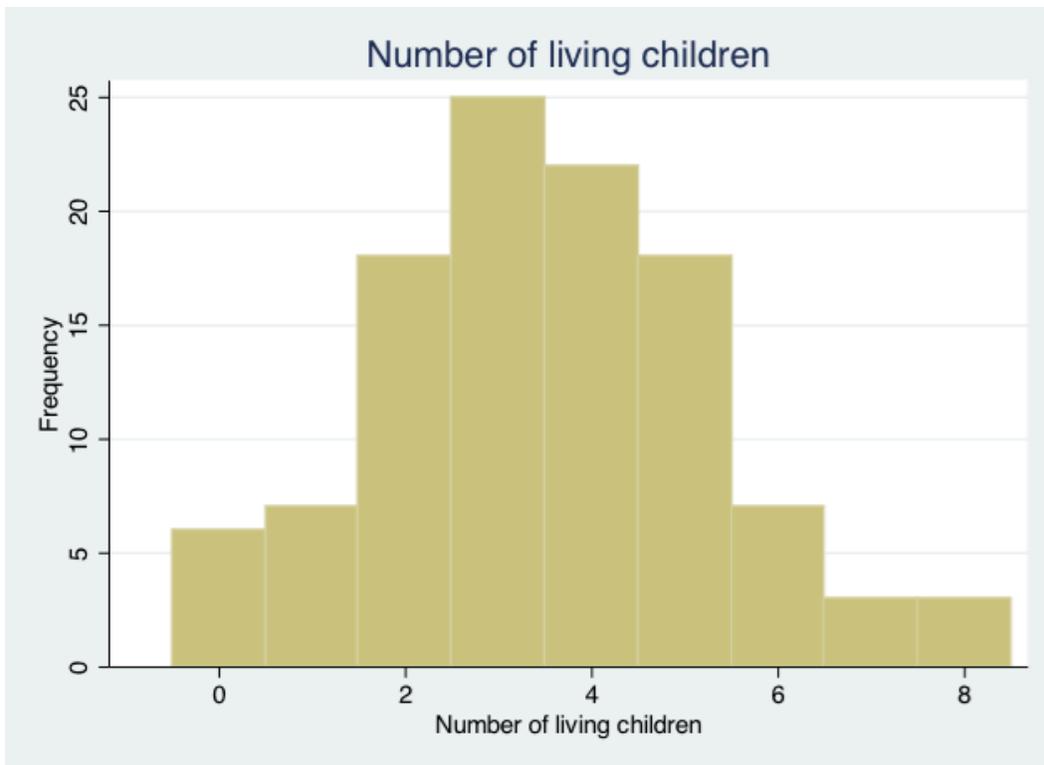


Figure 4: Number of living children of ASHAs surveyed in Kaushambi

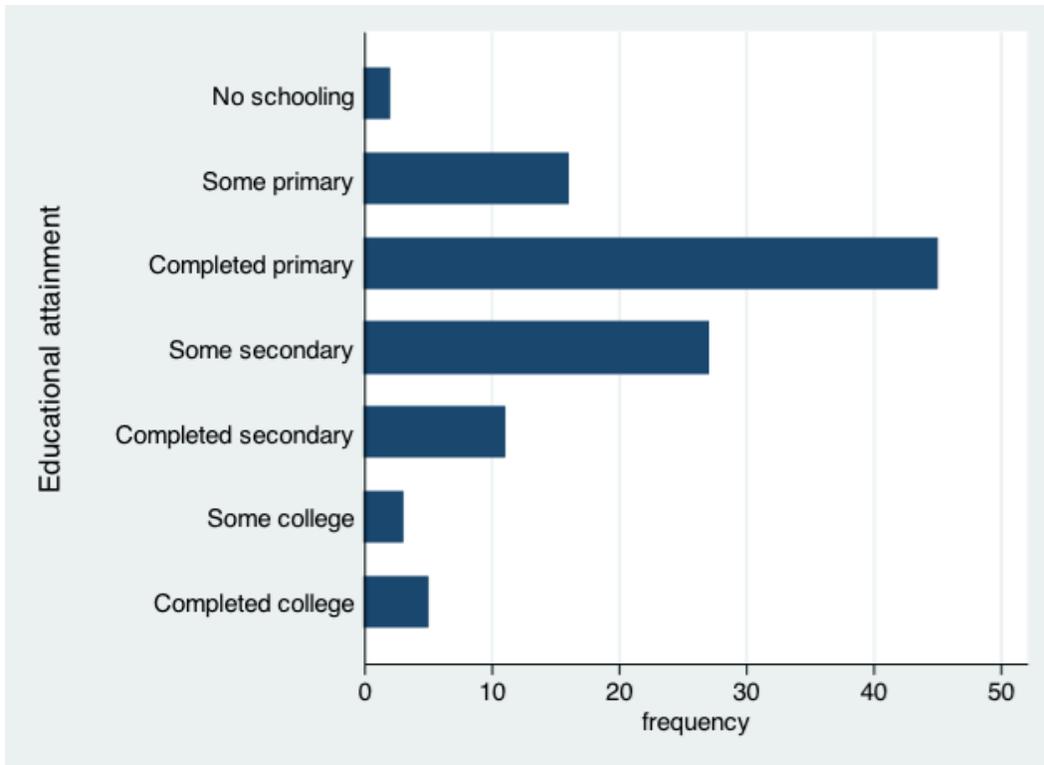


Figure 5: Education of ASHAs surveyed in Kaushambi

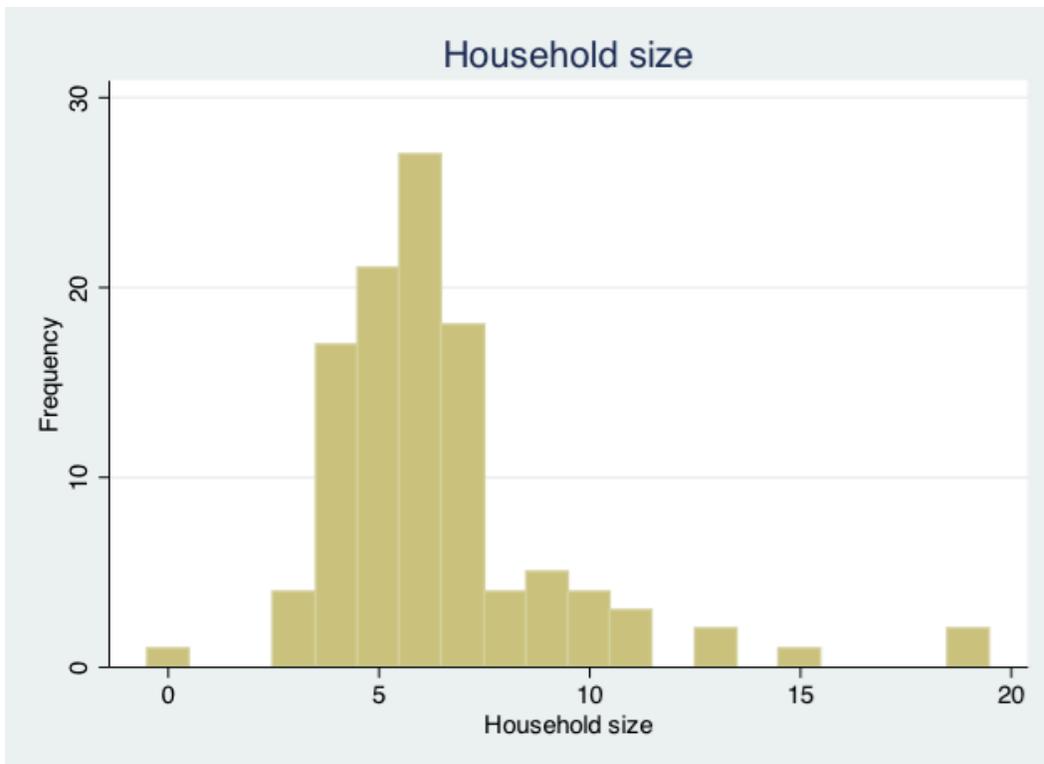


Figure 6: Household size of ASHAs surveyed in Kaushambi

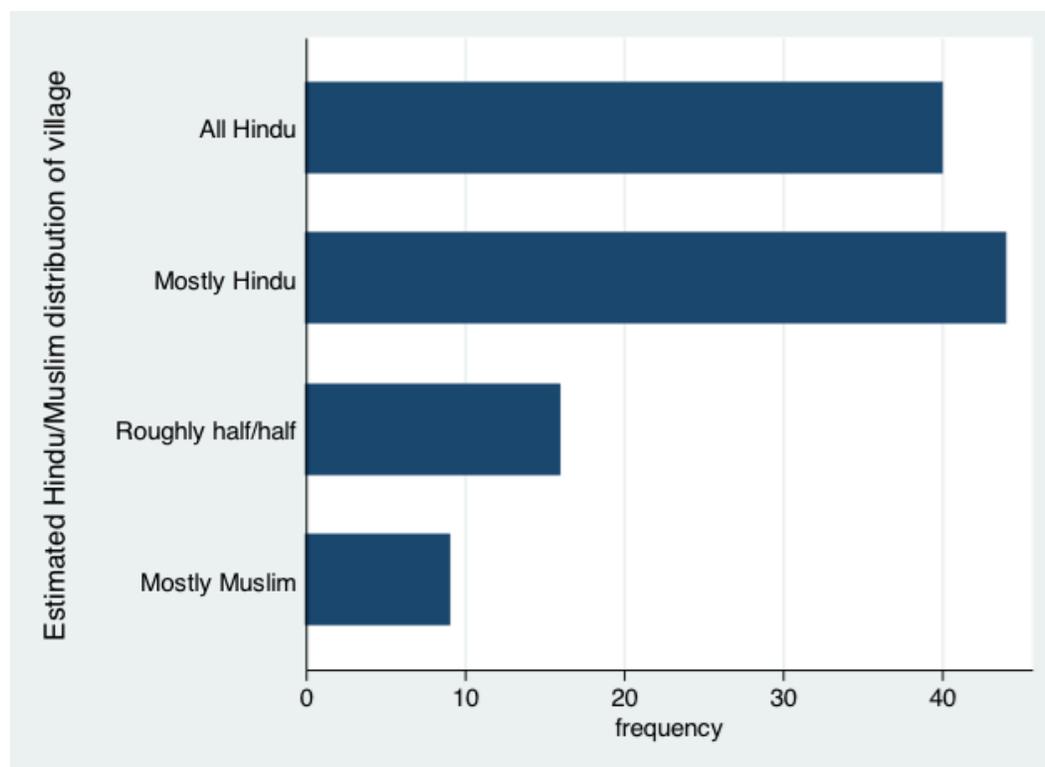


Figure 7: Estimated religious distribution of villages served by ASHAs surveyed in Kaushambi

Baseline Data on General Health Statistics in Kaushambi

As described in our implementation plan, our baseline data also includes general health statistics from the Kaushambi district. These are shown in the following table. For comparison, we also show the indicators for Uttar Pradesh as a whole.

Indicator	Kaushambi	UP
Maternal Mortality Ratio (per 100,000 live births)	442	345
Newborn Mortality Rate (per 1,000 live births, <28 days of age)	59 58 rural, 73 urban	50 53 rural, 36 urban
Infant Mortality Rate (per 1,000 live births, <12 months of age)	83 85 girls, 81 boys 81 rural, 103 urban	71 72 girls, 69 boys 74 rural, 54 urban
Under-5 Mortality Rate (per 1,000 live births, <5 years of age)	128 141 girls, 115 boys 129 rural, 122 urban	94 99 girls, 90 boys 101 rural, 68 urban
Sex Ratio at birth (girls per 1,000 boys)	859 863 rural, 814 urban	904 911 rural, 873 urban
Sex Ratio <5 years of age (girls per 1,000 boys)	894 898 rural, 841 urban	913 920 rural, 887 urban

First Revision of Cost Model and Value Model

Prior to this grant, Dimagi had developed a Total Cost of Ownership (TCO) model for deploying CommCare. The model was applicable to a wide range of settings, but we had estimated the necessary inputs (cost of phones, cost of training, etc.) for India.

Under this grant, we made it a goal to create an Effectiveness Model that will allow organizations to estimate the how much more effective their FLWs will be after introducing CommCare into their program. Combining this with the TCO model will allow organizations to model whether or not CommCare will make their FLW program more cost effective, as well estimate the health impact expected by introducing CommCare.

We were also interested in investigating whether the value proposition for CommCare varied substantially by the literacy rate of FLW users. Our first revision of the cost and value models can be seen in the following attachments:

- Overview of Effectiveness Model (Word document)
- Effectiveness Model (Excel)
- Revised Cost Model (Excel)
- Preliminary analysis of field work in Bihar (Word document)

Below, we describe some small updates to our cost model, introduce our effectiveness model, describe our investigation into literacy issues, and present next steps.

Revision of Cost Model

In February 2013, we conducted a review of the estimates in the price model and made model refinements. The list below summarizes the key changes:

- Estimates:
 - Changed FLW training cost from \$9 to \$8 per training day based on National Rural Health Mission prescribed costs for Training of FLWs.
 - Based on Indian salary structures, changed field staff salary from \$4400 per year to \$2400 per year.
 - Lowered cost of mobile phones (including charger and SIM) from \$111 to \$95 to reflect current prices.
 - Added in monthly travel costs for project managers (\$11) and field staff (\$22).
- Approach:
 - Removed the 3 year average lifetime assumption for Yearly Equipment Costs and replaced with annual Capital Depreciation / Replacement Rate set to 10% based on project experience.
 - Removed rounding of number of Project Managers and Field Staff in the model (previously would only add incremental whole #s of PMs/FSs when crossing specified CHW ratio, and the minimum number was set to 1 PM and 1 FS). The updated model now assumes linear growth (as a % of CHWs) for PM and FS FTEs with each additional user.

- Updated model and methodology to include intermediary unit calculations as outputs: Cost per Unit, Total Annual Units, Total Costs per year, Avg yearly costs per CHW, and estimated # of beneficiaries
- Addition of columns on inputs and outputs for using 2 languages in the model.

The refined cost model is attached as an Excel file. The net impact of the above changes resulted in an Avg. Annual Total Cost of Ownership of \$111 per CHW (previously reported at \$99).

Effectiveness Model

We have refined our Effectiveness Model (see the attached Effectiveness Model Excel file) that is further described in the attached Effectiveness Overview document. This model takes the 13 inputs shown in Table 2 below. These inputs include estimates of how much health benefit an ideal Frontline Worker (FLW) program can provide a population, as well as estimates of the level of service that people will receive before and after introducing CommCare across three key dimensions: access, quality, and experience of care. These terms are defined more carefully in the Overview document.

In Table 3, we present the initial estimates we used for the model and their rationale, though more investigation is needed to derive better estimates.

Table 4 shows the intermediate calculations that are derived from the inputs. This is the second tab of the Excel model. In our approach, there are nine levels of service that any client can receive from their FLW. This ranges from either no service at all, or one of the eight combinations of high or low access, high or low quality, and high or low experience. For each level of care, we use the inputs to compute the percentage of the population that receives that level with and without CommCare, as well as the percent of the maximum health benefit from a FLW that any client gets at that level. By definition a client getting no FLW service gets 0% of the FLW maximum benefit, while a client that receives high access, high quality, high experience care gets 100% of the FLW maximum benefit. These values are computed by making strong independence assumptions about how the 13 inputs interact.

Table 5 shows the outputs of the model in terms of key indicators. Some key indicators include how much more effective CommCare makes the program and how many lives per 1,000 people would be saved annually under these assumptions. This is the third tab of the attached Excel model. These values are computed in a straightforward way from the Table 4.

Table 2: Inputs to Effectiveness Model

#	Name	Description
1	Health: Without-CommCare	What is the number of deaths in this population per 1,000 people currently?
2	Health: With-Ideal-FLWs	What would the total deaths per 1,000 people be if the FLWs program performed perfectly—including registering all potential clients, timely follow-up, appropriate referrals, and providing health prevention messages persuasively?
3	Unserviced: Without-CommCare	What percent of the population that should be served by

		FLWs currently receives no service from FLWs?
4	Unservd: Conversion-Rate	After the introduction of CommCare, what percent of the population that doesn't receive FLW care will begin to receive care?
5	Access: Without-CommCare	Among the clients who receive care from FLWs without CommCare, what percent receive low access care?
6	Access: Conversion-Rate	After introducing CommCare, what percent of clients receiving low access care will begin receiving high access care?
7	Access: Relative-Impact	Compared to a client that has high access care from an FLW, what percent of the health benefit does a client with low access care receive? E.g., 80% would indicate that a client getting low access received 20% less total health benefit than a client getting high access care.
8	Quality: Without-CommCare	Among the clients who receive care from FLWs without CommCare, what percent receive low quality care?
9	Quality: Conversion-Rate	After introducing CommCare, what percent of clients receiving low quality care will convert to receiving high quality care?
10	Quality: Relative-Impact	Compared to a client receiving high quality care from an FLW, what percent of the health benefit does a client receiving low quality care receive? E.g., 80% would indicate that a client getting low quality got 20% less total health benefit than a client getting high quality care.
11	Experience: Without-CommCare	Among the clients who receive care from FLWs without CommCare, what percent receive low experience care?
12	Experience: Conversion-Rate	After the introduction of CommCare, what percent of clients receiving low experience care will begin receiving high experience care?
13	Experience: Relative-Impact	Compared to a client receiving high experience care from an FLW, what percent of the health benefit does a client receiving low experience care receive? E.g., 80% would indicate that a client getting low experience had 20% less total health benefit than a client getting high experience care.

Table 3: Initial estimates for Effectiveness Inputs

#	Name	Initial Estimate	Rationale for Estimate
1	Health: Without-CommCare	60	New infant mortality rates for Bihar are listed at 44 per 1,000 births.
2	Health: With-Ideal-FLWs	30	Crude estimate for what a perfect FLW system could yield.
3	Unservd: Without-	15%	Conservative estimate, given the large number

	CommCare		of low-performing ASHAs, that 85% of the eligible clients are served.
4	Unservd: Conversion-Rate	20%	Expecting modest improvement from CommCare, that 20% of the unserved will be enrolled through program improvements.
5	Access: Without-CommCare	70%	Estimating that 70% of clients have low access care without CommCare given consistent and clear reports that ASHAs are not conducting substantial or frequent visits before CommCare.
6	Access: Conversion-Rate	75%	Estimating that 75% of the clients will go from low to high access, given evidence that ASHAs using CommCare are conducting frequent and thorough visits, data from CommCareHQ showing frequent visits, and promising results from performance feedback.
7	Access: Relative- Impact	70%	A conservative estimate (relative to estimating a favorable CommCare effectiveness) that a client receiving low access care gets 70% of the health benefit as one receiving high access care.
8	Quality: Without-CommCare	50%	Estimating that 50% of the clients receive low quality care without CommCare, which is consistent with research in Bihar and findings in Uttar Pradesh that ASHAs know 50% of danger signs before CommCare.
9	Quality: Conversion-Rate	40%	Estimating that 40% of the clients receiving low quality care will convert to high quality given CommCare greatly increases thoroughness of visit, and a study in Uttar Pradesh showed ~40% improvement in danger sign knowledge from using CommCare.
10	Quality: Relative- Impact	40%	Estimating that a client receiving low quality care gets only 40% of the benefit of a client receiving high quality care, given that low quality visits do not convey key messages accurately and thus deliver less of the benefit.
11	Experience: Without-CommCare	40%	A conservative estimate (relative to estimating favorable CommCare effectiveness) that only 40% of the clients are currently receiving low experience care.
12	Experience: Conversion-Rate	70%	Estimating that 70% of the clients receiving low experience care will convert to high experience, given substantial evidence that CommCare improves credibility of ASHAs and that videos are very engaging, particularly in Bihar.

13	Experience: Relative-Impact	70%	A conservative estimate (relative to estimating a favorable CommCare effectiveness rate) that an unpersuasive ASHA (low experience) delivers 70% of benefit of a persuasive ASHA (high experience).
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Table 4: Intermediate calculations derived from the Inputs and used to create the Outputs

Table 2. Performance Level Comparison: Comparison of the multiple performance levels of care clients receive before CommCare and the level of care clients can receive after implementation of CommCare

Output No.	Performance Area			Percent Clients with this Level of Care			Percent
	Access	Quality	Experience	Before CommCare	After CommCare	Percent Change	Max Benefit
2.1	None	None	None	15%	12%	-20%	0%
2.2	Low	Low	Low	12%	1%	-95%	20%
2.3	Low	Low	High	18%	4%	-77%	28%
2.4	Low	High	Low	12%	1%	-89%	49%
2.5	High	Low	Low	5%	3%	-49%	28%
2.6	Low	High	High	18%	9%	-47%	80%
2.7	High	Low	High	8%	19%	151%	40%
2.8	High	High	Low	5%	6%	20%	55%
2.9	High	High	High	8%	45%	485%	100%

Table 5: Outputs from Effectiveness Model using initial Inputs

Table 3. Cost Effectiveness Analysis: Summary measures to evaluate cost effectiveness of CommCare implementation

Output No.	Summary Measure	Metric
3.1	Current average maximum benefit received by clients	41%
3.2	Post CommCare average maximum benefit received by clients	66%
3.3	Percent of gap closed by CommCare implementation	42%
3.4	Increase in effectiveness	59%
3.5	Post CommCare preventable deaths per 1000 population under surveillance	47
3.6	Lives saved per year by CommCare implementation per 1000 population under surveillance	13

Investigation into the impact of Literacy Level on Cost Effectiveness

Many ASHAs in India are not fully literate. Our research on into the cost effectiveness of CommCare in India includes an investigation into how the cost effectiveness of CommCare changes based on ASHAs' literacy levels. After analyzing CommCare data in Kaushambi and conducting a field investigation in Bihar, we have concluded that ASHA literacy does not appear to be a key factor in the cost effectiveness of CommCare. In particular, low literacy is not likely to limit CommCare's value, which was our primary concern. For our next steps, we plan to broaden the investigation beyond focusing solely on literacy.

Literacy Analysis from Kaushambi

We analyzed CommCare data from the 109 ASHAs surveyed in Kaushambi to compare literacy levels with CommCare performance levels. The baseline survey included a literacy measure in which the surveyor asks each ASHA to read aloud a simple Hindi sentence that they had not previously seen. The surveyor assesses the ASHA's ability to complete this task. The distribution of assessments is shown in Table 6, revealing a large number of ASHAs who are not fully literate.

Table 6: Distribution of literacy levels of ASHAs using CommCare in Kaushambi

Performance on Literacy task	Percentage
All words with ease	60%
All words with difficulty	12%
Some words	5%
Letters only	10%
No words or letters	11%
Refused	2%

For this analysis, we will classify "all words with ease" and "all words with difficulty" as literate, and all other classifications as illiterate. Based on these definitions, there are 72% literate and 28% illiterate users in our sample. We evaluated ASHAs' CommCare performance based on their use of two CommCare forms, Pregnancy Checklist and Pregnancy Counseling, using a rolling 90-day period as the time interval for performance measurement.¹

As shown in Table 7, there is little difference between the CommCare performance of illiterate and literate ASHAs in relation to these metrics. While more analysis is needed and we may yet uncover differences, it seems that that illiterate users in Kausahmbi do not use CommCare much less than literate ones. The benefit from CommCare derives, essentially, the difference between the FLWs' baseline performance before they use CommCare compared to their performance after they use CommCare. This analysis does not tell us if the baseline performance for literate ASHAs is higher or lower than illiterate ones and does not provide full insight into our metrics of access, quality, and

¹ The ASHAs were trained in batches, and some were delayed in starting their work after being trained. Thus, it is difficult to compare using fixed chronological markers, such as number of clients visited during a particular timeframe (e.g. October 2012). Instead, for each ASHA's effective start date, we have used the date on which her first form submission occurred. The measurement window starts on that date and concludes 90 days after that date.

experience. However, it does alleviate our concerns that illiterate ASHAs would not be able to use CommCare and thus derive little benefit.

Table 7: Comparison of literate and illiterate ASHAs' CommCare performance

	Measure	Mean for Illiterate ASHAs	Mean for Literate ASHAs
1	Cumulative visits (form submissions) during 90-day window. The maximum number of forms that can be submitted per client per day is one. If an ASHA visits a client and submits both a checklist form and a counseling form for the client on the same day, this counts only as one visit.	38.9	36.8
2	Cumulative cases (clients) during 90-day window. This includes all cases opened during the window, including cases closed during the window as well as cases that are still ongoing.	18.3	17.8
3	Average duration of visit (minutes). This uses the form "timeStart" and "timeEnd" metadata as a proxy for visit duration. If an ASHA submitted more than one form in a visit, the duration of the two forms have been added. Note that ASHAs may have different habits related to whether they keep a form open during the course of a visit even though no actual ASHA-related work is taking place.	22.0	22.0
4	Average interval between visits (days). This measures the average number of days between visits to a client. It could be misleading in that an ASHA who, for example, registers a client and visits the client again five days later but never sees the client a third time, will appear to have a low interval between visits despite not visiting the client frequently. Three ASHAs never visited any of their clients more than once, and thus they do not appear in this tabulation.	20.5	24.3

Investigation in Bihar

A Dimagi RA conducted an initial three-week field investigation in Bihar to further understand the value offered by CommCare. This was intended as formative research to contribute to our first revision of the value model and set the stage for further investigations. The research is described in detail in the attached "Bihar Research" document. The formative research informed the above estimates for the inputs to the Effectiveness model, as well as yielded the new findings described below.

After consulting with CARE, who is implementing CommCare in Bihar, we slightly modified our initial research objective to compare ASHAs of different literacy levels. This was based on feedback from the CARE staff, who did not think literacy was the main driver for the value proposition or uptake of CommCare. We decided instead to identify ASHAs that exhibited high, medium, and low levels of CommCare use.

In February 2013, a Dimagi RA assessed about 5 ASHAs in each category (high, medium, or low usage) and observed as many as possible using CommCare during a session with a client.

The Dimagi RA measured literacy as we did in Kaushambi, as well as collected information about ASHAs' age, education level, and other factors to observe which were correlated with usage level. We highlight the following ways to classify ASHAs, which are described in more detail in the attached Bihar Research document:

1. **CommCare Usage:** This followed the original metric of categorizing each ASHA as high, medium, or low. As described in the attached document, this categorization was based on the number of forms submitted over the last 90 days. This is referred to as 'UserType' in the analysis.
2. **CommCare Proficiency:** How well the ASHA had mastered the use of CommCare, as determined by the Dimagi RA observing them use CommCare.
3. **Literacy:** Based on an RA asking them to read a sentence aloud, as in Kaushambi.
4. **Quality of Care Provided:** This was assessed by an RA who observed an ASHA's visit with a client. We included two scores. One was more objective based on a checklist the RA used to determine if the ASHA covered all necessary material. The other was a more subjective assessment by the RA. These ended up to be well correlative
5. **Experience of Care Provided:** This was also assessed by our RA after observing one visit with a client, and was based on a scoring mechanism from the same observation form as "Quality of Care Provided."
6. **Motivation and Attitude:** This was not measured systematically in our formative research but emerged as an important dimension from the perspective of an RA. We will study this more formally in our future work described below, using questions from the Kaushambi survey.

During the three-week period we were able to interview 14 ASHAs. All of the subsequent conclusions and analysis are preliminary, but the findings include:

- There is no strong correlation between literacy and CommCare usage as judged by number of forms submitted). See Table 8.
- There is no strong correlation between literacy and CommCare proficiency. See Table 8.
- There is not a correlation between literacy and either quality of care or experience of care. See Table 10.
- There is a strong correlation between CommCare usage and CommCare proficiency. See Table 9.
- There are strong correlations between CommCare usage and quality of visit, CommCare usage and experience of visit, CommCare proficiency and quality of visit, CommCare proficiency and quality of visit. See Table 10.
- However, the above correlations with quality and experience are stronger for literate users than for lower literate users. See Table 11.

The final finding is intriguing and may point to there being an important correlation between an ASHA's literacy level and the value offered by CommCare, in that even if lower literate are able to use

CommCare, they may be receiving less than the full benefit. This warrants further investigation, though our conclusion that we should not focus on literacy as a primary differentiator remains.

Finally, the RA also had a chance to interview and observe some home visits of ASHAs who are not using CommCare. Most of these visits were short and incomplete. The ASHAs focused on the immediate and current state of the baby or mother, rather than assessing their health since the last visit. This meant that the information provided was targeted only to the immediate situation of the mother or child. For example, during a visit with a mother and her newborn that had a cough/cold, an ASHA counseled the mother to bring the child to the doctor and didn't address other aspects of newborn care.

Table 8: Pairwise correlations between ASHA Literacy, Education, Previous Mobile Experience, and Age vs. CommCare Usage and CommCare Proficiency, and Education.

ASHA Characteristic	CommCare User Type	CommCare Proficiency	Education
Literacy	0.2580 (0.3347)	0.2892 (0.2774)	0.6025 (0.0135) ††
Education	0.1531 (0.5715)	0.1611 (0.5512)	
Previous Mobile Experience	-0.3825 (0.1436)	-0.3570 (0.1746)	-0.1677 (0.5348)
Age	-0.3989 (0.1259)	-0.2372 (0.3764)	0.3131 (0.2377)

†† Significant at 99% Confidence Interval

Table 9: Correlation between CommCare Proficiency and CommCare Usage

	CommCare Usage
CommCare Proficiency	0.88177 †† (0.0001)

Table 10: Pairwise correlations between Literacy and Quality/Experience vs. CommCare Usage and Quality/Experience

	Quality Score*	Perception From Visit Quality Score**	Visit Experience Score***
Literacy	-0.0159 (0.9534)	-0.4271 (0.1277)	-0.0645 (0.8124)
CommCare Usage	0.6708 †† (0.0045)	0.8466 †† (0.0001)	0.6762 †† (0.0040)
CommCare Proficiency	0.6329 †† (0.0085)	0.7613 †† (0.0016)	0.6389 †† (0.0077)

*Quality Score is generated by scoring the quality of the visit and counseling. It includes if the visit incorporated counseling and the number of counseling topics, and for each topic, if complete information was provided, if accurate information was provided, if the client asked questions, and if the ASHA verified that the messages were being received.

**Perception Visit Quality was categorized as High, Middle, or Low while observing the home visits, based on the researcher's perceptions.

***Experience Score was generated by adding scores for frequency of audio, frequency of video, frequency of showing images, if the ASHA spoke with confidence, if she spoke loudly and clearly, and the duration of visit, where under 10 minutes receives 1, 10-20 minutes receives 2, and over 20 minutes receives 3.

†† Significant at 99% Confidence Interval

We test for correlation between CommCare Proficiency and Quality Score/Experience Score by CommCare User Type. The results suggest a stronger correlation for low and middle users of CommCare, where Quality Score and CommCare Proficiency are positively correlated. For High Users, Quality Score and CommCare Proficiency are negatively correlated. Experience of Care is negatively correlated to CommCare Proficiency for low and middle users, while it is positively correlated for High users. This is an interesting result, although it is not significant. Please See Table 5, and Graph 4 for details.

Table 11: Pairwise Correlations CommCare Proficiency and Quality Score/Experience Score by CommCare Usage

CommCare Usage	Quality Score and CommCare Proficiency	Experience Score and CommCare Proficiency
1 Low	0.5246 (0.2853)	-0.4167 (0.4112)
2 Middle	0.4736 (0.4204)	-0.2995 (0.6245)
3 High	-0.0257 (0.9672)	0.5669 (0.3190)

Next Steps

While we have completed our first revision of the value and cost model, we will be working to improve them. We will now share our Effectiveness Model with several of our partners. The concepts are subtle and we will continue to improve the presentation. We hope to poll several partners in India to get their estimates of each of the 13 parameters. Ultimately, we would like to publish our work on cost effectiveness modeling.

We will continue the research we started in Bihar. We hope to return later in 2013 and compare a random sample of ASHAs who use CommCare to those who do not in terms literacy, quality of care provided, quality of experience provided, and motivation. For those using CommCare, we will also measure CommCare usage and CommCare proficiency. We will get a larger sample of ASHAs, especially those not using CommCare. We will continue to investigate the role of literacy in determining the cost effectiveness of CommCare, but equally focus on other measures such as attitude and motivation.

Conclusion

Dimagi has completed Milestone 4 on time and is on track in regard to the other Milestones. Our RFA was a large success and we have over 25 organizations scheduled to launch CommCare. The second block of ASHAs in Kaushambi is scheduled to be trained by May of 2013. We are now shifting our focus on how to maximize our impact and accelerate the scale up of CommCare in India.

Annex A: Updated Metrics

Below is our updated PMP. Note that we slight adjusted our definitions of BASIC, PLUS, and FULL to be as follows:

BASIC: Organization builds the CommCare application on their own and conducts training with little to no help from Dimagi.

PLUS: Dimagi builds application, or majority of it, and conducts or supports any FLW training. All Proof of Concept Packages are PLUS packages.

FULL: Dimagi builds application and provides additional support, such as project management, Active Data Management, custom reports, or additional field time beyond what is included to launch PLUS projects.

Area	#	Indicator	Baseline (Sept 2012)	Nov-12	Feb-13	Aug. 2014 Target	Frequency of Data Collection	Data Source
Scale Up Monitoring	1	Number of new programs in India using CommCare	0	1	5	40	New programs reviewed monthly	Automatic from CommCareHQ after manual flag set
	2	Percent of new programs that try CommCare in India that are using it after one year	0% (0/0)	0% (0/0)	0% (0/0)	70%	New programs reviewed monthly	Automatic from CommCareHQ after manual flag set
	3	Number of new programs using CommCare in India that are scaling after 12 months	0% (0/0)	0% (0/0)	0% (0/0)	40%	New programs reviewed monthly	Automatic from CommCareHQ after manual flag set
	4	Number of new programs using CommCare in India for at least 12 months that are now at scale	0% (0/0)	0% (0/0)	0% (0/0)	30%	New programs reviewed monthly	Automatic from CommCareHQ after manual flag set
	5	Percent of BASIC CommCare programs in India	28% (5/18)	25% (5/20)	9% (2/22)	40%	New programs reviewed monthly	Automatic from CommCareHQ after manual flag set
	6	Percent of PLUS CommCare programs in India (includes POC packages)	61% (11/18)	60% (12/20)	64% (14/22)	50%	New programs reviewed monthly	Automatic from CommCareHQ after manual flag set
	7	Percent of FULL CommCare programs in India	11% (2/18)	15% (3/20)	27% (6/22)	10%	New programs reviewed monthly	Automatic from CommCareHQ after manual flag set
	8	Number of FLWs that have used CommCare in India	1,040	1,061	1,134	8000+current value	Real Time	Automatic from CommCareHQ
	9	Number of clients seen by FLWs using CommCare in India	69,094	89,267	120,765	200,000	Real Time	Automatic from CommCareHQ
	10	Number of FLWs trained in Bihar to use CommCare	519	519	519	500	Real Time	Automatic from CommCareHQ
	11	Number of FLWs trained in Kaushambi to use CommCare	116	122	122	285	Real Time	Automatic from CommCareHQ
Performance Monitoring	12	Percent of clients seen in last 60 days (proxy indicator for on time visit percentage)	74%	58%	71%	70%	Real Time	Automatic from CommCareHQ
	13	Percent of clients seen in last 120 days (proxy indicator for percentage clients who are still active)	93%	95%	92%	80%	Real Time	Automatic from CommCareHQ
Usage	14	Percent of new CommCare programs in India actively using ADM	0% (0/0)	0% (0/0)		n/a	New programs reviewed monthly	Automatic from CommCareHQ after manual flag set
	15	Percent of new CommCare programs in India actively using the Call Center	0% (0/0)	0% (0/0)		n/a	New programs reviewed monthly	Automatic from CommCareHQ after manual flag set
	16	Average number of clients seen by each FLW using CommCare in India	66	84	106	n/a	Real Time	Automatic from CommCareHQ
	17	Total forms submitted	227,511	417,120	638,872	n/a	Real Time	Automatic from CommCareHQ

"Scaling CommCare to Deliver Community Impact"

Milestone 5 Report, 4 June 2013

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Overview

Dimagi has completed Milestone 5 of the USAID Grant No. AID-OAA-F-12-00018, which consists of the following requirement:

- Launch 16 new programs or reach 3,200 new extensions workers using CommCare (whichever occurs first).

The sections below describe the activities Dimagi has undertaken to complete this milestone. All 16 programs launched under the DIV grant are summarized in Table 1 below. Launches 9-16 are described in further detail. The previously launched programs are described in detail in a previous Milestone report.

Activities

Revisions to Proof of Concept Support Plan

As Dimagi Field Managers continue to provide support to organizations in developing, field-testing, and deploying CommCare applications, Dimagi has made some improvements in deploying the Proof of Concept (POC) packages.

For applications that are used by low literate users or heavily include behavior change communication content, audio in CommCare was been hugely popular amongst implementing partners. Audio development for CommCare, which includes recording, processing, and integrating into the application, takes a very long time to do well. During the first eight projects, Dimagi Field Managers would typically complete the recordings and process the audio during their two-week field visits. This process was often taking away from valuable time that Dimagi Field Managers could have used to build organizations' capacity to manage, troubleshoot, and use more advanced features of CommCare's tools. Dimagi staff have developed support tools that guide organizations in completing audio requirements for their application. An instructional video Dimagi made is available [online](#).

In the original implementation model, Dimagi Field Managers completed the CommCare application for the organization before the pre-scheduled field visit and completed any media work and integration during the two-week field visit. After eight POC launches, Dimagi revised the implementation model to encourage organizations to take more ownership of their role and responsibilities for the CommCare project. In the revised model, organizations are asked to complete media work, translations, and provide user registration information prior to when Dimagi Field Managers arrive on site. The revised POC implementation schedule is shown in Figure 1 below.

*Site Visit start date agreed upon with Dimagi

Step	Responsible Party	Award Acceptance (weeks 1-4)				Application Specification (8 weeks, to begin 10 weeks before start of site visit)							Planning (2 wks before site)		GATE #3		Site Visit	
		1	2	3	4	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	0	+1	+2
1. Dimagi notifies partner of POC package award	Dimagi	X																
2. Meeting with Dimagi to discuss requirements and	Dimagi	X	X															
3. Any requested changes to the MOU submitted	Partner			X														
4. MOU signed and submitted	Partner				X													
5. Organizational baseline survey signed and submitted	Partner				X													
6. CommCare Definition Worksheet #1 submitted	Partner					X												
7. Meeting scheduled to discuss Worksheet #1	Dimagi						X											
8. Revisions to Worksheet #1	Partner							X										
9. CommCare Definition Worksheet #2 complete (Partner and Dimagi agree on	Partner & Dimagi								X									
10. CommCare Definition Worksheet #3 completed	Partner									X								
GATE #1 - Tentative field visit block scheduled																		
11. Translations for application content and audio script (if applicable) submitted	Partner										X							
12. Image consolidation and request submitted	Partner											X						
13. Processed audio files	Partner												X					
14. Formatted videos submitted (if applicable)	Partner													X				
GATE #2 - Tentative two weeks for field visit scheduled																		
15. Mobile user details submitted and SIMs procured,	Partner														X			
16. List of project staff attending CommCareHQ	Partner														X			
17. CommCare prototype application finalized	Dimagi															X		
18. Field visit schedule shared and finalized	Partner															X		
GATE #3 - Confirm field visit																		
19. Site Visit	Partner & Dimagi																X	X
20. Submission of final survey (3 months after Site Visit)	Partner																	X
21. Remote support of deployment (Ongoing)	Dimagi																	X

Figure 1: Revised POC Implementation Schedule

Field Manager Meetings

As part of Dimagi’s knowledge sharing process for implementing POCs, all India-based Dimagi field staff have been participating in “POC Round-Up” meetings at the end of every month to discuss lessons learned and challenges. The first POC Round-Up meeting was conducted completely online and remotely. The focus of the first POC Round-Up meeting was mostly on implementation processes and expectations during field visits. The second POC Round-Up meeting was conducted in-person in New Delhi, and focused primarily on follow-up, support, and monitoring processes after POCs are launched in the field and when Dimagi Field Managers leave the site.

Dimagi also developed a monthly reporting format that requires POCs to outline challenges, lessons, and to indicate progress on the goals identified in their proposals. This requires partners to reflect during the

field iteration phase and testing process, as well as to use the data management tools provided in CommCareHQ to study progress towards their goals. Dimagi is currently testing this reporting tool with early POC projects.

Technical Support for CommCare Programs

Dimagi has also developed new systems to ensure that CommCare users, supervisors of users, and project managers have the necessary support to maintain their CommCare applications and escalate any problems that may arise. Once CommCare applications are deployed, it is common that partners may face technical issues that include deleted applications or multimedia, problems with application permissions, or problems with the network. Initial observations show that the frequency of initial technical issues significantly subsides after one to three months.

At the end of the field visit, Dimagi sets up partners with a technical support application based in CommCare in which they may report technical issues directly to Dimagi. Dimagi has created template reports on CommCareHQ that send summaries of technical issue forms filled out by project support staff directly to Field Managers via email. Based on the issues reported by project staff, Field Managers at Dimagi are able to provide necessary and timely technical support to POC projects.

BASIC, PLUS, and FULL Support

Dimagi helps organizations launch CommCare through three levels of support.

BASIC Support: With BASIC Support, an organization builds the CommCare application on their own and conducts training of frontline workers (FLWs) with little to no field support from Dimagi. Dimagi provides training to the organization and technical assistance to build and deploy the CommCare project.

PLUS Support: With PLUS Support, Dimagi builds the application, or the majority of it, and conducts or supports any FLW training. All organizations launched with a POC package are categorized as PLUS support. In achieving Milestone 5, all eight new launches received PLUS support.

FULL Support: With FULL Support, Dimagi builds the application and provides additional support, such as project management, Active Data Management, custom reports, or additional field time beyond what is included to launch PLUS projects.

Milestone 5 Launches

Table 1 below summarizes the new programs that have been launched with CommCare under this grant. For each launch, the following information is provided:

- **Organization:** Name of the partner organization that is implementing a CommCare project
- **Location:** District and state in India where the CommCare application is being deployed
- **When Launched:** When the CommCare application was launched
- **Sector:** Describes what development sector the CommCare application addresses (e.g. Health, Agriculture, Finance, etc.)
- **Focus Area:** Indicates what focus area within the sector the CommCare application

addresses (examples within health include MNCH, sexual health, malaria, etc.).

- **Project Type:** Indicates whether the project was with BASIC, PLUS, or FULL support.

Contact information for the organizations listed in Table 1 is available upon request.

Table 1: Summary of Programs Launched Under Dimagi’s Stage 2 DIV Grant

Organization	Location	When Launched	Sector	Focus	Project Type	CommCare User
1. Catholic Relief Services	Kaushambi, Uttar Pradesh	Sep. 2012	Health	Supervision	Full	Field Supervisors
2. CARE	Saharsa, Bihar	Nov. 2012	Health	Technical Support	Full	Technical Support Staff
3. SNEHA	Mumbai, Maharashtra	Nov. 2012	Health	Maternal Health	PLUS	Community Organizers
4. KGVK	Ranchi, Jharkhand	Feb. 2013	Health	Maternal Health	PLUS	Community Mobilizers
5. World Renew/EFICOR	Bangalore, Karnataka	Mar. 2013	Health	Maternal Health	PLUS	Saahiyas
6. Swasti	Sahibganj, Jharkhand	Mar. 2013	Health	Sexual Health	PLUS	Peer Educators
7. Aarohi	Nainital, Uttarakhand	Mar. 2013	Health	Maternal Health	PLUS	ASHAs
8. SNEHA	Thane, Maharashtra	April 2013	Health	Household Tracking	BASIC	Urban CHWs
9. Marie Stopes India	Bareilly, Uttar Pradesh	April 2013	Health	Family Planning	PLUS	Interpersonal Communicators (IPCs)
10. Comprehensive Rural Health Project	Jamkhed, Maharashtra	April 2013	Health	Maternal & Child Health	PLUS	Village Health Workers
11. SKNMC/Johns Hopkins	Pune, Maharashtra	April 2013	Health	Household Tracking; Empowering Women	PLUS	Hospital staff
12. Pollinate Energy	Bangalore, Karnataka	April 2013	Energy	Affordable Energy	PLUS	Pollinators
13. St. John’s Research Institute	Bangalore, Karnataka	May 2013	Health	Domestic Violence	PLUS	ANMs
14. UNION	Ranchi, Jharkhand	May 2013	Health	Tuberculosis	PLUS	Rural Health Care Providers; Lab Techs
15. Durbar	Calcutta, West Bengal	May 2013	Health	Sexual Health	PLUS	Peer Educators
16. PCI Global	Moradabad, Uttar Pradesh	May 2013	Health	Mother/Newborn Post-partum Care	PLUS	ASHAs

Dimagi’s Milestone 3 report described the first eight organizations that launched CommCare applications under this grant. Launches 9-16 are described in greater detail below.

Launch #9: Marie Stopes India

Marie Stopes India provides family planning and reproductive health services throughout India, focusing specifically on poor and young women and men. The organization’s CommCare application is designed

to support FLWs called Interpersonal Communicators (IPCs) in counseling women on various birth control methods. IPCs use the CommCare application to provide information to women about several different birth control methods, including birth spacing and birth limiting options. The CommCare application has separate modules for individual and group counseling sessions, and gives IPCs the ability to follow up with clients.

Launch #10: Comprehensive Rural Health Project (CRHP)

The Comprehensive Rural Health Project mobilizes communities to use simple tools, adapted to the local context, to address priority health needs, and empowers them to be in charge of their own development. The CRHP model has been adopted in over 178 countries, including in India where they provide services that impact half a million people in Maharashtra. The CRHP application is designed to help Village Health Workers in Maharashtra track essential medical services



A Dimagi Field Manager during a CommCare training with CRHP Village Health Workers.

delivered to pregnant women and to provide counseling about safe delivery and pregnancy practices. This application is a replication of Dimagi's standard maternal and child health (MCH) application that has been field tested with over five organizations over two years. CRHP wanted to leverage field-testing elsewhere for the pilot phase before they recommend any changes. This application is the first MCH application whose content and audio is completely translated in Marathi. Due to high levels of inter-community migration, Dimagi Field Managers have built a migration module into this application that allows the Village Health Workers to take into account when pregnant women have moved to a new community.

Launch #11: Shrimati Kashibai Navale Medical College & Johns Hopkins University

The CommCare application for Johns Hopkins University and Shrimati Kashibai Navale Medical College & General Hospital helps identify and track life goals of women enrolled in collaboration's empowerment training programs. The program initially developed by David Gershon and Gail Straub, founders and co-directors of the Empowerment Institute's School for Transformational Social Change, has successfully been applied over the past 30 years in numerous countries worldwide. In the application, field surveyors, who are also workshop trainers, register workshop participants and document their goals across seven core areas of life, such as relationships, work, and health. The application guides the participant to introspect their emotions, develop related goals for each value, and during follow-up visits, reminds participants of their progress in reaching their goals and tracking achievements.

Launch #12: Pollinate Energy

Pollinate Energy is an Indian-based NGO whose mission is to eradicate energy poverty through clean energy solutions, including solar-powered lights. Pollinate Energy's CommCare application is used by Pollinate Energy's "Pollinators" to manage their energy solutions stock, complete community profile surveys, and ensure that communities provide accurate and timely repayments for solar-powered lights. In addition to supporting Pollinators, the application also provides a solar-powered light installation guide for beneficiaries.

Launch #13: St. John's Research Institute and Catholic Bishops' Conference of India (CBCI) Society for Medical Education

St. Johns Research Institute and the CBCI Society for Medical Education CommCare application helps Auxiliary Nurse Midwives (ANMs) in Bangalore screen victims of domestic violence. There are three modules in the application. The first module is a registration module, in which ANMs track antenatal, post-natal or general visit details for pregnancy cases. The second module is a domestic violence-screening module, in which the ANM completes a checklist for indirect signs of domestic violence. The third module contains a checklist of direct and more obvious signs of domestic violence.



A CommCare application demonstration with Auxiliary Nurse Midwives from St. John's/CBCI



A Dimagi Field Manager working with an ANM as she uses her CommCare application

If a relevant set of questions in the second module are recorded, the ANM is guided to fill out the third module, which contains a checklist of high risk signs, prompts for referrals, and displays suggestions for counseling. A significant amount of flexibility is built into the counseling section, so depending on the situation, a choice of counseling topics are displayed in CommCare and ANMs can choose specific topic(s) or whether they would like to provide counseling.

Launch #14: The International Union Against Tuberculosis and Lung Disease (UNION)

UNION's CommCare application seeks to improve TB case detection and follow-up rates in rural Jharkhand. Rural Health Care Providers (RHCPs) use the CommCare application to refer patient cases to a Lab Technicians (LT), who then test sputum for tuberculosis. If a patient is lost to follow-up, an SMS

will be sent to the patient, the RHCP, and the LT. An SMS will also be sent to the patient regarding the lab result. The CommCare application is also used to help counsel patients about TB transmission and treatment options, and is used to make sure that the patient is adhering to their DOTs treatment.

Launch #15: Durbar Mahila Samanwaya Committee

Durbar is a sex worker advocacy organization that represents over 65,000 sex workers. The organization works to establish sex worker rights and reduce discrimination in marginalized communities. With the Durbar CommCare application, peer educators track sex workers and provide them with weekly sexual health counseling sessions. During these sessions, a peer educator updates a sex worker's case with sexual health information, including whether she's been tested for STIs, is using condoms, or has faced violence in the last week. The peer educator then provides the appropriate sexual health counseling messages based on the sex worker's responses. The application also informs sex workers about social entitlements and the USHA cooperative, which gives sex workers the opportunity to take out loans.

Launch #16: PCI Global

PCI Global works to prevent disease, improve community health, and promote sustainable development worldwide. PCI Global's CommCare application supports ASHAs in providing post-partum care to mothers in Uttar Pradesh. The application provides ASHAs with information about maternal and newborn post-partum home assessments, including teaching ASHAs about early warning signs of complications. ASHAs can use the CommCare application for early home-based management and to diagnose and refer mothers and children with post-partum complications. The application is expected to reach approximately 2,000 mothers/pregnant women across ten different areas.



"Scaling CommCare to Deliver Community Impact"

Milestone 6 Report, 4 June 2013

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Overview

Dimagi has completed Milestone 6 of the USAID Grant No. AID-OAA-F-12-00018. This milestone consists of the following element:

- 285 CHWs are trained in Kaushambi, Uttar Pradesh

The details of the training are described below. Additionally, Appendix B provides an update on all metrics included in the PMP against stated targets.

Completion of CHW Training in Kaushambi, Uttar Pradesh

Total Number Trained

As detailed in Appendix A, a total of 318 people were trained on CommCare in Kaushambi, Uttar Pradesh, which consisted of 259 Accredited Social Health Activists (ASHAs), 49 Auxiliary Nurse Midwives (ANMs), and 10 Sector Facilitators. As described in the Project Implementation Plan submitted as part of Milestone 1, we had initially expected to train all 285 ASHAs in CommCare in two blocks (Manjhanpur and Mooratganj) in Kaushambi, Uttar Pradesh. However, it turns out that 26 of the ASHAs were not active in their jobs and could not be trained.

Having 259 ASHAs use CommCare rather than 285 will not hinder the planned research in Kaushambi. As described in the implementation report, the research plan is to test the primary hypothesis on the first block of 110 ASHAs. This research is underway. The second block of ASHAs will be used to test additional hypotheses. There is a provision in the research plan to allow the second block to also be used to test the primary hypothesis. Even in this case, the difference between 259 and 285 on the power of the study is negligible. The figure below shows the power calculations by Dimagi's partner at Harvard University, showing that the Minimum Detectable Effective Size (MDES) is essentially unchanged in that range.

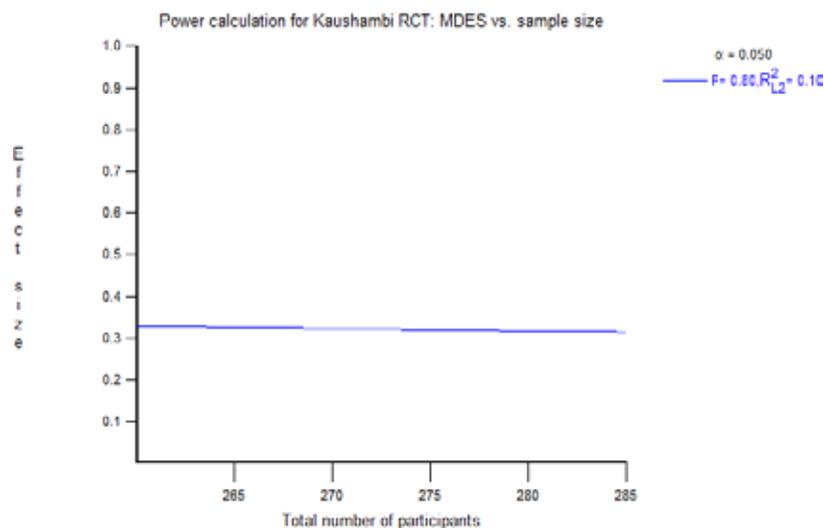


Figure 1: Kaushambi Study's Power Calculation

Background: CommCare Application

The CommCare application was developed in collaboration with Dimagi's partners Catholic Relief Services (CRS) and Vatsalya for ASHAs in the Manjhanpur and Mooratganj blocks of the Kaushambi district in Uttar Pradesh, India. ASHAs can use CommCare to monitor the health and delivery of essential services to pregnant women, post partum mothers and newborns. The pregnancy module contains pregnancy care checklists, danger sign assessments, and forms to counseling women about the importance of antenatal care check-ups, pregnancy danger signs, and birth preparedness.



Figure 2: A map of Uttar Pradesh, showing the location of the Kaushambi district



Figure 3: CommCare Application for Pregnancy, Postpartum and Newborn Care

In preparation to roll out the CommCare pregnancy module trainings for ASHAs in the Manjhanpur and Mooratganj blocks of Kaushambi, Dimagi developed training tools for CRS, Vatsalya, and government officials. Dimagi staff also facilitated the Training of Trainers (ToT) sessions and provided in-field technical support and mentorship to Master Trainers. Three training facilitation guides were developed, including a guide for Master Trainers, a guide for CommCare trainers, and various guides for ASHAs. The tools were tested and improved at the end of the Manjhanpur block's ToTs in collaboration with CRS, Vatsalya, and government trainers. These tools were further refined prior to the Mooratganj block trainings.



Figure 4: The ANM and Health Education Officer giving a CommCare-enabled mobile phone to an ASHA

CRS and Vatsalya staff coordinated the field trainings. All of the trainings involved the ANMs servicing both blocks as well as several Government of India Health Department staff acting as Master Trainers and Training Facilitators. Dimagi and partners prioritized collaborating with the health department at all project stages, from application development to training delivery, as a way to foster project ownership by local government officials. The local health department's active involvement resulted in successfully rolling out CommCare trainings and a high CommCare adoption rate by ASHAs and ANMs.

Once the training tools and ToTs were completed, in August 2012, Dimagi, CRS, and Vatsalaya began training ASHAs to use CommCare in two blocks of the Kaushambi District. In October 2012, 110 ASHAs, 29 ANMs, and four Sector Facilitators completed CommCare training in the Manjhanpur block. On March 5, 2012, Dimagi, CRS and Vatsalaya began training 149 ASHAs, 20 ANMs, and 6 Sector Facilitators from the neighboring Mooratganj block. In total, 318 users were trained to use CommCare in Kaushambi, including 259 ASHAs, 49 ANMs and 10 Sector Facilitators. The training dates are listed in Appendix A of this report.



Figure 5: ASHAs who have completed their three-day CommCare training in the Mooratganj block

Training

Trainings were conducted in groups of 20 ASHAs over a period of three days. One lead trainer and one co-facilitator facilitated each group. Two training batches were conducted simultaneously per week.

Day one of each training was focused on interpersonal communication, in which ASHAs learned best practices for counseling and providing verbal and non-verbal cues to their beneficiaries, including body posture and eye

contact. The following two days were focused on teaching ASHAs how to use the CommCare application as a job aid during home visits, including as a counseling tool.

The training content for CommCare was organized into 10 different modules:

1. **Mobile Phone Orientation:** teaching ASHAs about hardware specific orientation (i.e. memory cards, SIM cards, batteries, headphones), keypad, speakers, phone home screen, and menus
2. **Application Start-up and Login:** how to start CommCare, and understanding difference between demo and login models
3. **Application Structure:** introduction to modules and forms in the application and the purpose of each section and form
4. **Case Management:** contents and uses of the case list and case detail screens
5. **Navigation Review:** how to navigate between different screens reviewed in Modules 2-4.
6. **Answering Questions in Forms:** demonstration of different question types and how to enter data for each type (i.e. date, yes/no questions, multiple choice questions, prompts)
7. **Form completion and sending data:** Illustration of how data is sent from the phone to CommCareHQ, how to determine there are unsent forms on the phone, or if the Internet is not available or working
8. **Text Entry:** how to type in Hindi using a Nokia phone keypad
9. **(Optional) Important phone menus:** identifying where the application is stored on the phone, how to access the media player and memory card, and how to re-configure settings
10. **(Optional) Sorting & Filtering:** advanced orientation for case lists that allow users to sort and filter long case lists with greater ease.

Modules 1 to 7 were reviewed on day one. Modules 8-10 were reviewed on day two. The optional modules were reviewed with ASHAs depending on the trainer's assessment of the level of mobile competency for each training group. On day two, the focus was largely on text entry as this is typically challenging for users and requires extensive practice.

Post Training Follow-up

Within the week after trainings, Vatsalya and their team of CommCare Trainers visited the field to follow-up with the ASHAs. Trainers accompanied



Figure 6: A government health worker facilitating a CommCare training in the Mooratganj block



Figure 7: A Project Officer facilitates a CommCare training in the Mooratganj block



ASHAs as they used CommCare for the first time during home visits with pregnant women. Trainers addressed and helped ASHAs improve areas of demonstrated weakness. These ASHAs are continuously being monitored by Sector Facilitators that provide on-going supportive supervision.

Appendix A: Training Schedules

Table 1 Training Schedule for Manjhanpur Block

Sub-centre	No. of ASHAs Trained	No. of ANMs Trained	TOTAL Trained
GRAND TOTAL	110	29	139
BATCH 1: August 6, 7, 9, 2012			
Bahadurpur	8	2	10
Karari	0	1	1
Khojawapur	1	0	1
<i>Sub-Total</i>	<i>9</i>	<i>3</i>	<i>12</i>
BATCH 2: August 6, 7, 9, 2012			
Guwara	6	1	7
Edilpur	6	1	7
Khojwapur	1	0	1
<i>Sub-Total</i>	<i>13</i>	<i>2</i>	<i>15</i>
BATCH 3: August 13, 14, 16, 2012			
Bhaila	8	2	10
Osa	6	2	8
<i>Sub-Total</i>	<i>14</i>	<i>4</i>	<i>18</i>
BATCH 4: August 13, 14, 16, 2012			
Chaksaiyad Alipur	9	2	11
Bandhwarajwar	6	1	7
<i>Sub-Total</i>	<i>15</i>	<i>3</i>	<i>18</i>
BATCH 5: August 28, 30, 31, 2012			
Manjhanpur	0	1	1
Khojawapur	3	1	4
Pawara	5	2	7
<i>Sub-Total</i>	<i>8</i>	<i>4</i>	<i>12</i>
BATCH 6: September 4, 6, 7, 2012			
Ammawa Paschim	7	0	7
Tenshah Alamabad	5	2	7
Pawara	1	0	1
<i>Sub-Total</i>	<i>13</i>	<i>2</i>	<i>15</i>
BATCH 7: September 4, 6, 7, 2012			
Para Hasanpur	7	2	9

Manjhanpur Second	4	1	5
<i>Sub-Total</i>	<i>11</i>	<i>3</i>	<i>14</i>
<i>BATCH 8: October 4, 6, 7, 2012</i>			
Baiskati	4	2	6
Pindra	9	2	11
<i>Sub-Total</i>	<i>13</i>	<i>4</i>	<i>17</i>
<i>BATCH 9: October 4, 6, 7, 2012</i>			
Kotari Pashchim	7	1	8
Tewan	7	2	9
Ammawapurab	0	1	1
<i>Sub-Total</i>	<i>14</i>	<i>4</i>	<i>18</i>

Table 2 Training Schedule for Mooratganj Block

Sub-centre	No. of ASHAs Trained	No. of ANMs Trained	TOTAL Trained
GRAND TOTAL	149	20	169
BATCH 1: March 5, 11, 12, 2013			
Alam Chand	6	1	7
Narvar Patti	6	1	7
<i>Sub-Total</i>	<i>12</i>	<i>2</i>	<i>14</i>
BATCH 2: March 5, 11, 12, 2013			
Basedhi	6	1	7
Laukipur	9	1	10
<i>Sub-Total</i>	<i>15</i>	<i>2</i>	<i>17</i>
BATCH 3: March 15, 18, 19, 2013			
Bajaha	6	1	7
Malak Nagar	8	0	8
<i>Sub-Total</i>	<i>14</i>	<i>1</i>	<i>15</i>
BATCH 4: March 15, 18, 19, 2013			
Samaspur	8	1	9
Chapahua	7	1	8
<i>Sub-Total</i>	<i>15</i>	<i>2</i>	<i>17</i>
BATCH 5: April 2, 5, 6, 2013			
Birauli	9	1	10
Siriyawan	4	1	5
<i>Sub-Total</i>	<i>13</i>	<i>2</i>	<i>15</i>
BATCH 6: April 2, 5, 6, 2013			
Gauhani	10	1	11
Bharwari	1	1	2
Chaphua, Mooratganj-1st, Rasoolpur	3	0	3
<i>Sub-Total</i>	<i>14</i>	<i>2</i>	<i>16</i>
BATCH 7: April 2, 5, 6, 2013			
Badagaon	7	0	7
Mooratganj-2nd	3	0	3
<i>Sub-Total</i>	<i>10</i>	<i>0</i>	<i>10</i>
BATCH 8: April 16, May 2, 3, 2013			
Sakadha	4	1	5
Kasiya	6	1	7

Siriyawan	1	0	1
<i>Sub-Total</i>	<i>11</i>	<i>2</i>	<i>13</i>
BATCH 9: April 16, May 20, 21, 2013			
Rasoolpur	3	1	4
Mooratganj-1	4	0	4
Mahgaon	4	1	5
<i>Sub-Total</i>	<i>11</i>	<i>2</i>	<i>13</i>
BATCH 10: April 16, May 2, 3, 2013			
Gauspur	4	1	5
Ujjahini	5	1	6
<i>Sub-Total</i>	<i>9</i>	<i>2</i>	<i>11</i>
BATCH 11: April 18, May 16, 17, 2013			
Saiyyad Sarawan	7	1	8
Umarchha	8	1	9
<i>Sub-Total</i>	<i>15</i>	<i>2</i>	<i>17</i>
BATCH 12: April 18, May 8, 9, 2013			
Ashokpur	10	1	11
<i>Sub-Total</i>	<i>10</i>	<i>1</i>	<i>11</i>

Appendix B: Updated Metrics

Below is the updated PMP. Note that we slight adjusted the definitions of BASIC, PLUS, and FULL to be as follows:

BASIC: Organization builds the CommCare application on their own and conducts training with little to no help from Dimagi.

PLUS: Dimagi builds application, or majority of it, and conducts or supports any FLW training. All Proof of Concept Packages are PLUS packages.

FULL: Dimagi builds application and provides additional support, such as project management, Active Data Management, custom reports, or additional field time beyond what is included to launch PLUS projects.

Area	#	Indicator	Baseline (Sept 2012)	Nov-12	Feb-13	Jun-13	Aug. 2014 Target
Scale Up Monitoring	1	Number of new programs in India using CommCare	0	1	5	16	40
	2	Percent of new programs that try CommCare in India that are using it after one year	0% (0/0)	0% (0/0)	0% (0/0)	0% (0/0)	70%
	3	Number of new programs using CommCare in India that are scaling after 12 months	0% (0/0)	0% (0/0)	0% (0/0)	0% (0/0)	40%
	4	Number of new programs using CommCare in India for at least 12 months that are now at scale	0% (0/0)	0% (0/0)	0% (0/0)	0% (0/0)	30%
	5	Percent of BASIC CommCare programs in India	28% (5/18)	25% (5/20)	9% (2/22)	15% (6/41)	40%
	6	Percent of PLUS CommCare programs in India (includes POC packages)	61% (11/18)	60% (12/20)	64% (14/22)	68% (28/41)	50%
	7	Percent of FULL CommCare programs in India	11% (2/18)	15% (3/20)	27% (6/22)	17% (7/41)	10%
	8	Number of FLWs that have used CommCare in India	1,040	1,061	1,134	1,332	8000+current value
	9	Number of clients seen by FLWs using CommCare in India	69,094	89,267	120,765	179,445	200,000
	10	Number of FLWs trained in Bihar to use CommCare	519	519	519	519	500
	11	Number of FLWs trained in Kaushambi to use CommCare	116	122	122	318	285
Performance Monitoring	12	Percent of clients seen in last 60 days (proxy indicator for on time visit percentage)	74%	58%	71%	57%	70%
	13	Percent of clients seen in last 120 days (proxy indicator for percentage clients who are still active)	93%	95%	92%	73%	80%
Usage	14	Percent of new CommCare programs in India actively using ADM	0% (0/0)	0% (0/0)		0% (0/17)	n/a
	15	Percent of new CommCare programs in India actively using the Call Center	0% (0/0)	0% (0/0)		0% (0/17)	n/a
	16	Average number of clients seen by each FLW using CommCare in India	66	84	106	135	n/a
	17	Total forms submitted	227,511	417,120	638,872	911,302	n/a

"Scaling CommCare to Deliver Community Impact"

Milestone 7 Report, 29 September, 2013

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Overview

Dimagi has completed Milestone 7 of the USAID Grant No. AID-OAA-F-12-00018, which consists of the following requirement:

- Launch 24 new programs or reach 4,800 new extensions workers using CommCare (whichever occurs first).

The sections below describe the activities Dimagi has undertaken to complete this milestone. All 24 programs launched under the DIV grant are summarized in Table 1 below. Launches 17-24 are described in further detail. The previously launched programs are described in detail in two previous Milestone reports (Milestones 3 and 5).

Activities

CommCare Workshop in Mumbai

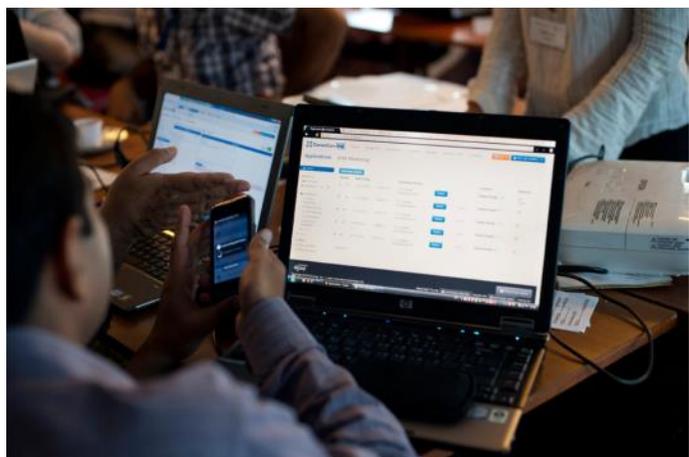
From July 12-14, Dimagi hosted a CommCare workshop in Mumbai to support organizations to build their own CommCare mobile applications. The cost of the workshop was Rs. 3500 to each participating organization. Each organization was allowed to send two participants for that cost and received an Android phone to take with them to their organizations with their demo application loaded onto it. The primary goal of the workshop was to seek out and support organizations to self-start CommCare applications with initial but limited support from Dimagi. Dimagi has previously held similar workshops for organizations in Senegal, Mozambique, and Guatemala. In our experience, we have found that these workshops have been effective in introducing



Dimagi staff taking questions from workshop participants.

organizations to CommCare and helping them understand what is involved in designing and supporting their own mobile applications and programs for their frontline workers.

After heavily advertising the workshop to various organizations in India, we selected nine organizations to attend. These nine organizations included the Foundation for Research in Community Health, Sangath, Jharkhand State Livelihood Promotion Society, the Ekaam Foundation, Educate Girls, mPaani, Kautala Friends Sporting Club, Catholic Relief Services, and Technoserve. We requested that each organization bring one technical staff member and one programmatic staff member, which we have found is useful in designing and building CommCare applications. Prior to the workshop, participating organizations were also asked to submit a completed CommCare worksheet to help them visualize what their CommCare app would look like. This included filling out key questions and responses for their application and organizing the applications modules, forms, and case lists in a logical way.



A workshop participant downloading their mobile app onto their phone.

During the first day of the workshop, participants were given a general overview of mobile health, CommCare, and Dimagi's

other open source tools to support frontline worker programs. Several staff members from the Society for Nutrition, Education, and Health Action (SNEHA), one of the organizations that received a Proof of Concept package in India through DIV Stage 2 support, presented their experience using CommCare for three various projects across their 40 slum cluster in India. This included a child nutrition project, a randomized controlled trial, and a maternal and newborn child health project.

The remainder of the workshop focused on helping build participants' technical capacity to use CommCare's online authoring tools to create their own CommCare applications for their organizations. Each session was followed by a breakout session where organizations had the chance to develop components of their application that they had discussed with us prior to the workshop. By the end of the workshop, several groups were able to demo the CommCare applications they had built with the rest of the group, and all organizations walked away with their own customized CommCare applications that they built themselves. If the CommCare applications are used by FLWs, they will count as BASIC CommCare launches (see below for definitions) in future Milestone reports.



Dimagi staff demoing CommCare to workshop participants.

BASIC, PLUS, and FULL Support

Dimagi helps organizations launch CommCare through three levels of support.

BASIC Support: With BASIC Support, an organization builds the CommCare application on their own and conducts training of frontline workers (FLWs) with little to no field support from Dimagi. Dimagi provides training to the organization and technical assistance to build and deploy the CommCare project.

PLUS Support: With PLUS Support, Dimagi builds the application, or the majority of it, and conducts or supports any FLW training. All organizations launched with a POC package are categorized as PLUS support. In achieving Milestone 7, all eight new launches received PLUS support.

FULL Support: With FULL Support, Dimagi builds the application and provides additional support, such as project management, Active Data Management, custom reports, or additional field time beyond what is included to launch PLUS projects.

Milestone 7 Launches

Table 1 below summarizes the new programs that have been launched with CommCare under this grant. For each launch, the following information is provided:

- **Organization:** Name of the partner organization that is implementing a CommCare project

- **Location:** District and state in India where the CommCare application is being deployed
- **When Launched:** When the CommCare application was launched
- **Sector:** Describes what development sector the CommCare application addresses (e.g. Health, Agriculture, Finance, etc.)
- **Focus Area:** Indicates what focus area within the sector the CommCare application addresses (examples within health include MNCH, sexual health, malaria, etc.).
- **Project Type:** Indicates whether the project was with BASIC, PLUS, or FULL support.

Contact information for the organizations listed in Table 1 is available upon request.

Table 1: Summary of Programs Launched Under Dimagi's Stage 2 DIV Grant

Organization	Location	When Launched	Sector	Focus	Project Type	CommCare User
1. Catholic Relief Services	Kaushambi, Uttar Pradesh	Sep. 2012	Health	Supervision	Full	Field Supervisors
2. CARE	Saharsa, Bihar	Nov. 2012	Health	Technical Support	Full	Technical Support Staff
3. SNEHA	Mumbai, Maharashtra	Nov. 2012	Health	Maternal Health	PLUS	Community Organizers
4. KGVK	Ranchi, Jharkhand	Feb. 2013	Health	Maternal Health	PLUS	Community Mobilizers
5. World Renew/EFICOR	Bangalore, Karnataka	Mar. 2013	Health	Maternal Health	PLUS	Saahiyas
6. Swasti	Sahibganj, Jharkhand	Mar. 2013	Health	Sexual Health	PLUS	Peer Educators
7. Aarohi	Nainital, Uttarakhand	Mar. 2013	Health	Maternal Health	PLUS	Accredited Social Health Activists (ASHAs)
8. SNEHA	Thane, Maharashtra	April 2013	Health	Household Tracking	BASIC	Urban CHWs
9. Marie Stopes India	Bareilly, Uttar Pradesh	April 2013	Health	Family Planning	PLUS	Interpersonal Communicators (IPCs)
10. Comprehensive Rural Health Project	Jamkhed, Maharashtra	April 2013	Health	Maternal & Child Health	PLUS	Village Health Workers
11. SKNMC/Johns Hopkins	Pune, Maharashtra	April 2013	Health	Household Tracking; Empowering Women	PLUS	Hospital staff
12. Pollinate Energy	Bangalore, Karnataka	April 2013	Energy	Affordable Energy	PLUS	Pollinators
13. St. John's Research Institute	Bangalore, Karnataka	May 2013	Health	Domestic Violence	PLUS	Auxiliary Nurse Midwives (ANMs)
14. UNION	Ranchi, Jharkhand	May 2013	Health	Tuberculosis	PLUS	Rural Health Care Providers; Lab Techs
15. Durbar	Calcutta, West Bengal	May 2013	Health	Sexual Health	PLUS	Peer Educators
16. PCI Global	Moradabad, Uttar Pradesh	May 2013	Health	Mother/Newborn Post-partum Care	PLUS	ASHAs
17. Indian Institute of Health Management	Muzzafapur, Bihar	July 2013	Health	Maternal & Child Health	PLUS	ANMs

Research (IIHMR)						
18. Lata Medical Research Foundation	Nagpur, Maharashtra	July 2013	Health	Maternal & Child Health	PLUS	ASHAs
19. Indian Health Action Trust (IHAT)	Udaipur & Jodhpur, Rajasthan	July 2013	Health	Maternal & Child Health/HIV	PLUS	Outreach Workers (ORWs)
20. Operation Smile	Nagoan, Assam	July 2013	Health	Nutrition/Surgery Follow-up	PLUS	ASHAs
21. GOAL India	Purulia & Jalpaiguri, West Bengal	July 2013	Health	Malaria Surveillance	PLUS	Community Mobilizers
22. Going to School	Nine districts in Bihar	July 2013	Education	Tracking Schools' Progress	PLUS	District Coordinators
23. Maternal and Child Health Integrated Program (mCHIP)	Hisar, Haryana	August 2013	Health	Immunizations	PLUS	Medical Officers
24. Myrada	Chikballapur, Karnataka	August 2013	Health	Maternal & Child Health; Nutrition	PLUS	Anganwadi Workers (AWWs)

Dimagi's Milestone 3 and Milestone 5 reports described the first sixteen organizations that launched CommCare applications under this grant. Launches 17-24 are described in greater detail below.

Launch #17: Indian Institute of Health Management Research (IIHMR)

The Indian Institute of Health Management Research (IIHMR)'s maternal, newborn, and child health application is designed to improve the workflow of Auxiliary Nurse Midwives (ANMs) in providing prenatal care, better capturing delivery information, and ensuring that children have completed their course of recommended immunizations. IIHMR has been tasked by the Government of India's National Rural Health Mission (NRHM) to improve data collection and quality at the community level. In order to improve data collection and close data-sharing gaps, all data that is collected from the CommCare application is submitted directly to the NRHM's Mother and Child Tracking System (MCTS). IIHMR's application was designed not only to provide better care to beneficiaries, but it's the first CommCare application that is designed to streamline ANMs workflow. CommCare is helping reduce the number of data entry errors, improve oversight of data collection, and close the gap between services provided and reported on.



An Auxiliary Nurse Midwife compares collected data on paper and on the CommCare application.



An IIHMR staff member shows ANMs how to use their new CommCare application.

Launch #18: Lata Medical Research Foundation (LMRF)

The Lata Medical Research Foundation (LMRF) was formed to improve the overall health of communities by conducting much needed public health research in resource-poor settings. LMRF’s application is designed to help Accredited Social Health Activists (ASHAs) in Maharashtra track essential medical services delivered to pregnant women and provide counseling about safe delivery and pregnancy practices. Like the Comprehensive Rural Health Project’s CommCare application, LMRF’s application is based on Dimagi’s standard maternal and child health (MCH) application. It contains modifications that leverage new features now supported in CommCare, including a new “form filtering” feature that displays visit and follow-up forms that are relevant for each beneficiary.

Launch #19: Indian Health Action Trust (IHAT)

Since 2003, the Indian Health Action Trust (IHAT) has been working to improve public health in India and abroad by applying proven public health techniques, insights, and principles. IHAT’s CommCare application is an HIV/PMTCT app that Outreach Workers use to screen pregnant women for symptoms of HIV, follows up with HIV symptomatic referred for HIV testing, and tracks HIV-positive women throughout the course of their pregnancies until their child reaches 18 months old. In addition to helping improve HIV-related follow-up adherence and counseling, the application also incorporates a standard maternal, newborn, and child health component with an immunization checklist for children.



An Outreach Worker counsels mothers about HIV.

Launch #20: Operation Smile

Since 2003, Operation Smile has provided surgical treatment for children with cleft lip and palate across India. In the state of Assam, the Operation Smile Guwahati Comprehensive Cleft Care Center has offered surgical repair and follow-up care to more than 4,000 patients with cleft lip and palate facial deformities over the past eighteen months. Because children with cleft palates are often malnourished, many of them are unable to undergo surgery with Operation Smile. Operation Smile has adopted CommCare to better monitor patients’ nutrition before and after surgery and to stay better connected with patients’ families, who often live far away from Operation Smile’s Care Center. This application is currently being piloted in the district of Nagaon, Assam, where Operation Smile is working closely with the Assamese Government and ASHAs to identify patients and bring them to the Care Center for surgery.

Launch #21: GOAL India

Through its India field office, GOAL India has been working in West Bengal's Jalpaiguri and Purlia Districts for the last three years to reduce the number of children who die from malaria. GOAL has developed a CommCare application that can be used as a malaria surveillance tool in five villages in Jalpaiguri and five villages in Purlia. The application was designed to supplement the efforts of ASHAs in collating real-time and accurate information about malaria incidence in their communities and share information about which households have cases of malaria with government representatives. Data collected over a period of time is also enabling trend analysis, which is helping ASHAs share more accurate health information with community members. Depending on the success of the project, it will be scaled to other aspects of pregnant and lactating women's health, children's health, and household WASH activities.

Launch #22: Going to School

Going to School is a non-profit education trust that creates dynamic, design-driven stories to teach India's poorest children skills in over 1,000 schools in Bihar. The Going to School CommCare application is an education application that gathers data on school classes by addressing parameters like attendance of children, teachers, and outcomes of the skill books. By using CommCare, district coordinators each visit 30-50 schools to track the progress of the schools and capture the reasons why teachers are not able to conduct classes. The application was developed in conjunction with the Going to School staff in New Delhi and Patna. The Going to School staff plan to implement CommCare with 18 District Coordinators over the course of the next year in the hopes of scaling up to more CommCare users in other states after the completion of the pilot year.

Launch #23: Maternal and Child Health Integrated Program (mCHIP)

Maternal and Child Health Integrated Program (mCHIP) supports clinical capacity strengthening and training initiatives for community-level health care providers in various states across India. One of mCHIP's primary activities is to support India's Universal Immunization Program, which aims to lower the number of children in India who have not been immunized from its current 40% rate. In order to prompt more timely action at higher levels, mCHIP's "E-Supervision" CommCare application aims to improve monitoring and supportive supervision mechanism at the field level through immediate data transfer from supervisors to District Program Officers for information and corrective action. Medical supervisors use the CommCare application to facilitate remote submission of Haryana State immunization forms for village-wide immunization days. Details of session monitoring and cold chain point monitoring for each immunization day are submitted to district-level government medical officers for review of service availability.

Launch #24: Myrada

In an effort to combat malnutrition in the Chikballapur district of Karnataka, the south Indian NGO Myrada has designed a unique five-step program to track and treat identified cases of malnutrition. This

program was designed and tested in conjunction with the local Department of Women and Child Development through a one-year pilot. In order to improve the program's effectiveness, Myrada adopted CommCare to better register and track malnourished pregnant women, adolescent girls with low BMIs, and children. Once these beneficiaries are registered with CommCare, Anganwadi workers (AWWs) at Anganwadi Centers (AWCs) can track beneficiaries and treat them with the Indian Government's Integrated Child Development Services protocol.



"Scaling CommCare to Deliver Community Impact"

Milestone 8 Report

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Form Data

Case Data

User	Form Data			Case Data			
	# Forms Submitted	Avg # Forms Submitted	Last Form Submission	# Cases Created	# Cases Closed	# Cases Modified	Avg # Cases Modified
	0	7	No forms submitted in time period	0	0	0	2
	0	0	No forms submitted in time period	0	0	0	0
	14	4	2013-06-22 17:02:37	6	0	7	2
	18	4	2013-06-21 12:35:21	5	1	8	1
	12	16	2013-06-24 09:48:23	4	2	7	4
	5	7	2013-06-24 13:09:14	1	0	2	3
	11	21	2013-06-24 12:44:11	1	0	4	5
	16	8	2013-06-23 11:39:12	3	1	6	5
	2	2	2013-06-22 18:24:43	0	0	1	0
	2	11	2013-06-20 17:11:32	1	0	1	4
Total	1727	1699	179 / 262	335	80	708	611

FLWs names have been removed

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Overview

Dimagi has completed Milestone 8 of the USAID Grant No. AID-OAA-F-12-00018. This milestone consists of the following two elements:

- Active Data Management (ADM) process launched, tested, and running with several partners participating.
- Call center staffed and fully operational, following field-testing.

Each element is described below, along with the required mid-point metrics. Additionally, Appendix C at provides an update on all metrics included in the PMP against stated targets.

Active Data Management (ADM)

Active Data Management (ADM) provides frontline supervisors with actionable information to monitor and improve the performance of the Frontline Workers (FLWs) they manage. ADM reports include actionable information about FLWs' activities to help frontline supervisors provide timely and targeted feedback to their FLWs.

ADM processes address supervision challenges that are often cited as a key barrier to improving the impact of community-based programs. Addressing these common challenges can lead to increased client enrollment, improved data quality, better consistency of household visits, and increased adherence to required follow-up visits.

Dimagi has launched the following ADM processes with our partners in India:

- An ADM processes designed for Catholic Relief Services (CRS) in Uttar Pradesh
- An ADM processes designed for CARE International in Bihar
- A general ADM report (called the "Worker Activity Report") for use by all CommCare projects, based on the above experienced. It is currently being used by many partners.

We elaborate on each of these three activities below.

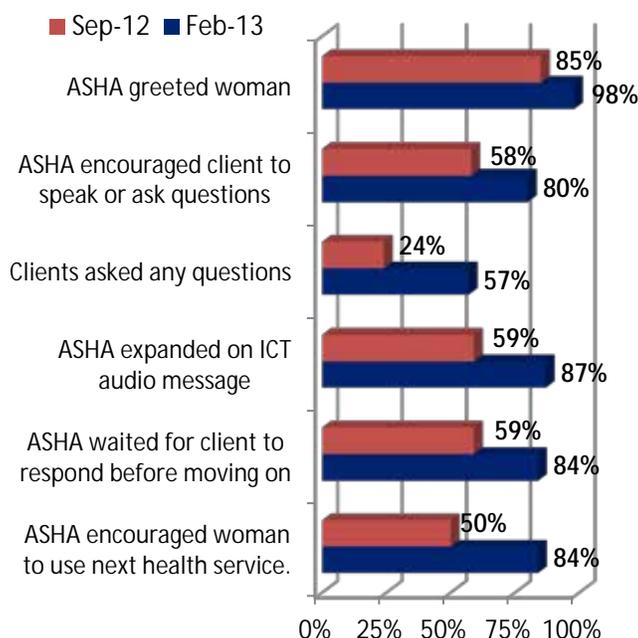
ADM for Catholic Relief Services (CRS) in Uttar Pradesh (UP)

Dimagi worked with CRS to develop and test an ADM process tailored to the needs of CRS's ReMiND project in Uttar Pradesh. The ADM reports were a key component of the ReMiND project's initiative to test out a model of *Sector Facilitators* to support FLWs (who are all ASHAs). CRS's objective is to generate recommendations for strengthening supportive supervision that can be used by the Uttar Pradesh government to help inform planning and rollout of FLW Sector Facilitators in the state. CRS hired and trained Sector Facilitators in Kaushambi, Uttar Pradesh. Each Sector Facilitator was assigned about 28 FLWs to supervise. Every month, the Sector Facilitator conducts a half-day supportive supervision visit to each assigned ASHA.

The ADM reports support Sector Facilitators' supervision activities. The ADM reports include weekly and monthly reports of FLWs' activities and lists targeted follow-up actions for supervisory staff. The reports also track how well FLWs are managing their clients. At the beginning of every week, Sector Facilitators

print sub-center level ADM reports and review the activity of the FLWs they directly support. The reports list the names of high-performing FLWs and those who have not met pre-designated performance benchmarks based on client coverage, follow-up statuses, and completion of home visit forms. Sector Facilitators then follow-up with a phone call to ask about selected FLWs' poor activity. A field schedule is made each week based on the results of the ADM report. Supervisors prioritize visits related to performance that are identified in the ADM report and schedule routine, monthly visits with all FLWs. Supervisors also share the ADM reports at the sub-center level meetings and PHC meetings hosted by health department officials. Health department staff conduct performance reviews for the FLWs based on the ADM reports.

The graph below shows improvements in FLW performance found by CRS after introducing the Sector Facilitators.



ADM for CARE International in Bihar

Dimagi has worked with CARE International to develop and test an ADM process tailored to the organization's needs for their Ananya project in Bihar. Requirements gathering for this work began in September of 2012, and led to the first release of CARE's ADM report in November of 2012.

The Worker Rank Table (WRT) provides actionable data for each FLW across any date range. An example of the WRT that shows the performance of a group of FLWs in Bihar from June-August of 2013 can be viewed in Appendix A. The table includes:

- **FLW Name:** name of the specific FLW in question.
- **AWC Code:** geographic code linking the FLW to the Anganwadi Center within the catchment area that they work.

- **Active Cases:** the number of pregnant clients with information that has been updated over the report's selected date range.
- **Total Cases:** total number of currently pregnant clients registered by an FLW over the duration of the project.
- **Form Submission:** the cumulative number of all forms submitted during the selected time period by an individual FLW.
- **Days Since Last Submission:** the number of days since the report's end date that a form was submitted.
- **Clients Visited:** the number and percent of clients that have had information updated within the selected time period.
- **Inactive Clients:** number of currently pregnant women whose cases have not been updated in the last the 30 days by the case sharing team.

General ADM Report: Worker Activity Report

Based on our experience equipping multiple partners with tailored ADM projects, Dimagi has made a general ADM report called the "Worker Activity Report" (WAR) within CommCareHQ available to all CommCare projects around the world. The WAR is appropriate for any project in which FLWs use CommCare to track clients or other types of cases over time. It would, for example, not be appropriate for an organization using CommCare to perform simple data collection without case tracking.

CRS has switched over to using the WAR rather than the tailored ADM reports described above. In addition, in India the following programs that have been launched by this DIV Stage 2 grant are accessing the WAR report: GOAL India, Going to School, Maternal and Child Health Integrated Program (mCHIP), SNEHA, and SWASTI. This is reflected in Metric 14 of the PMP. In addition to CRS, the following organizations that were already using CommCare prior to this DIV 2 grant are accessing the WAR report: NEEDS and the Harvard School of Public Health.

The WAR focuses on higher-level performance indicators for better accessibility, speed, and flexibility in viewing project data. The report enables supervisor to see a list of all of the FLWs that they support, not just the high and low performers.

The Worker Activity Report shows a summary of forms and case activity by user or group. The report is organized into three major sections: form data, case data, and case activity. Appendix B shows one example of a worker activity report and how it is divided into these three sections. The WAR table includes the following data points, which are broken down into the three sections:

Form Data:

- **# Forms Submitted:** number of forms submitted in chosen date range.
- **Average # of Forms Submitted:** average number of forms submitted in the last three date ranges of the same length. This field calculates the average over the three date ranges of the same length immediately prior to the selected range.

- **Last Form Submission:** date of last form submission in time period. Total row displays proportion of users submitting forms in date range.

Case Data:

- **# Cases Created:** number of cases created in the date range.
- **# Cases Closed:** number of cases closed in the date range.

Case Activity:

- **# Active Cases:** number of cases owned by the user that were opened, modified or closed in date range. This includes case sharing cases.
- **# Total Cases:** total number of cases owned by the user, including case sharing cases. Note that this is NOT the current case list but rather reflects the total number of cases during the data range selected in the filter.
- **% Active Cases:** percentage of cases owned by the user that were active (active cases divided by total cases). This includes case sharing cases and only refers to active cases during the reporting period.

Performance call center

In a separate effort to help organizations improve FLWs' performance, Dimagi launched a call center in which Dimagi staff contacted FLWs through outbound calls to provide FLWs with individual performance feedback. The call center was launched in the following three steps:

- **Step 1 (Explore):** Dimagi worked with the Real Medicine Foundation in Madhya Pradesh to conduct a randomized study from November 2012 to February 2013 on the potential for a call center to improve FLW performance. During this study, a Dimagi Research Assistant manually calculated each FLW's changes in performance on a weekly basis. Initial results were highly encouraging.
- **Step 2 (Build):** Dimagi built the performance call center (PCC) functionality into CommCare to allow any CommCare project to be supported by outbound performance calls.
- **Step 3 (Test):** Dimagi tested the new functionality with two organizations that have launched CommCare through this grant (Aarohi and PCI Global) from August to September of 2013. Dimagi staff made outbound calls to approximately 20 FLWs over the course of several weeks.

Based on the lessons learned from this process, Dimagi recommends that organizations' supervisors use the PCC to directly follow up with FLWs. FLWs respond better to supervisors whom they already know and report to, thus keeping supervisors up to date on the FLWs' activities. *We propose to include organizations that use the PCC with their own staff in our PMP, counting them under Metric 15, "Percent of new CommCare programs in India actively using the call center."*

Step 1: Evaluation with Real Medicine Foundation

Dimagi ran a 10 week randomized control trial with the Real Medicine Foundation (RMF) to evaluate the impact that performance feedback has on 61 Community Nutrition Experts' (CNEs) performance and

motivation in five districts of Madhya Pradesh. A draft manuscript for this study is attached in Appendix D.

The objective of the study was to assess how providing weekly, individualized calls to CNEs about specific indicators from their performance in the past week impacted 1) CNE performance and 2) CNEs' adherence to reporting standards they were given feedback on. The aim of the intervention was to gain improvements in these performance indicators and improve adherence to reporting standards. This study was accomplished by analyzing performance data and feedback from CNEs' form submissions to their CommCare infant malnutrition application. Once enough data was generated, a staff member placed individualized, weekly outbound calls to CNEs through the call center.

In collecting data from five districts in Madhya Pradesh, three performance indicators were identified relevant to the program and FLWs were randomized into three treatment groups. Each group received weekly calls discussing their performance and any challenges or technical issues faced during the week, for a six-week period. Data was collected for an additional four weeks to assess inter-temporal sustained effects of the intervention.

At the study's conclusion, we found that the call center had positive and significant impacts on duration of counseling, while case activity and number of form submissions do not show significant improvements as a result of the intervention. We find moderate to large effect of providing performance feedback on counseling times in the initial six weeks, when the CHWs received calls. These effects were sustained the post intervention period. Further analysis showed the counseling times decreased slightly from the intervention to post intervention period by 2.14 minutes ($p=.015$). Case activity improved for all CNEs after the intervention.

Based on these results, we were able to conclude that calls providing performance feedback are effective in improving FLW motivation and performance. The calls providing feedback had positive effect on performance in the case of duration of counseling. Regardless of the performance information disclosed, calls can improve performance due to elements of supportive supervision included in the calls encouraging FLW motivation.

Step 2: Performance call center (PCC) Technology

In the initial investigation, a Dimagi Research Assistant manually exported and analyzed data from CommCareHQ to provide FLWs individualized feedback. In order to scale the process, we needed to develop the functionality within CommCareHQ to support performance calls without the need for this manual step. To automate this process, we designed and developed the performance call center (PCC) functionality within CommCare.

The PCC apps were built using CommCare itself. In a typical CommCare application, the FLWs are the CommCare users and CommCare tracks FLWs' clients. In the PCC application, the call center staff are the CommCare users and they use CommCare to track FLWs that receive calls. The PCC application presents a list of FLWs to the call center staff, ordered in the sequence in which they should be called. The application then guides the staff through the conversation with the FLW, similar to how CommCare guides an FLW through a home visit with a client.

To build the PCC application, the following three new CommCare software features were designed, developed, and tested:

- **Auto-Registration of FLWs:** This capability allows new FLWs registered as users in a CommCare application to be automatically registered as cases to be tracked into their corresponding PCC application.
- **Indicators:** A wide range of FLW performance indicators can be automatically accessed in the PCC, including:
 - Number of forms submitted 0 – 7 days ago, 7 – 14 days ago, and 0 – 30 days ago
 - Number of cases modified 0 – 30 days ago and 30 – 60 days ago
 - Total number of cases owned by a given FLW
 - Average amount of time taken to fill out a counseling form (domain-specific)
 - Number of mother visit forms filled out in the (domain-specific)
- **Multi-sort Capability:** Functionality was added to the CommCare case list so that it is now possible to sort the case list by multiple case properties according to a given priority order. This functionality was necessary to set up a case list that properly sorted the list of FLW cases in the sequence that a call center agent should call them in, dynamically updated as calls are made.

Given this new functionality, we were able to build a core CommCare PCC application that accesses key indicators and guides call center agents through soliciting and communicating performance feedback. All collected performance feedback can be adjusted based on performance indicators and target most relevant to a given CommCare deployment. The PCC application also helps call center agents provide technical troubleshooting to FLWs and escalate questions that they are unable to resolve.

Step 3: Testing PCC Functionality

Once the PCC functionality was developed, we tested it with Aarohi and PCI Global, two organizations that started using CommCare through this grant. The table in Appendix D shows the call script that was used. The PCC application would walk the call center Staff (a Dimagi employee) through this conversation—guiding the call center staff to provide appropriate feedback based on whether or not the FLW met their targets for the number of forms they submitted on CommCare.

Although we did not conduct a formal analysis, there were significant improvements in FLWs' overall performance. Additional lessons learned from the overall process include the following:

- **Call Script:** Our findings indicate that it's important to frame feedback in a positive light. Low performers were not given direct negative feedback (for example, "you did not meet your targets.") but rather feedback framed in a positive light.
- **Call Schedule and Timing:** While the first calls were made in the late afternoon, it quickly became apparent that most FLWs were either in the field or visiting clients at that time. We asked FLWs for their preferred time to receive phone calls. The majority responded that evenings were the most convenient time of day. Although we tried to call FLWs on weekday evenings, we often had to call on Sundays to get in touch with them. Attempts over the course of two or three days were also necessary to get in touch with them.

- **Caller Profile:** There is an initial phase in the call center process where FLWs need to become acclimatized to receiving calls about performance feedback. As reflected in the script, if the caller is someone unknown to the FLW, it is useful to make references to Dimagi or project staff the FLW met during their CommCare training. Sharing this information makes it easier for the FLWs to understand the purpose of the call. Occasionally FLWs' husbands answered their wives' phones, and were skeptical about why their wives were receiving phone calls in the evening. It was fortunate that female staff were making the calls for this project.

In addition to providing performance feedback, these calls also presented an opportunity to provide various other services and support, including identifying and either resolving or escalating troubleshooting issues. The majority of these issues were identified during the first week of calls. It was also clear that these calls tapped into information that was important for field supervisors to have. This included being able meaningfully discuss why low-performing FLWs were not been performing as well as expected.

Next Steps and Shift to Calls by Field Supervisors

We have two conclusions from our experiences so far. First, the Performance call center is an important tool towards improving FLW performance and fully taking advantage of mobile systems for FLWs. Dimagi plans to continue offering PCC services to clients. In order to check in with and provide feedback to low-performing FLWs, PCC services will be deployed in an upcoming deployment of 400 FLWs in Bihar in a nutrition-focused conditional cash transfer program. In contexts where organizational capacity may be lacking for FLW supervisors to provide such support themselves, the PCC service will be designed and executed so as to improve FLW performance and amplify CommCare's capacity to support and incentivize high performance.

Our second conclusion is that while a centralized call center offers many practical advantages, the calls are best made by the field supervisors of FLWs when a given FLW program has the supervisory capacity to take on this responsibility. There are various reasons for why this is the case. Firstly, the supervisor will have relevant context about an FLW, their circumstances, and habits than a call center. Equally importantly, the kind of feedback received by a caller about the circumstances of an FLW is diverse and multi-faceted, including the need for training reinforcement, being able to troubleshoot problems, and share information about availability and health. When a centralized call center staff member makes these calls, the supervisor misses out on important conversations with the FLW. FLWs that receive the calls are also more likely to be familiar with and trust a field supervisor, who is the person the FLW would turn to in case of problems in her work. The field supervisor will also be able to provide much richer and more nuanced feedback, drawing upon his knowledge of the situation.

In recognition of this, going forward, we will make the PCC application available to our partners. They can use the same application that a call center staff would to guide them through a supervisory phone call. By using the PCC application, we can also track when the supervisor speaks with their FLWs. Given that we will be promoting local use of the PCC application, we propose to include local use in metric 15 of our PMP, "Percent of new CommCare programs in India actively using the call center." That is, if an

organization uses the PCC application to make their own performance calls (or visits) to FLWs, we will count them as “actively using the call center” when computing metric 15 of the PMP.

Mid-Point Metrics

Having reached the midpoint of this grant, we report on the following metrics. Note that these metric were more carefully defined in the Implementation plan submitted under Milestone 1.

Metric 1. Leveraged partnerships in India: *This is defined as the Dimagi partnerships formed (or expanded) in India since the beginning of this grant other than those the new programs launching CommCare.*

- **USAID India Gender Based Violence grant:** Dimagi has increasingly collaborated with the USAID Mission through both the Stage 1 and Stage 2 funding from DIV. USAID India recently secured a \$498,928, three year grant to support Dimagi to scale innovations in Gender Based Violence. This grant builds directly off the Proof of Concept project supported by the DIV Stage 2 grant with St. John’s Research Institute in Bangalore, who is a partner on the grant.
- **World Bank India Development Marketplace:** Dimagi submitted and won a two year grant from the World Bank based off of ideas created and tested during our stage 1 and 2 grants from DIV. We proposed to take the POC approach to the state of Jharkhand, working with new partners to kick start mHealth pilots¹². Through this grant, we are already working to expand our partnerships in Jharkhand that were originally fostered under the DIV Stage 2 POC RFA. We hope to scale the UNION, World Renew, and KGVK pilot projects in Jharkhand with this funding, and have already engaged with UNICEF, mCHIP, and the Government of Jharkhand to figure out how best to bring CommCrae to the Jharkhand Frontline Health Worker, the Saahiya, to improve maternal and child health.
- **Bill and Melinda Gates Foundation (BMGF):** During the course of this grant, Dimagi has expanded its relationship with the BMGF, building off the work with CARE International in Bihar. Dimagi expects to continue to get core funding for the CommCare platform (as part of the MOTECH Suite) and is currently working with BMGF on a multi-year grant to support the technology.
- **Microsoft Research India:** Dimagi has collaborated with Microsoft Research, including co-authoring a research study into how FLWs use the phones that run CommCare for other purposes, which was accepted as a short paper for the competitive ICTD conference to be held in Cape town in December 2013.)
- **CARE International:** Dimagi’s CommCare deployment was the largest to date when it began in July of 2012. CARE approached the Government of Bihar this past March with a note to further scale CommCare from its current location in four blocks of Saharsa District. The cabinet recently approved this request, which we hope will soon lead to multiple districts and a chance to work with 10,000 FLWs. This expansion will leverage support from DFID which is provided to the Bihar government. The projects that started in Bihar under this grant helped cement this

¹ <http://social.yourstory.in/2013/05/world-bank-group-awards-2-million-to-20-social-enterprises/>

² <http://wbi.worldbank.org/wbdm/stories/india-dm-2013-finalists>

relationship and drive for scale, including a POC with IHMR, and a conditional cash transfer project for 450 workers with Oxford Policy Management.

- **BBC Media Action:** Dimagi worked initially with the BBC World Service Trust (BBCWST, now BBC Media Action) as part of the Stage 1 DIV grant to user-test videos on a mobile handset. Since then, Dimagi has been able to further engage and build a relationship with the BBCWST in India, as a result of jointly scaling mobile technology work. The software development of the platform that we have been able to achieve with Div2 funding has simplified the user interface and improved the robustness of the software. The BBC has expressed interest in discussing partnerships for future work to engage more with mobile applications.
- **CRS:** Our Stage 2 DIV grant has helped Dimagi expand its relationship with CRS, including participating in joint discussions with Mission Director of National Rural Health Mission about possible scale up of the work within Uttar Pradesh. The ability to show the scale and diversity of partnerships that we have formed under this grant have helped stimulate interest at the government level to bolster existing projects, such as the ASHA work with CRS in Kaushambi district, Uttar Pradesh.
- **World Vision:** Dimagi started working with World Vision on a Stage 1 DIV grant. Since then, World Vision has engaged Dimagi in a Master Services Agreement, and begun to deploy CommCare projects for anything from nutrition to maternal and child health in SouthEast Asia and Africa. The work that began in India, and the discussions that have continued as a result of that project, has led to numerous offshoots, and renewed interest in scaling our work together in India as well.

Metric 2. FLWs from leveraged partnerships: *This is defined as the number of new extension workers in India using CommCare through the leveraged partnerships since the start of the project.*

Of the 1647 FLWs using CommCare in India, 1040 were using CommCare at baseline, and 318 are part of the 24 CommCare projects that were launched by Sept 1, 2013. The remaining 289 FLWs using CommCare are from the leveraged partnerships.

Metric 3. # programs scaling: *Of the new partnerships created over the previous 12 months, the number of programs that piloted CommCare that are now scaling. This is defined as a program that is increasing the number of CommCare users to a target level that is beyond the number in the pilot effort and has committed to using CommCare through the life of their program.*

While many of the new CommCare programs are planning to scale, none have added a substantial number of FLWs using CommCare after the initial training, excluding the ones that have reached scale as described in in the following metric.

Metric 4. # programs at scale: *Of the new partnerships created over the previous 12 months, the number of programs that piloted CommCare that are now at-scale. This is defined as a program that has reached the specified target number of CommCare users defined for the scaling effort and has committed to using CommCare through the life of their program.*

The following four projects that have been launched under this DIV grant are at scale: Lata Medical Research Foundation, Going to School, Pollinate Energy, and SKNMC/Johns Hopkins. In all cases, the

total number of FLWs using CommCare is small, but they are considered at scale because all of their FLWs are using CommCare.

Cost and Pricing Model

In Milestone 4, the cost model was updated and a cost-effectiveness model was introduced. There have not been further updates. However, Dimagi is working with the DIV team in Washington, D.C. to improve the cost effectiveness model, and expects to make progress on this in the next few months. The cost effectiveness model that we will use in our final reports to USAID will not be based on the revision in Milestone 4, but instead on a future revision that addresses the limitations noted in our final Milestone 4 report.

On August 2nd, 2013, Dimagi introduced a new pricing model to all CommCareHQ users (see Appendix E). This included the introduction of software plans that are based on a monthly subscription fee for projects that have over fifty users. These new software plans give users access to CommCare on Dimagi's managed cloud servers, including cloud server support, advanced features and SMS capabilities, automatic software updates, bug fixes, maintenance support, security updates, HIPAA compliance, in addition to other features. Projects that have fewer than 50 mobile users fall under the "Community" software plan, which provides access to all basic CommCare features for free. In order to add more mobile users or access advanced features, organizations can upgrade to one of four additional higher-level software plans. We also developed online resources to further describe each CommCare subscription plan, and a list of Frequently Asked Questions to all pre-existing clients. Note that these changes will not go into effect until January 1, 2014.

This software plan addition is different from our pre-existing implementation service packages, which will remain largely unchanged. With implementation service packages, organizations can hire Dimagi staff to work with in-country teams to develop mobile applications, provide implementation support, and build staff's capacity.

Conclusion

Dimagi has completed Milestone 8 and is on track to complete all remaining Milestones. All associated ADM and call center efforts are key steps towards realizing the full potential of mobile tools to improve feedback and supervision of FLWs.

Appendix A: Worker Rank Table of FLWs in Bihar from June-August 2013

Supervisor Reports

Report Filters

User Type: **Mobile Workers Only**

Group: Agwanpur ASHA

Date Range: From 2013-06-01 To 2013-08-31 This report's timezone is Asia/Kolkata. Showing June 2013.

Apply Favorites Save **Print Report**

Hide Filter Options Email report Search

FLW Name	AWG Code	Active Cases / सक्रिय केस	Total Cases / कुल केस	Form Submissions / फॉर्म सबमिशन	Days Since Last Submission / # दिन जबसे आखिरी फॉर्म जमा किया गया	A Clients Visited / आगामी दिन के लिए की गई भेंटें	Inactive Clients / निष्क्रिय केस
FLW Name has been removed	040	39	41	22	51	39/41 (95%)	11/41 (27%)
	122	57	60	22	20	57/60 (95%)	6/60 (10%)
	038	43	46	74	17	43/46 (93%)	9/46 (19%)
	082	37	42	123	0	37/42 (88%)	11/42 (26%)
	037	44	53	87	6	44/53 (83%)	15/53 (28%)
	084	28	26	136	0	28/26 (81%)	5/26 (19%)
	003	46	57	131	0	46/57 (81%)	14/57 (25%)
	121	26	36	72	1	26/36 (72%)	9/36 (25%)
	091	25	47	149	0	25/47 (53%)	17/47 (36%)
Total	—	347	420	815	—	347/420 (83%)	124/420 (29%)
Average	—	38	46	90	11	38/46 (83%)	10/46 (22%)

Showing 1 to 9 of 9 entries 10 per page Previous Next

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Appendix B: Worker Activity Report

Form Data

Case Data

Case Activity

User	Form Data			Case Data				Case Activity		
	# Forms Submitted	Avg # Forms Submitted	Last Form Submission	# Cases Created	# Cases Closed	# Cases Modified	Avg # Cases Modified	# Inactive Cases	# Total Cases	% Inactive Cases
	0	7	No forms submitted in time period	0	0	0	2	7	7	100%
	0	0	No forms submitted in time period	0	0	0	0	0	0	—
	14	4	2013-06-22 17:02:37	6	0	7	2	37	44	84%
	18	4	2013-06-21 12:35:21	5	1	8	1	18	26	69%
	12	16	2013-06-24 09:48:23	4	2	7	4	9	16	56%
	5	7	2013-06-24 13:09:14	1	0	2	3	9	11	82%
	11	21	2013-06-24 12:44:11	1	0	4	5	14	18	78%
	16	8	2013-06-23 11:39:12	3	1	6	5	26	32	81%
	2	2	2013-06-22 18:24:43	0	0	1	0	7	8	88%
	2	11	2013-06-20 17:11:32	1	0	1	4	13	14	93%
Total	1727	1699	179 / 262	335	80	708	611	4058	4766	—

FLWs names have been removed

Appendix C: Updated Metrics

Below is our updated PMP. Note that we slight adjusted our definitions of BASIC, PLUS, and FULL to be as follows:

BASIC Support: With BASIC Support, an organization builds the CommCare application on their own and conducts training of FLWs with little to no field support from Dimagi. Dimagi provides training to the organization and technical assistance to build and deploy the CommCare project.

PLUS Support: With PLUS Support, Dimagi builds the application, or the majority of it, and conducts or supports any FLW training. All organizations launched with a POC package are categorized as having received PLUS support.

FULL Support: With FULL Support, Dimagi builds the application and provides additional support, such as project management, Active Data Management, custom reports, and/or additional field time beyond what is included to launch a PLUS project.

Area	#	Indicator	Baseline (Sept 2012)	Nov-12	Feb-13	Jun-13	Sep-13	Aug. 2014 Target
Scale Up Monitoring	1	Number of new programs in India using CommCare	0	1	5	16	24	40
	2	Percent of new programs that try CommCare in India that are using it after one year	0% (0/0)	0% (0/0)	0% (0/0)	0% (0/0)	0% (0/0)	70%
	3	Number of new programs using CommCare in India that are scaling after 12 months	0% (0/0)	0% (0/0)	0% (0/0)	0% (0/0)	0% (0/0)	40%
	4	Number of new programs using CommCare in India for at least 12 months that are now at scale	0% (0/0)	0% (0/0)	0% (0/0)	0% (0/0)	0% (0/0)	30%
	5	Percent of BASIC CommCare programs in India	28% (5/18)	25% (5/20)	9% (2/22)	15% (6/41)	(3/50) 6%	40%
	6	Percent of PLUS CommCare programs in India (includes POC packages)	61% (11/18)	60% (12/20)	64% (14/22)	68% (28/41)	(40/50) 80%	50%
	7	Percent of FULL CommCare programs in India	11% (2/18)	15% (3/20)	27% (6/22)	17% (7/41)	(7/50) 14%	10%
	8	Number of FLWs that have used CommCare in India	1,040	1,061	1,134	1,332	1,647	800+current value
	9	Number of clients seen by FLWs using CommCare in India	69,094	89,267	120,765	179,445	224,292	200,000
	10	Number of FLWs trained in Bihar to use CommCare	519	519	519	519	519	500
	11	Number of FLWs trained in Kaushambi to use CommCare	116	122	122	318	318	285
Performance Monitoring	12	Percent of clients seen in last 60 days (proxy indicator for on time visit percentage)	74%	58%	71%	57%	58%	70%
	13	Percent of clients seen in last 120 days (proxy indicator for percentage clients who are still active)	93%	95%	92%	73%	72%	80%
Usage	14	Percent of new CommCare programs in India actively using ADM	0% (0/0)	0% (0/0)	0%	0%	21% (5/24)	n/a
	15	Percent of new CommCare programs in India actively using the Call Center	0% (0/0)	0% (0/0)	0%	0%	8% (2/24)	n/a
	16	Average number of clients seen by each FLW using CommCare in India	66	84	106	135	136	n/a
	17	Total forms submitted	227,511	417,120	638,872	911,302	973,507	n/a

Appendix D: Call Script for Performance Call Center

<u>CALL CENTER CALL SCRIPT</u>	
Hello ____.	
My name is _____. I work with CommCare.	
I work with DANGWAL Ji.	
How are you _____Ji?	
Do you have some 5 minutes? Can we talk?	
____Ji, We can see in CommCare that you have met ___out of ___clients in the last week and you have met ___out of ___clients in the last 30 days.	
[Below target is a project-specific calculation based on partner input and indicators available.]	
Met target	Congratulations ____Ji. Your performance has been very good. You have met with all the clients that are in your CommCare in the last month. Thanks a lot for doing your work so well ____Ji. Please keep it up.
Did not meet target but improved	Congratulations ____Ji. I can see that you have tried and improved your work. You have met ___more clients than compared to last week. [Re-iteration of project-specific performance target:] Please keep up your efforts and remember that you should try to visit all your clients at least once every month.
Did not meet target and declined/stayed the same	Remember that you have to meet with all the clients that are registered in your CommCare at least once every month. Can you tell me if you are facing some problems that are hindering your work?
Can we do anything to make your work easier?	
____Ji, Do you have any problem in your phone or in your CommCare?	
(Last week you had ___problem. Do you still have this problem or has it been resolved?)	
Okay good ____Ji, I will call you again next week on ___day at the same time.	
I will call you next week around this same time, and tell you again about how you have been performing.	
[Re-iteration of project-specific performance target:] Do remember that you have to meet with all the clients registered in your CommCare at least once every month.	
Okay ____Ji, Thank you. Bye!	

Appendix E: New Software Plans

Software Plans	Community ⁱ	Standard ⁱ	Pro ⁱ	Advanced ⁱ	Enterprise (Coming Soon) ⁱ
Pricing*	Free	\$100/month	\$500/month	\$1,000/month	(Contact Us)
Mobile User Limit	50	250	500	1,000	Unlimited / Discounted Pricing
Mobile					LEARN MORE
Java Feature Phones and Android Smartphones	✓	✓	✓	✓	✓
Multimedia Support	✓	✓	✓	✓	✓
Web					LEARN MORE
CommCare Application Builder	✓	✓	✓	✓	✓
CommCare Exchange (visit the Exchange)	✓	✓	✓	✓	✓
API Access	–	✓	✓	✓	✓
Lookup Tables	–	✓	✓	✓	✓
Web-based Applications (CloudCare)	–	–	✓	✓	✓
Custom Branding	–	–	–	✓	✓
Analytics					LEARN MORE
Data Export	✓	✓	✓	✓	✓
Standard Reports	✓	✓	✓	✓	✓
Cross-Project Reports	–	✓	✓	✓	✓
Custom Reports	–	–	✓	✓	✓
Active Data Management (read more)	–	–	–	✓	✓
SMS (CommConnect)					LEARN MORE
Outbound Messaging	–	✓	✓	✓	✓
Rules Engine	–	✓	✓	✓	✓
Android-based SMS Gateway	–	✓	✓	✓	✓
SMS Data Collection	–	–	✓	✓	✓
Inbound SMS (where available)	–	–	✓	✓	✓
Included Messages (Dimagi Gateway)**	–	250/month	1,000/month	2,000/month	Unlimited
Included Messages (Your Gateway)***	–	Unlimited	Unlimited	Unlimited	Unlimited

User Management and Security					LEARN MORE
User Groups	✓	✓	✓	✓	✓
Data Security and Privacy	✓	✓	✓	✓	✓
Role-Based Access	—	✓	✓	✓	✓
Bulk User Management	—	✓	✓	✓	✓
HIPAA Compliance Assurance	—	—	✓	✓	✓
De-identified Data	—	—	✓	✓	✓

Support					LEARN MORE
Community Support (visit commcare-users)	✓	✓	✓	✓	✓
Direct Email Support	—	✓	✓	✓	✓
Phone Support	—	—	✓	✓	✓
Dedicated Support Staff	—	—	—	✓	✓
Dedicated Enterprise Account Management	—	—	—	—	✓

"Scaling CommCare to Deliver Community Impact"

Milestone 9 Report, 1 December 2013

Overview

Dimagi has completed Milestone 9 of the USAID Grant No. AID-OAA-F-12-00018. This reporting milestone consists of the following element:

- Updated metrics in the Performance Management Plan

Milestone 9 is the first of four reporting milestones (in addition to Milestones 11, 12, 13). The metrics in the Performance Management Plan (PMP) have also been reported as part of Milestones 2, 4, 6, and 8.

Performance Management Plan

Below is our updated PMP for Milestone 9 (see Appendix A). The PMP is divided into three sections: Scale Up Monitoring, Performance Monitoring, and Usage. It reflects the most recent numbers from December 1st, 2013.

As seen in the PMP, the definitions of BASIC, PLUS, and FULL packages are as follows:

BASIC Support: With BASIC Support, an organization builds the CommCare application on their own and conducts training of FLWs with little to no field support from Dimagi. Dimagi provides training to the organization and technical assistance to build and deploy the CommCare project.

PLUS Support: With PLUS Support, Dimagi builds the application, or the majority of it, and conducts or supports any FLW training. All organizations launched with a POC package are categorized as having received PLUS support.

FULL Support: With FULL Support, Dimagi builds the application and provides additional support, such as project management, Active Data Management, custom reports, and/or additional field time beyond what is included to launch a PLUS project.

Appendix A

Area	#	Indicator	Baseline (Sept 2012)	Nov-12	Feb-13	Jun-13	Sep-13	Dec-13	Aug. 2014 Target	Frequency of Data Collection	Data Source
Scale Up Monitoring	1	Number of new programs in India using CommCare	0	1	5	16	24	40	40	New programs reviewed monthly	Automatic from CommCareHQ after manual flag set
	2	Percent of new programs that try CommCare in India that are using it after one year	0% (0/0)	0% (0/0)	0% (0/0)	0% (0/0)	0% (0/0)	0% (0/0)	70%	New programs reviewed monthly	Automatic from CommCareHQ after manual flag set
	3	Number of new programs using CommCare in India that are scaling after 12 months	0% (0/0)	0% (0/0)	0% (0/0)	0% (0/0)	0% (0/0)	0% (0/0)	40%	New programs reviewed monthly	Automatic from CommCareHQ after manual flag set
	4	Number of new programs using CommCare in India for at least 12 months that are now at scale	0% (0/0)	0% (0/0)	0% (0/0)	0% (0/0)	0% (0/0)	0% (0/0)	30%	New programs reviewed monthly	Automatic from CommCareHQ after manual flag set
	5	Percent of BASIC CommCare programs in India	28% (5/18)	25% (5/20)	9% (2/22)	15% (6/41)	6% (3/50)	16% (11/68)	40%	New programs reviewed monthly	Automatic from CommCareHQ after manual flag set
	6	Percent of PLUS CommCare programs in India (includes POC packages)	61% (11/18)	60% (12/20)	64% (14/22)	68% (28/41)	80% (40/50)	72% (49/68)	50%	New programs reviewed monthly	Automatic from CommCareHQ after manual flag set
	7	Percent of FULL CommCare programs in India	11% (2/18)	15% (3/20)	27% (6/22)	17% (7/41)	14% (7/50)	12% (8/68)	10%	New programs reviewed monthly	Automatic from CommCareHQ after manual flag set
	8	Number of FLWs that have used CommCare in India	1,040	1,061	1,134	1,332	1,647	1,988	8000+current value	Real Time	Automatic from CommCareHQ
	9	Number of clients seen by FLWs using CommCare in India	69,094	89,267	120,765	179,445	224,292	280,505	200,000	Real Time	Automatic from CommCareHQ
	10	Number of FLWs trained in Bihar to use CommCare	519	519	519	519	519	519	500	Real Time	Automatic from CommCareHQ
	11	Number of FLWs trained in Kaushambi to use CommCare	116	122	122	318	318	318	285	Real Time	Automatic from CommCareHQ
Performance Monitoring	12	Percent of clients seen in last 60 days (proxy indicator for on time visit percentage)	74%	58%	71%	57%	58%	53%	70%	Real Time	Automatic from CommCareHQ
	13	Percent of clients seen in last 120 days (proxy indicator for percentage clients who are still active)	93%	95%	92%	73%	72%	75%	80%	Real Time	Automatic from CommCareHQ
Usage	14	Percent of new CommCare programs in India actively using ADM	0% (0/0)	0% (0/0)		0%	0%	40% (16/40)	n/a	New programs reviewed monthly	Automatic from CommCareHQ after manual flag set
	15	Percent of new CommCare programs in India actively using the Call Center	0% (0/0)	0% (0/0)		0%	0%	5% (2/40)	n/a	New programs reviewed monthly	Automatic from CommCareHQ after manual flag set
	16	Average number of clients seen by each FLW using CommCare in India	66	84	106	135	136	141	n/a	Real Time	Automatic from CommCareHQ
	17	Total forms submitted	227,511	417,120	638,872	911,302	973,507	1,328,033	n/a	Real Time	Automatic from CommCareHQ

"Scaling CommCare to Deliver Community Impact"

Milestone 12: CommCare Competitor Report, 6 December 2013

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Overview

Dimagi has completed the first part of Milestone 12 of the USAID Grant No. AID-OAA-F-12-00018. Milestone 12 is the second of four reporting milestones (in addition to Milestones 9, 11, 13). The Competitor Report is included below. The PMP will be delivered separately at month 21 of the grant. In May 2013, Milestone 12 was amended to say that “an updated PMP will still be provided to DIV 21 months after the award date and no corresponding payment will be associated with the submission of that report.”

Competitor Report Introduction

The primary purpose of this report is to describe how CommCare compares to alternative mobile technologies that support Frontline Workers (FLWs) in India, with an emphasis on the mobile health (mHealth) sector. Since CommCare and many of its software competitors operate at a global scale, we will provide an overview of the global mHealth space from Dimagi’s perspective and introduce key concepts that underlie CommCare’s competitive advantage both globally and in India. This report assumes that the reader is familiar with CommCare and how it has been used to equip FLWs with mobile applications to improve access, quality, experience, and accountability of care.

In order to compare CommCare to alternatives, we need to define several terms, which are detailed in Appendix A. Firstly, we distinguish between technologies, applications, and projects. An mHealth **technology** is a system that is used to build **applications** for specific **projects**. We will refer to an application that runs on a mobile device as an ‘**app**,’ as opposed to a web-based application. For example, CommCare is an mHealth technology. It is being used to build many apps. One example of this is an app for FLWs in Uttar Pradesh, India that is comprised of health messages and questions in Hindi related to maternal health. This app was part of a project to use mHealth to improve maternal and child health in Uttar Pradesh. To use an example outside of mHealth, SurveyMonkey is a technology. It allows users to create online survey applications (e.g., a five question survey on eating habits), which can be deployed as part of a project (e.g., a project to investigate eating habits).

Global Competitors to CommCare

Overview of mHealth Technologies

There are many mHealth technologies on the market and many organizations that can develop and implement mHealth apps with these technologies. It can be challenging to understand the difference among these technologies and among the vendors. In this section, we present a method of categorizing mHealth technologies based on the following three dimensions:

1. Type of Technology: If the mHealth software comes in the form of a **cloud product**, **desktop product**, or **customizable codebase**.
2. Complexity of Tasks: We distinguish between simple **point tasks** and more complex **platform tasks**, and describe the common types of each in mHealth.

3. Open Source: Whether the software is **open source** or not.

In this section we further describe these three dimensions. All defined terms are listed in Appendix A.

Dimension #1: Type of Technology

In the first dimension, we categorize mHealth technologies into their three possible forms: **cloud product**, **desktop product**, or **customizable codebase**.

A **cloud product** is hosted by the software provider and made available over the Internet through a website. Common examples of cloud products that have scaled massively are Dropbox and Facebook. A key feature of a cloud product is that users can do everything needed to use the product through a public website that allows users to create and manage accounts, rather than to have a software developer write new software each time the product is used. Furthermore, users do not need to maintain their own server to support the service or manage their data. Instead, many users share the costs of maintaining the software. Cloud products' ability to shoulder software maintenance across multiple people offers important economies of scale. Due to these advantages, cloud products are increasingly dominating the market for common tasks such as email and data storage.

A **desktop product** is software that one can download and run on a computer. Microsoft Word is a common example of a desktop product. The clear trend in mHealth is towards cloud products over desktop products. One reason for this is that most mHealth apps require storing and maintaining data over time. For mHealth projects with sensitive patient data, the data must be secured, backed up, and always available. Cloud products typically offer this service at a low cost. Desktop products require maintaining a computer (or server) to store and protect the data, which may be expensive and require higher IT capacity than many organizations have in-house.

A key advantage of both cloud and desktop products is that they enable easy re-use of software across projects. The extreme alternative to using a software product is to have custom software programmed from scratch for a particular need. Due to the significant cost of developing and maintaining customized software, this is unlikely to be practical except in the case of very large mHealth deployments. However, many mHealth vendors have developed a **customizable codebase** which requires a modest amount of software development for each new mHealth app, but which generally re-uses much of the same core software platform among mHealth apps. A customizable codebase may be proprietary and only supported by one mHealth vendor. Below, we discuss why cloud products offer important advantages over custom approaches in mHealth.

All of the mHealth technologies covered in this report require user-defined content, such as health messages or questions. Cloud products include **application building tools** that allow users without software development skills to build and configure applications all by themselves. SurveyMonkey is a popular example of a cloud product with application building tools. A user can design a survey on SurveyMonkey's website, including questions, validation logic, and branching logic, and then send their online survey application to others. The user can then later log back into SurveyMonkey and export the data collected through the online survey. While cloud products support users to build mHealth apps themselves, customizable codebases require a software developer to program each new mobile app.

Dimension #2: Complexity of Tasks

The complexity of the tasks supported by mHealth technologies falls into two broad groups. We distinguish between simple point tasks and more complex platform tasks. **Point tasks** generally involve short interactions with no or minimal history maintained between interactions. SurveyMonkey and Doodle are popular examples of technologies that support point tasks. **Platform tasks** require tracking people or other entities over time, and often include complex branching logic and rules for parsing or responding to messages. Salesforce is a good example of a technology that supports platform tasks.

Application building tools for point tasks are typically easy to use. A cloud product for point applications enables almost anybody with a modest amount of technical skill to quickly create applications with no or minimal training.

Application building tools for platform problems typically require a higher level of technical skill and more training to use. This level of user is often called a **business user**—somebody who is technically proficient but does not need the technical skills that a software developer has to build an app.

Table 1 lists examples of cloud products for point tasks in mHealth. These fall primarily into two categories. The first category is **Simple SMS** apps. With simple SMS apps, users can broadcast and respond to SMS messages. Simple SMS apps can also log incoming and outgoing SMS messages to and from the server. The second category is **Mobile Data Collection** apps, which involves collecting data via a mobile app. Cloud products for mobile data collection allow non-programmers to quickly design surveys by specifying questions, branching logic, and validation rules. The survey is then transferred to a mobile app, which prompts the app user with each question while they are administering the survey. The availability of cloud and desktop products has eliminated the need for customizable codebases such as RapidSMS for point tasks.

Table 1: Popular mHealth Technologies for Point Tasks

Product Type	Open Source?	Simple SMS	Mobile Data Collection
Cloud Product	Yes	FrontlineCloud	FormHub, ODK
	No		iFormBuilder Magpi, DataWinners, TaroWorks
Desktop Product	Yes	FrontlineSMS	

Table 2 shows cloud products and custom codebases for three categories of platform tasks in mHealth. First there are mobile **Messaging** apps that support more complex interactions with an end-user via SMS or Interactive Voice Response (IVR), most commonly using structured SMS. Messaging apps have higher functionality than Simple SMS apps. For example, someone can use a Messaging app to share their medical symptoms over text or using IVR, and receive a possible prognosis based on their history and pre-defined logic in the app. The second category is mobile **Frontline Worker (FLW) Support** apps. FLW Support apps are designed to help FLWs access clients' health records from past visits, better treat clients with decision support, counsel clients with predefined health messages, and track clients over time. The third category is mobile **Frontline Supply Chain** apps, which allow supply points to report

supply levels and track resupply through structured SMS messages or mobile apps. Note that within Table 2, there are no desktop products.

Table 2: Popular mHealth Technologies for Platform Tasks

Product Type	Open Source?	Messaging	FLW Support	Frontline Supply Chain
Cloud Product	Yes		CommCare	CommTrack
Customizable Codebase	Yes	RapidSMS	eMocha	
	No	Text4Change, MOTECH	Mezzanine, Mobenzi, D-tree, Medic Mobile	Logistimo, SMS4LIFE, Dhristee

Dimension #3: Open Source

The third dimension in our overview is whether mHealth technology is open source or not. Software is open source if the original source code is made freely available and can be redistributed and modified. Dimagi releases its software under the most permissive of Open Source Initiative software licenses (BSD and Apache v 2.0). These licenses grant organizations complete freedom to re-use, redistribute, and reproduce Dimagi's software without consulting Dimagi.

It is important to note that utilizing open source code may require substantial resources. For example, an organization that obtains open source software for free may have to hire software developers to modify and install the open source code. In some cases, there exists a community of software developers who contribute to a code base. In this case, there is more support for new software developers to begin using the code. In other cases (including with Dimagi's open source products), a single company produces almost all the software, but the code is available for others to use.

Using open source code is especially beneficial if a project is going to scale or if there is a need to transfer the mHealth technology to a government. With open source code, governments can directly copy and customize pre-existing code and set-up their own servers without having to pay for licensing fees, use, or distribution of the software. This ensures that local software developers in a country can take ownership of a code base, and can be important for the long-term sustainability of a large-scale mHealth project.

Importance of Open Source Cloud Products for Platform Tasks

In this section, we explain why Dimagi has focused on building open source cloud products for platform problems.

Most mHealth projects go through the following three stages listed in Table 3, starting with **Proof of Concept** (Stage 1), moving on to **Scale and Sustain** (Stage 2), and finally **National Scale and Government Ownership** (Stage 3). While there are modest advantages to an open source cloud product during the Proof of Concept stage, there are substantial advantages as organizations move into the second and third scaling stages.

During the initial **Proof of Concept** stage, an organization is just starting to equip their FLWs with a mobile app. At this stage, the difference between a cloud product and another type of technology is less

substantial. In either case, an organization may end up needing external help to get started (e.g., in the same way that many organizations hire consultants to start using Salesforce). This is because it takes expertise to use the application building tools for platform problems, and also expertise to design FLW Support apps that meet FLWs’ needs. A cloud product will offer some costs savings at this stage, but these savings will not be substantial unless the organization uses the cloud product.

However, organizations will be best served if they plan for the scaling stages before starting the Proof of Concept stage. Cloud products offer substantial advantages to an organization entering the **Scale and Sustain** stage. During this stage, an organization will add users, adapt content, and begin to take advantage of the mHealth system they deployed with more advanced features, such as improving FLW supervision. Because cloud products are already designed to scale, new users can be easily added. Staff from the implementing organization can make their own changes to the mHealth app using the application building tools in the cloud product, even if they needed to hire consultants to get started. In contrast, a custom approach will be substantially more expensive to implement since the entire cost must be incurred by a single organization, and knowledge transfer between software developers is costly and complex.

As an example, Dimagi’s server currently supports over 130 active deployments of CommCare globally. These organizations are essentially sharing the cost of maintaining the FLW support system. Not one of these 130 organizations is paying close to what it would cost them to run and maintain their own server. Furthermore, all 130 organizations enjoy continual updates to the system. If one of the 130 organizations funds a new feature, the other 129 also receive access to that feature. For example, when significant funding from USAID or the Bill & Melinda Gates Foundation funds new core features, all organizations receive access to it.

At the **National Scale and Government Ownership** stage, there is less need for a cloud server since there can be a dedicated code base and dedicated technical staff members for the national deployment. At this stage, it’s common for governments to require that they run their own code base, and the cost per-FLW is likely to be affordable at large scale. The fact that CommCare is open source becomes very important at this stage, since governments can take ownership of the codebase and modify it to their liking. CommCare’s user-friendly application building tools also remain important at this stage. As governments take over and run an entire mHealth system, they will need to hire the appropriate technical experts and software developers to maintain their code base, mHealth apps, and corresponding websites or reporting mechanisms. Application building tools reduce the time it takes staff to build and maintain apps, and because they can be used by business users and not just costly software developers, the money governments need to invest in hiring technical staff.

Table 3: Advantages of CommCare for FLW Support Projects

Stage of Project	Advantages of Open Source Cloud Products	Comment
Proof of Concept	<ul style="list-style-type: none"> • Possibility of doing it yourself with application building tools for business users • Lower costs to hire business users to configure system for you, compared to 	<i>In initial stages, less value-differentiation among mHealth cloud products.</i>

	<ul style="list-style-type: none"> hiring software developers Cloud hosting for quick startup and lower costs 	
Scale and Sustain	<ul style="list-style-type: none"> Ability to make changes to mobile apps yourself Substantially reduced operational costs compared to custom approach Scalable—the system is already supporting other projects at large scale 	<i>When scaling, a cloud product is crucial for organizations unless they have internal capacity to run their own systems.</i>
National Scale & Government Ownership	<ul style="list-style-type: none"> Open source Has many advanced features that would take time to replicate in a custom programmed approach Application building tools for business users 	<i>For handoff to government, open source is essential.</i>

Why not use Products Designed for Point Tasks?

Some organizations use cloud products for point tasks, such as Magpi or ODK, in the Proof of Concept stage of FLW Support projects. These apps can be used to collect data and provide simple decision support to their FLWs. In the short term, this may be sufficient. However, most projects will want to eventually maintain a longitudinal record between visits rather than only collect new information each time a client is visited. (Point products are often used to collect data from subjects who are only visited once.) FLW Support apps are designed specifically for this. Similarly, without an FLW Support app, it will be challenging for organizations to link information collected from multiple visits together when IDs are not correctly entered each time. If an organization tries to address these and other problems that arise, it is likely that they will find themselves cobbling together their own FLW Support app.

FLW Support apps also offer specialized analytics and tools (which are typically unavailable in more generic apps) that will become essential after the initial introduction of an mHealth system to an FLW program. For example, CommCare has a report called the “Worker Activity Report” available to all CommCare projects. This report provides information for each FLW to track their activity. The list can be sorted to find high- or low- performers in terms of their number of mobile submissions, number of clients, and other useful metrics. Similarly, CommCare also provides performance call center functionality that provides call center staff with a list of FLWs, ordered in the sequence that FLWs should be called. CommCare then guides the call center staff through the conversation with an FLW, similar to how CommCare guides an FLW through a home visit with a client.

MOTECH Suite

Dimagi and Grameen Foundation are leading a strategic partnership called MOTECH Suite (www.motechsuite.org), which will provide an integrated, cloud product with advanced Messaging, FLW Support, and Supply Chain functionality. This will provide a single mHealth cloud product that combines the power of CommCare, CommTrack, and the MOTECH SMS and IVR projects that have reached large scale in Ghana and India. Furthermore, MOTECH Suite will support integration with many external system including DHIS2, OpenMRS, and OpenLMIS. Led by open source software developers from

Dimagi and Grameen Foundation, MOTECH Suite's consortium brings together several of the most experienced mHealth content developers, funders, open source solution providers, and technical experts.

Competitor Matrix for FLW-Support Technologies (Global)

In this section, we provide a more detailed analysis that compares CommCare to other technologies for FLWs Support apps.

In selecting these technologies, we only included ones that have a substantial amount of publicly available information and that operate globally. Note that most of these technologies are *not* currently active in India. Additionally, we only included technologies that support offline **case management** on their supported platforms. Case management refers to when a person (or other entity) can be tracked over time on a mobile app, and that some record of past information collected for that person is available on the mobile app.

In Table 4, we compared technologies for FLW Support based on the following dimensions:

- **Cloud Product (Yes, No):** As defined above, whether the technology is offered as a cloud product. A “yes” means that there must be a publicly available website that allows a user to create an account, configure a mobile app to support FLWs, and deploy the app.
- **Open Source (Yes, No):** Whether the source code for the technology is available online and can be edited and re-used.
- **Public Pricing Plans (Yes, No):** Whether or not there is a public pricing plan on the technology's website. This indicates that there is a commercially available and supported project.
- **Multimedia (Yes, No):** Whether the technology supports the use of multimedia either for data collection or display in mobile apps, including images, audio, or videos.
- **Public APIs (Yes, No):** whether or not the technology supports direct data export to other packages or software systems. A ‘yes’ means that we were able to find API documentation on the technology's public website.
- **SMS Capability (Yes, No):** whether or not the technology enables data collection using SMS
- **Online support (Low, Medium, High):** Refers to the level of support that can be found on the technology's public website.
 - Low: official documentation, email support, online query submission
 - Medium: enriched documentation, email support, online query submission, knowledge articles (case studies) and user community available, online training sessions (webinars, video tutorials)
 - High: rich documentation, email support, online query submission, knowledge articles, online training sessions (webinar, video tutorial), active user community, user forum voting for ideas to improve the products (e.g., Uservoice)
- **Mobile Platforms (Low, Medium, High):** Here we categorize technologies based on the amount of mobile operating systems they run on. We flesh this out in Table 5, where we list each technology, and each operating system the technology runs on.
 - Low: If the technology works with only one operating system, e.g. Android, J2ME, or iOS.

- Medium: If the technology operates on both Android and J2ME, as these are the two most common and appropriate operating systems.
- High: If the technology operates on Android, J2ME, and other systems such as iOS or RIM (Blackberry).

In regards to the above mobile platform dimension, there is a wide range of perspectives on what mobile platforms turn out to be most successful. Some argue that only SMS or IVR solutions will last, since they work on any phone and may not require purchasing phones for FLWs. Another side argues that within five years, every FLW will own Android smartphones, and any effort into lesser platforms is wasted. Dimagi is currently seeing a trend towards Android platforms. At the same time, in 2014, being able to run on Java-enabled phones (that run J2ME) still seems a critical advantage in low-resource settings where Smartphone penetration remains low. Android phones have yet to catch up to Java-enabled phones sold by Nokia and other manufacturers in terms of battery life, robustness, and native language keyboards. Several of our partners in India thoroughly compared Android and J2ME for scaling CommCare (which runs on both), and chose J2ME.

Table 4: Features In FLW Support Technologies

Name of Technology	Developer	Cloud Product	Open Source	Public Pricing	Multimedia	Public APIs	SMS Capability	Online Support	Mobile Platform
CommCare	Dimagi	Ü	Ü	Ü	Ü	Ü	Ü	HIGH	MEDIUM
Mezzanine Mobile Health Platform	Mezzanine Ware	-	-	-	Ü	Ü	Ü	LOW	LOW
Mobenzi Outreach	Mobenzi	-	-	Ü	Ü	Ü	Ü	MEDIUM	HIGH
eMOCHA	Johns Hopkins University	-	Ü	-	Ü	Ü	-	LOW	LOW
Kujua Lite	Medic Mobile	-	Ü	-	-	-	Ü	LOW	HIGH
TaroWorks	Grameen Foundation	Ü	-	-	Ü	Ü	-	HIGH	LOW

Table 5: Supported Operating Systems for FLW Support Technologies

Competitors	J2ME	Android	iOS	RIM	Windows
CommCare	Ü	Ü	-	-	-
Mezzanine	-	Ü	-	-	-
Mobenzi Outreach	Ü	Ü	-	Ü	Ü
eMOCHA	-	Ü	-	-	-
Kujua Lite	Ü	Ü	Ü	Ü	Ü
TaroWorks	-	Ü	-	-	-

Notable Features of CommCare

In addition to the features listed in Table 4, CommCare has several specific features that are worth noting. In this section, we list out the features, most of which we expect are rare among the competitors listed above, although it is hard to determine with certainty from publicly available information.

CommCare Exchange: Effective reuse of mHealth apps can increase productivity, save time, and reduce the cost of technology development. CommCare Exchange (www.commcarehq.org/exchange) is the first free, open source, mobile app market that allows anyone to download and customize pre-existing mobile apps for FLWs.

Data Security: CommCare provides a high level of data security. All users require secure, unique logins to the system. CommCare is securely hosted and all data is encrypted at rest using RSA 256-bit encryption. All interactions on the website are conducted over industry standard transmission encryption. Reports are only made available to users with appropriate access to PHI. All interactions on the website are logged by user, date, time and location for auditing purposes. Dimagi supports many academic and commercial clients on CommCare's platform, which has been evaluated as HIPAA compliant by multiple parties. All data transfers to and from the mobile phone are encrypted using HTTPS. Additionally, the CommCare mobile client on Android provides encrypted data storage at rest (AES 256-Bit Symmetric Encryption, fully HIPAA compliant).

Supervision and Performance Improvement: CommCare users can also access web-based reports that feature real-time data about FLW performance including number of client households visited, duration of visits, etc. CommCare's Active Data Management (ADM) service supports performance management by providing timely, interpretable reports of FLW activities, as well as targeted follow-up actions for supervisory staff members. Supervisors can use these reports to following up with underperforming FLWs, reinforce skills learned during training, and solve any technical problem. All CommCare data submissions can be traced to a user and the time and date of entry into the phone and the server, which helps verify the actual events on the ground. Feedback from CommCare's performance call center functionality (described above) has also been shown to increase FLWs' duration of visits and client follow-up rates.

Integrated Bi-directional SMS Capacity: CommCare's SMS capabilities can be used as a standalone system *or* can be integrated with CommCare's form-based and case management applications. This enables organizations to quickly deploy sophisticated applications or tie them into preexisting CommCare applications to better track users. In addition to its extensive messaging capabilities, CommConnect also supports data collection, web reporting, and user management.

Evidence Base: CommCare has an extensive evidence base which is available online (<http://tinyurl.com/cut6pkt>). Over the past five years, Dimagi has partnered with numerous research partners to conduct research about CommCare. This research has led to 15 peer-reviewed publications about CommCare, compared to a total of three on alternative technologies' for FLW Support apps that we are aware of.

Implementation Services: Dimagi's growing staff of 70+ software developers, public health experts, clinicians, project managers, and field staff apply their experience in global health care delivery and data system design to effectively deploy CommCare projects in 30 countries worldwide. Our Field Managers bring significant experience implementing CommCare apps. Field Managers work directly with organizations on project sites to design and deploy CommCare apps, repeatedly field test, localize, and iterate apps with end-users, and provide technical guidance for project scaling and evaluation. Field Managers lead project trainings for different users (from FLWs' clients to Ministry of Health staff), as well as conduct training of trainers so that organizations can lead their own scale-up trainings.

Notable Features of Competitors

SIM Apps: The first SIM application developed by Medic Mobile can operate on any GSM device. The implementation of this technology makes data collection accessible offline in places that have poor Internet connectivity.

Close Partnerships with a Single Mobile Provider: Mezzanine has a close strategic partnership with Vodafone. This is advantageous because Mezzanine can leverage Vodafone's relationships and infrastructure. However, this can also be a limitation in areas where other networks provide stronger service, as Mezzanine can only work with Vodafone.

Competitor Matrix for Mobile Data Collection (Global)

While not the main focus, CommCare is also used for mobile data collection. In this section, we compare CommCare to other competitors for this task. For the simple case of mobile data collection, cloud products designed only for this point problem are oftentimes the best choice. But in several important instances, CommCare has advantages over other Mobile Data Collection technologies.

We use the following dimensions to compare technologies for point tasks, in addition to several of the dimensions used to compare technologies for FLW Support apps we list above:

- **Pricing Structure (Yes, No):** Refers to whether the software product charges organizations by how much data the project needs to collect, or if it charges by how many mobile users of the software the project has.
- **Data Collected and Displayed (Low, Medium, High):** Refers to the types of data a mobile app can collect (e.g. ability to input someone's GPS location or signature) and can display (e.g. an app that can display text only versus text and multimedia).
 - Low: free text, numeric data (numbers, date and time), GPS location
 - Medium: text, numeric data, GPS location, multimedia (video, image, and audio), barcode
 - High: text, numeric data, GPS location, multimedia, barcode, signature, attachments
- **Form Reusability (Yes, No):** Refers to whether the software product provides free template or reusable applications to users starting from scratch
- **Ease of Use (Low, Medium, High):** Refers to the ability of a user to readily and successfully build an app with the software product without the need for an advanced explanation or the

instruction manual. Also refers to the simplicity, obviousness, clarity, and time spent building the application

- Low: Complex systems requiring IT proficiency for either system setup or form building offering inadequate support (i.e.: tooltip popups only in application builder)
- Medium: Complex systems requiring less IT proficiency, form building is made easier with: template forms, input widgets, device view, etc.
- High: Turnkey installations requiring no IT expertise, forms could be easily created/modified without programming knowledge (i.e.: drag and drop editor enabling users to build an application with minimum or no reference to documentation)

Table 6: Competitor Matrix for Mobile Data Collection

	Developer	Pricing Structure	Cloud Product	Open Source	Mobile Platforms	Data Collected & Displayed	Form Reusability	Online Support	Ease of Use
CommCare	Dimagi	User-based	ü	ü	MEDIUM	HIGH	ü	HIGH	MEDIUM
DataWinners	Human Network International	Volume-based	ü	-	MEDIUM	MEDIUM	ü	MEDIUM	MEDIUM
FormHub	Columbia University	Free	ü	ü	LOW (Android only)	HIGH	ü	MEDIUM	LOW
iFormBuilder	Zerizon	User-based	ü	-	MEDIUM	HIGH	-	MEDIUM	HIGH
Kobo Toolbox	Harvard Humanitarian Initiative	Free	ü	ü	LOW (Android only)	MEDIUM	-	MEDIUM	LOW
Magpi (EpiSurveyor)	DataDyne	Volume-based	ü	-	HIGH	MEDIUM	ü	LOW	HIGH
Mobenzi Researcher	Mobenzi	Volume-based	ü	-	HIGH	MEDIUM	-	HIGH	MEDIUM
FieldData	Arthify	User-based	-	-	LOW (Android only)	HIGH	-	LOW	HIGH
TaroWorks	Grameen Foundation	User-based	ü	-	LOW (Android only)	MEDIUM	-	LOW	MEDIUM
OpenDataKit	Open Data Kit	Free	-	ü	LOW (Android only)	MEDIUM	-	MEDIUM	MEDIUM

CommCare Competition in India

CommCare's Position in India

With support from the USAID Development Innovation Ventures (DIV) Stage 1 and Stage 2 grants, CommCare is very strongly positioned in India. Dimagi has 18 staff members in India, who are supporting 68 CommCare projects in 16 states.

Prior to 2010, Dimagi had minimal presence in India. After receiving a DIV Stage 1 Grant in 2010, Dimagi supported 11 organizations in eight states in India to launch CommCare. This work also helped Dimagi forge many key relationships, including partnerships with the Bill & Melinda Gates Foundation, CARE, BBC Media Action, and the Grameen Foundation in Bihar on a large and scaling mHealth project. With DIV Stage 2 funding, Dimagi expanded these partnerships and launched an additional 40 new CommCare projects in 2013. In addition to expanding CommCare's presence in India, support from DIV for our work in India has enabled Dimagi to also productize CommCare so that it's easier to scale across the country, launch significant India-based research that has led to the largest evidence base for an mHealth platform, and develop useful cost effectiveness modeling tools for organizations. By combining at scale an innovative, field-tested mHealth solution, a massive health workforce, a broad base of implementation partners, and rigorous, relevant, and timely research. Dimagi is helping to realize the full potential of community-based primary care as envisioned by the Government of India, and globally.

A few key projects have solidified Dimagi's position as a leader of FLW Support apps in India, including:

- **Scale-up in Bihar:** In March of 2013, CARE requested the Government of Bihar's permission to further scale CommCare from its current location in four blocks of Saharsa District. The Government of Bihar recently approved this request, which we hope will soon lead to CommCare being used by 10,000 FLWs in multiple districts. This expansion will leverage support from DFID, which is provided to the Bihar government.
- **Scale-up in Jharkhand:** Dimagi submitted and won a two-year grant from the World Bank India Development Marketplace to expand CommCare across Jharkhand for maternal and child health. Dimagi is working with UNICEF, mCHIP, and the Government of Jharkhand to scale CommCare in a coordinated way across the state, building off existing projects in Jharkhand with the organizations UNION, World Renew, and KGVK.
- **USAID India Gender Based Violence grant:** Dimagi has increasingly collaborated with the USAID India Mission through Stage 1 and Stage 2 of DIV. USAID India recently secured a \$498,928, three-year grant to support Dimagi to scale innovations in gender-based violence. This grant builds directly off the Proof of Concept project supported by the DIV Stage 2 grant with St. John's Research Institute in Bangalore, who is a partner on the project.
- **Catholic Relief Services ReMiND Project:** In Uttar Pradesh, Dimagi is working with Catholic Relief Services (CRS) to roll out pregnancy, postpartum, infant, and referral CommCare modules for FLWs in consultation with district and state health authorities. 271 FLWs are using audio and visual prompts to systematically counsel and assess women and babies for danger signs. FLW supervisors are also alerted when visits are missed. The CRS site has become a strong innovation

test bed and an increasingly well-known example globally of mHealth as a supportive supervision tool. The project is currently assessing how direct-to-FLW feedback improves FLW motivation and performance.

- **Conditional Cash Transfers:** Dimagi is a leader in the integration of conditional cash transfers and mHealth in India. We are currently working with Oxford Policy Management to implement a conditional cash transfer project for 450 FLWs in Bihar.

Competitors in India for FLW Support Technologies

Somewhat surprisingly, Dimagi is one of the few organizations known globally for FLW Support technologies that has a strong presence in India. Relevant organizations *without* a strong presence in India include Click Medixs, D-tree International, eMocha, Medic Mobile, Mezzanine, and Mobenzi. Grameen Foundation also has staff and multiple projects in India, but as described above, is a close partner to Dimagi in deploying MOTECH Suite (which uses CommCare).

While there is no single, major competitor that Dimagi encounters regularly in India, there is a myriad of FLW Support projects in India. As discussed below, Dimagi also competes against custom programmed solutions for any given project.

Because there is little publicly available information about competitors in India, it is difficult to create a feature-by-feature analysis. Below is a description of the most notable competitors:

Artoo: The approach of Artoo is similar in spirit to CommCare, with the goal of developing an easily customizable platform to empower FLWs to perform data collection, patient education, follow-up visits, and FLW training. The only deployment of Artoo in the health sector in India that we are aware of is a primary healthcare clinic, for rapid risk assessment of data for cardiovascular and diabetes.

DHIS2-Mobile: Developed by Health Information Systems Programme, DHIS2 (District Health Information Software) is a tool for collecting, storing, visualizing, and analyzing health data. Like CommCare, DHIS2 has a mobile component for FLWs to collect information and manage case based records. DHIS2 is currently being used in 30 countries, including in India. A large DHIS mobile installation in Punjab has enrolled 6,000 FLWs to regularly report on a number of health indicators from their catchment areas using SMS from Nokia phones.

eMamta: eMamta is a web-based application that tracks mother and child health. It is integrated into the Health Management Information System for the state of Gujarat. eMamta is designed to register pregnant mothers, children, and adolescents in Gujarat in order to ensure complete service delivery of antenatal care, childbirth, postnatal care, immunizations, nutrition, and adolescent services.

Freedom Polio: ZMQ is a notable social enterprise that develops custom mHealth solutions in India. They are well known for their work in game-related services. They have worked with CORE Group's Polio Project to implement Freedom Polio, a large mHealth project for tracking polio in India. This project includes mobile apps for block and district officers.

Handsrel: The Handheld Solutions & Research Labs (Handsrel) is a mobile technology company that develops solutions for many areas, including health. They utilize openXdata, which is an open source customizable platform that was primarily designed for mobile data collection. Handsrel deploys openXdata for projects that are similar to CommCare projects. Handsrel is being used in Uttarakhand to collect field data about specific diseases under surveillance.

Mobile Kunji: Launched by BBC Media Action in Bihar, Mobile Kunji is a toll free job aid that provides audio counseling messages over IVR. FLWs call an IVR-supported phone number and play audio messages for their clients. FLWs are also given a printed deck of cards. A unique code at the bottom of each card allows FLWs to play audio messages while they show the pictures on the cards to their clients. Mobile Kunji lacks many of the essential capabilities of CommCare, including case management and the ability to collect data. However, it is easier and less expensive to roll out, though incremental cost per visit is higher. It's for these reasons that Mobile Kunji may be considered an alternative to CommCare.

mSahki: mSahki is a custom Android mobile app developed by IntraHealth, which built mSahki off of its experience piloting CommCare in Bahraich, Uttar Pradesh. The mobile app has some impressive features, including the ability to store pictures of each client. However, to our knowledge, mSahki's technology is relatively immature and the server-side system is in a preliminary state. Due to strong connections with the government, they are well positioned in Uttar Pradesh.

Operation ASHA: Operation ASHA is an organization that developed an electronic compliance system for tuberculosis that is tracking 1,600 TB patients. DOTS center providers carry the system (which is comprised of a netbook and fingerprint reader to register new patients), and will send text messages to counselors if a patient misses an appointment. While Operation ASHA does not compete with Dimagi in other sectors, they are a strong competitor for tuberculosis-specific projects.

Swasthya Slate: An Android phone or tablet-based diagnostic kit and clinical screening tool. Swasthya Slate performs nine basic health checks, among them body temperature, blood pressure, heart rate, and a urine protein test. The tool is operated by FLWs or government appointed auxiliary nurse midwives and can be paired with an Android phone or tablet. Swasthya Slate records patients' medical history, indicators, and provide diagnoses based on collected information.

Virtuosis: Virtuosis is an Indian software development company with expertise in eGovernance solutions. Nurses in Chattisgarh are using Virtuosis' mobile app to replace paper forms. The mobile app transmits data over SMS and enables users to review and edit data before sending. This system is integrated with the state's Maternal and Child Tracking System. Virtuosis has partnered with BSNL and may scale their app to ANMs in Bihar and West Bengal, as well.

World Health Partners/Neurosynaptics: World Health Partners and Neurosynaptics developed ReMeDi Remote Healthcare Delivery Solutions, a remote diagnostic kit that is remotely controlled by doctors. Deployed in rural villages, ReMeDi collects clinical data to support decision-making by facilitating remote diagnosis of patients. ReMeDi captures various basic physiological parameters, with the aim of reducing the cost of remote healthcare delivery.

Comparison on Cost and User Experience

As shown in the table below, there is limited publicly available information about competitors’ costs or user experience. Handsrel is the only group in India we could find that has public pricing information and offers a solution that could be used for the range of tasks CommCare supports. However, Handsrel’s services and pricing are oriented towards data collection projects. While Handsrel offers support for data collection at a low price, the price for complex applications needed to support FLWs (many forms, lots of data over time) would be much higher than for a similar CommCare project based on their public pricing information. We were able to find prices for the hardware for OperationASHA and Swasthya Slate. The hardware is more expensive than the phones that CommCare runs on—though will provide more value for the special tasks they are suited for.

There is similarly little concrete information we could find about user experience. Several of the more custom built mobile applications such as mSakhi and Virtuosis provide a good experience to their mobile users, based on videos or demos we have seen. And several of the organizations that focus on a specific area will provide a very good experience for that scenario. One example of this is OperationASHA’s mobile solution is well suited for tuberculosis projects, but less so for other areas.

As discussed above, we expect CommCare’s primary advantage to come from being the only cloud product that can be configured to support different types of FLW programs. This will allow slightly lower start up costs, and significantly lower maintenance and scaling costs. It will also allow us to support a much larger number of projects at once than with a non-product approach, especially in projects’ early stages. For example, we expect that none of the non-product approaches could have launched 40 FLW apps in one year in India. Additionally, because CommCare is open source, its code can be handed off to governments for adoption.

In the next section, we further reflect on competing with entirely customized approaches for large-scale projects.

Name/ Website	Pricing Comparison	User Experience Comparison
India		
mSaki (no website)	No public pricing information.	Video available (http://bit.ly/Ldq4F0). Mobile experience looks comparable to CommCare, with some nice features that CommCare lacks (see report).
Artoo artoo.in	No public pricing information.	While functionality appears limited, the design looks more user-friendly than CommCare.
DHIS2-Mobile hispindia.org	No public pricing information for implementation services.	Generally worse experience for mobile, but better for web users since focus of DHIS is on aggregating data.
Freedom Polio www.freedompolio.org	No public pricing information.	Highly customized mobile app, likely very good user experience for use case.
Handsrel	Handsrel charges RS 200,000	More focus on general data collection

www.handsrel.com	(\$3,250) plus taxes for "full server deployment." This supports one form with up to 30 questions, and a collection of 1,000 records that form. Would be much for expensive than CommCare for FLW app with many forms and long-term use.	and thus will be a worse user experience for FLW applications.
Mobile Kunji http://www.rethink1000days.org/programme-outputs/mobile-kunji/	No public pricing information. Operates on a large scale only with substantial donor funding. Because Mobile Kunki only supports IVR, implementation costs are reduced by not needing to buy new phones for FLWs, assuming that they have negotiated very low per-minute costs for airtime.	IVR-only system. Provides a simpler experience without key functionality of CommCare, including case management or images.
Virtuosis http://www.virtuosos.in/	No public pricing information.	Highly customized mobile app. We saw a demo in person and it seemed to have a very good user experience.
Swasthya Slate http://www.swasthyaslate.org/	The hardware currently costs Rs 30,000 (\$487)per unit. no pricing available on implementation. Phones that run CommCare cost less than \$80 per unit.	Very good experience for the tasks it's suited for.
World Health Partner/Neurosynaptics http://www.neurosynaptic.com/Testimonials.html	No public pricing information. Note that this group is geared to address a very different, specific use case.	Very good experience for their use case.
Operation ASHA http://www.opasha.org/our-work/ecompliance-innovation-and-health/	Hardware costs Rs 20,000 (\$325) per eCompliance terminal. Phones that run CommCare cost less than \$80 per unit.	Very good user experience for TB use cases.
eMamta http://e-mamta.gujarat.gov.in/	No public pricing information.	Seems to have a text-oriented interface.
Global		
Mezzanine http://www.mezzanineware.com/	No public pricing information .	Comparable to CommCare.
Mobenzi Outreach http://www.mobenzi.com/outreach/home	Pricing available for their Mobenzi Reseacher platform, quoted as "per fieldworker would generally range from about \$7 - \$50 per month depending on volumes and usage patterns." For comparison, CommCare is approximately \$1-2 per month per user.	Comparable to CommCare.
eMOCHA http://main.ccghe.net/content/emocha	No public pricing information.	Comparable to CommCare.
Kujua Lite	No public pricing information.	SIM app interfaces present a worse

http://medicmobile.org/tools/kujua-lite/	Implementation costs are reduced since it isn't necessary to buy a new phone for every FLW.	user experience than mobile application. Web is experience very good.
TaroWorks http://taroworks.org/	TaroWorks charges an introductory price of \$5,000/year to organizations. Organizations must also pay Salesforce.	For FLWs, the mobile app is a much more limited and has a worse user experience than CommCare because it is not designed for case management. Salesforce will provide a better experience for web users than CommCare.

Competing with Custom Solutions in India

In India, there are innumerable software development firms, including some very large and well-known groups such as Wipro and InfoSys. For any given large-scale mHealth project, Dimagi is competing with the possibility that one of these software development firms may build a custom solution specifically for that project. Although often scalable within one vertical, these custom applications often don't translate between partners, projects, or states. However, on any given project, custom programming is much more of a threat in India than in any other place we work in the world given the maturity of the IT industry.

For a large-scale project there are merits to both the product approach that we offer and to a custom approach. In a custom approach, the solution can be built for exactly what a particular program wants and needs. The program has complete control of the technical and implementation roadmap. Many of these groups also have strong ties with government. Conversely, significant resources in both time and money need to be invested on an ongoing basis to support technical development and maintenance for a package that often can't be easily deployed to another geography or sector. Further, and improvement requires an investment. With a product approach, the program has less control over the technical direction of a product, as valid program requirements may not fit with the product's future direction, but the benefits come in the reduced cost due to a large number of users sharing infrastructure, transferrable intellectual property rights if the product is open source, and a more robust platform that has been tested and used in other sectors and geographies.

For any large contract, Dimagi will always face the challenge of competing with custom solutions. If the scale up in Bihar happens as expected, this will substantially improve our position to win these competitions, as will the increasing maturity and evidence base of our platform. However, there is always a chance in India of a large government contract going to a single local vendor to design a custom package that is deployed to a district or state.

Appendix A: Glossary

The following terms have been defined and used throughout this report:

Term	Definition	Examples
General mHealth Terms		

Technology	In the context of this report, a system that is used to create mobile or web applications for any purpose.	SurveyMonkey, CommCare
mHealth Technology	A system that is used to create mobile applications for specific health projects.	CommCare, Mobenzi
mHealth Applications	A defined, health application that runs on a mobile phone, as opposed to a web-based application. We refer to applications on mobile phones as “apps.”,	A CommCare app designed to support Indian women throughout their pregnancies.during pregnancy.
mHealth Projects	A specific context in which an mHealth application is implemented.	The ReMiND project by Catholic Relief Services in Uttar Pradesh, India that uses CommCare
mHealth Technology Overview		
Cloud product	A software product that is available a public website.	Dropbox, Facebook, and Google Maps, CommCare
Desktop product	A software product that one can download and run on a computer.	Microsoft Word (non-mHealth)
Customizable codebase	Customized software that requires a modest amount of software development for each new app, but which generally re-uses much of the same core software platform among apps.	RapidSMS
Application building tools	Software tools that allow a person to create applications without any new software development.	SurveyMonkey, Doodle
Point tasks	Involve short interactions with no or minimal history maintained between interactions.	Online surveys, ,Mobile Data Collection
Platform tasks	More complex in nature than point applications; often require tracking people, complex branching logic, rules for responding to messages.	Salesforce,
Business user	A user that is technically proficient but does not need the technical skills of a software developer to use platform applications.	A non-programmer who configures Salesforce for an organization.
Open source software	Software for which the original source code is freely available and may be redistributed or modified.	OpenMRS, CommCare
Types of Apps Used in mHealth		
Simple SMS apps	Low-complexity apps. Users can broadcast respond to SMS messages; can log incoming and outgoing SMS messages to and from the server.	FrontlineCloud
Mobile Data Collection apps	A mobile app that allows the user to collect and report structured data.	Magpi, DataWinners
Messaging apps	SMS-messaging software that distributes and collects information via text messages, building off past interactions with a given individual.	FrontlineSMS, RapidSMS,

Frontline Worker (FLW) Support apps	Mobile app used by a Frontline Worker. The app should help them track clients (or manage cases), provide decision support, and support for counseling.	CommCare, eMocha
Frontline Supply Chain apps	Mobile app that supports both SMS and mobile forms reporting of stock indicators, stock replenishment, and receipt confirmation.	CommTrack, Logistimos
mHealth Project Stages		
Proof of Concept	First stage of an mHealth project when an organization tests an mHealth solution with a small number of users.	Catholic Relief Services equips ten FLWs with phones in Uttar Pradesh.
Scale and Sustain	Following the Proof of Concept stage, organization will begin to scale mHealth project by adding users, adapting content, and begin incorporating more advanced features.	Catholic Relief Services scaling mHealth project to 300 FLWs.
National Scale & Government Ownership	Third and final stage of an mHealth project. Government takes over mHealth project (and oftentimes codebase) and scales it throughout a state or country.	Government of India scales and runs mHealth project throughout Uttar Pradesh.

Appendix B: mHealth Technologies and Implementers

The focus of this report is to compare CommCare to other mobile apps that support FLWs, especially in the health sector. Below we provide a short description of many mHealth technologies (although the list is far from complete).

Technology (Developer)	Description
Akvo	Technology for FLW support apps focused on water applications.
Artoo	Technology for mobile apps that help FLWs to perform data collection, patient education, follow-up visits, and FLW training. It doesn't seem to have case management, but is targeted at FLWs.
DataProctor	An Android, cloud-based mobile technology that focuses on facility and assets management
DataWinners	Data collection technology; users submit data with SMS, Smartphone, or Web
DHIS2-Mobile	Technology collects, stores, visualizes, and analyzes health data; has mobile and web component and ability to manage case-based records
Digital Green	Organization that disseminates agricultural information to farmers through digital video; branching out into other sectors and countries.
eMamta	Web-based application to track and ensure service delivery of mothers and children in Gujarat, India; integrated with Gujarat's HMIS
FieldData	Cloud product for mobile data collection.
FormHub	Open source data backend service to create mobile surveys and view

	collected data in web-based format
Freedom Polio (ZMQ)	A Set of mobile apps for tracking polio in India; developed by ZMQ
FrontlineForms	A desktop product for mobile data collection
FrontlineSMS	A desktop product for simple SMS messaging
Health Phone	Organization that disseminates health and nutrition information through digital videos pre-loaded on low-cost phones
iFormBuilder	Cloud product for mobile data collection
Kobo Toolbox	Cloud product for mobile data collection
Magpi	Formerly known as EpiSurveyor, cloud product for mobile data collection
Mobile 4 Reproductive Health (FHI360)	Opt-in SMS-based health communication program focusing on disseminating information about family planning
Mobile Alliance for Maternal Action	Known as “MAMA,” SMS/voice message content provider; works to improve mothers’ access to health information
Mobile Kunji (BBC Media Action)	Toll free job aid that provides FLWs in Bihar, India with audio counseling messages over IVR.
Mobenzi Researcher	Cloud product for mobile data collection.
mPower Health	Customized system for organizations with needs in data collection, data analysis, and capacity building
mSahki	Android mobile app in Uttar Pradesh, built off CommCare pilot. Strong features (client picture storage), but relatively immature technology
openXdata	Open source customizable codebase for mobile data collection
Operation ASHA	Organization developed a TB electronic compliance system that tracks 1,600 TB patients. Registers patients, sends SMS missed appointment notifications to counselors
OpenDataKit	Open source cloud product for mobile data collection
RapidSMS	Open source customizable codebase; used to build mobile services with web-based dashboards for data collection, complex workflows, and automating data analysis
Remedi (WHP & Neurosynaptics)	Remote diagnostic kit that for doctors; collects clinical data to support decision-making by facilitating remote diagnosis of patients
SMS for Life	Customizable codebase for Frontline Supply apps to manage malaria medications
Swasthya Slate	Android phone/tablet diagnostic kit and clinical screening tool. FLWs and midwives use to perform basic health checks, record patients’ history and indicators, and receive diagnoses from information
TaroWorks	Suite of mobile technology tools designed for FLWs working in last mile; built on Salesforce platform and accessed via Android
Virtuosis	Software company that develops a mobile app for nurses to transmit SMS data; integrated with Chattisgarh’s Maternal and Child Tracking System



"Scaling CommCare to Deliver Community Impact"

Milestone 13 Report, 29 August 2014

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Overview

Dimagi has completed Milestone 13 of the USAID Grant No. AID-OAA-F-12-00018. This milestone consists of the following elements:

- Final Evaluation Report for the Bihar CommCare Activities
- Final Evaluation Report for the Kaushambi, Uttar Pradesh study
- Updated table of the estimated cost effectiveness at the end of the project
- Updated table with the CommCare Pricing Model at the end of the project
- Total revenue generated over the course of the project from user fees and other services listed in the CommCare Pricing Model

Each element is described below. Additionally, the following attachments are included:

- A. Bihar - report from CARE on “Experience from Implementing mobile-based system for Maternal Child Health Continuum”
- B. Bihar – report from CARE on “mHealth at Scale”
- C. Bihar - draft manuscript from quality of care research
- D. Bihar – CCS case study
- E. Kaushambi- draft manuscript on Intrinsic Motivations
- F. Kaushambi- CRS analysis of midline study
- G. TOC—updated total cost of ownership model
- H. A case study of the CommCare deployment by Lata Medical Research Foundation



Figure 1: Members of different organizations discussing use of CommCare

Bihar Report

As discussed with Jill Boezwinkle, the Bihar research is being led by Mathematica Policy Research (this shift occurred in-between when Dimagi's proposal was submitted and when it was granted). Mathematica has just completed their data collection and Dimagi has agreed to forward their findings to DIV as soon as they are available. These are expected by Q1 of 2015 at latest.

Attachments A and B are documents from CARE International describing the work in Bihar. Several important results are highlighted in slides 12-14 of Attachment A. A five-fold increase in the percent of pregnant women registered in their first trimester was observed within a year from when CommCare was first introduced, from 4.4% to 26.9%. The percentage of women visited by FLWs within the first 24 hours after birth increased from 6.7% to 59.5% in the same time period. The report also shows a slight increase in clean cord practice, a slight decrease in children with low weight, and modest increase in the percentage of pregnant women receiving at least 100 IFA tablets.

Attachment B provides further qualitative evidence on the effectiveness of CommCare. It describes how data digitization is much faster with CommCare and that field level capacity is strengthened due to better work coordination, easy access to health counseling content on mobiles, and increased supportive supervision.

Attachment C is a draft manuscript of Dimagi-led research in Bihar. This work was first reported in Dimagi's Milestone 4 Report, and this manuscript reflects further analysis and literature review. The manuscript presents an analytical framework for mHealth technology adoption and its impact on the quality and experience of care. This framework is used to analyze results from observing 20 ASHAs in Bihar during home visits and scoring the visits for quality and experience. One important result is that the quality score for high-frequency users of CommCare is higher by 7.350 ($p = 0.036$) compared to low-frequency users of CommCare, which is a difference of 33.4%, significant at the 95% confidence interval. Those who score higher on CommCare proficiency also provide significantly higher quality and experience of care, where an additional point in CommCare proficiency score increases quality score by around half a point (0.541, $p = 0.069$), and increases experience score by around a third of a point (0.308, $p = 0.032$). This amounts to 2.5% increase in quality score and 1.9% increase in experience score for each additional point in CommCare proficiency, both significant at the 95% confidence interval. This study did not find any association between literacy levels and quality and experience of care, or education levels and quality and experience of care provided by ASHAs.

Attachment D is a case study prepared by Dimagi for the CommCare deployment in Bihar, which also draws upon the Attachments A, B, and C.

Kaushambi Final Report

Real-time self-tracking to improve health worker performance

As described extensively in Attachment E, Dimagi supported a randomized controlled trial in Kaushambi, Uttar Pradesh, led by researchers from Harvard Business School and University of Washington. The objective of the study was to examine the effect of “self-tracking” on the performance of ASHAs. Self-tracking is an emerging trend in which consumers use technology (typically mobile) to record and track information about daily activities such as diet, fitness, and work. Smartphone apps, web services, and wearable devices such as Runkeeper, Mint, RescueTime, Fitbit, and Nike+ are popular examples.

The theoretical motivation for this study is that self-tracking mobile technology can improve the performance of frontline health workers. The study’s hypothesis is that giving community health workers the ability to track their performance in real time will motivate them to do more work.

For this experiment, a novel interface was added to CommCare whereby a community health worker can view a real-time dashboard that shows her performance with respect to key indicators, namely: total number of clients, total clients visited during the current month, and total clients visited in each of the previous six months. Static simulations of the dashboard can be seen at <http://bit.ly/kausHigh> (high performer), <http://bit.ly/kausMed> (medium performer), and <http://bit.ly/kausLow> (low performer). To view the simulations, click on the icons displayed via these links.

The first round of the experiment was launched in February 2013, with 55 ASHAs trained in how to use the self-tracking app, and 54 ASHAs trained in how to use a “generic encouragement” app, in which instead of showing individual-specific performance graphs, the app shows generic educational messages and inspiring quotes. The purpose of the generic encouragement app is to control for the basic technology of the self-tracking app, which we wanted to separate from the information content delivered by the self-tracking app.

In November 2013, the research team conducted a survey of the 109 ASHAs to better understand the ASHAs’ subjective experiences with and attitudes toward the technologies. In addition, after launching the experiment, the research team tracked ASHA performance for 12 months.

The preliminary analysis has yielded three main findings. First, demand is higher for the self-tracking app than the generic encouragement app. Note that, in this cohort of 109 ASHAs, an ASHA visits a pregnant client (and reports the visit through CommCare and thus interacts with her work phone), on average, once every 2.5 days. In this context, the average ASHA in the generic encouragement treatment uses her app once every 3.62 days, whereas the average ASHA in the self-tracking treatment uses her app once every 2.73 days—a 33% greater frequency. While the data does not include strong priors about how frequently ASHAs would access the self-tracking app, the fact that they access the app as frequently as they interact with their phones for work purposes (as opposed to, say, once per month, which might be the case for more static types of performance feedback) reassures us that this type of information content is engaging to ASHAs.

Second, demand for the self-tracking app varies based on psychological traits of ASHAs. The baseline survey of the ASHAs included a series of validated psychometric tests to measure ASHAs' degrees of extrinsic and intrinsic motivation. The former refers primarily to motivation to do ASHA work for extrinsic benefits such as income and career opportunities, whereas the latter refers to motivation on the basis of intrinsic enjoyment of ASHA work and a desire to have positive social impact.

Third, compared to the generic encouragement app, demand for the self-tracking app is highest for those who are most intrinsically motivated. Among the bottom third of ASHAs who are least intrinsically motivated, there is no statistically significant difference in demand for the self-tracking app as compared to the generic encouragement app. In contrast, in the top third of intrinsically motivated ASHAs, the self-tracking app is accessed 68% more often than the generic app. In short, it appears that for ASHAs who are intrinsically motivated, providing personalized information about performance is more engaging and meaningful than providing generic encouragement.

Finally, turning to effects on actual performance, the self-tracking app had no effect on the performance of the average ASHA. That is, ASHAs in the two treatment groups register the same number of pregnant clients and conduct the same number of home visits to the clients. However, the effect of the self-tracking app on performance is greatest for those who are most intrinsically motivated. **Specifically, the self-tracking app leads to a 38% increase in performance in the top third of intrinsically motivated ASHAs.**

These results offer a promising, but cautious, lesson about the potential of mobile technology as a tool for motivating health workers in low-resource settings. There is evidence that providing personalized real-time performance data—something that has become possible only with recent mobile technologies—is more engaging overall than providing generic encouragement. However, this does not guarantee a positive impact on performance; for health workers who are least intrinsically motivated, personalized self-tracking is no more engaging or effective at motivating higher performance than generic encouragement. However, for those who are most intrinsically motivated, personalized self-tracking does motivate higher performance.

Analysis of CRS Midline report

Attachment F describes analysis by CRS on their household surveys in Kaushambi, UP. This work was not part of the original Dimagi proposal to DIV, but was additional work funded and carried out by CRS. CRS conducted a baseline and midline survey for the ReMiND project, which uses CommCare to improve maternal and child health. An endline is planned for 2015. The comparison of the baseline and midline surveys yields some clear positive results and a few ambiguous ones. The baseline survey was held during December 2012 and January 2013 with 1,100 women in the two blocks where ReMiND currently works, Mooratganj and Manjhanpur. The project had already started in Manjhanpur by then, but not in Mooratganj. The midline survey was held in May and June 2014, 18 months after the beginning of ReMiND. The survey's coverage was increased to 2,200 women in all blocks of Kaushambi.

Two clear positive results that are seen are the increase in home visits during pregnancy by ASHAs and increase in counselling sessions. Home visits increased from 60% of women at baseline to 76% at

midline, while counselling increased from 44% to 72% of women. While there are clear increases in pregnancy home visits, post-partum visits show only a small increase. This is a strong indication that the increase seen in pregnancy home visits can be attributed to the use of the CommCare application, which focuses on visits during pregnancy. (A post-partum component of CommCare will soon be introduced).

Counselling via the mobile is a major attraction of CommCare usage. In the midline survey, it was found that 75% of women had experienced CommCare. In areas using CommCare, topics upon which the women received counselling nearly doubled the average number of topics counselled on from 0.77 to 1.46. The topics that CommCare focuses on, such as TT injections, nutrition, and danger signs showed large increases. However the IFA consumption decreased, despite counselling. It is likely that this decrease is due to government stock-outs of IFA tablets rather than caused by ReMiND. The app focuses on delivery danger signs, both for counselling and in questions that lead to decision-making according to the severity of symptoms. This resulted in an increase in the percent of women with knowledge of two or more delivery danger signs from 24% to 39%. The increase largely consists of a decline in the percent of women who would not know any delivery danger signs. The opposite occurred with knowledge of post-partum danger signs, which decreased from 45% to 36%. No significant difference was observed on knowledge of infancy danger signs.

Another clear positive result was the increase in ANC check-ups. This was compared with education levels of the women. A relatively uniform increase in quality of ANC practices at all levels was observed. However, the number and quality of visits are generally low compared to the ideal. On average, women received 41% more ANC checkups, with the effect concentrated among less-educated women. This points to the effectiveness of counselling, coupled with regular follow-up, including ANC checkups embedded in the CommCare app.

While the home visits and counselling changes are heartening, there are other results that must be analysed further and may generate changes in the mobile health intervention. While immunisation was not a target indicator of the project, an increase in home visits could have corresponded to increase in immunisation. From baseline to midline, there was no change for most immunisations, an increase in HepB0, and a decline in BCG, HepB1 and DPT1. Did ASHA focus shift more towards home visits or were there other changes in the district over time? This could also be a one-off result rather than a consistent pattern. There was also only a small, non-statistically significant change in births assisted by skilled providers from 60% to 63%. All of this was in one block of ReMiND, Manjhanpur. Mooratganj has much lower utilization of birth attendants compared to any other block in ReMiND or non-ReMiND areas. The reason for this needs to be examined. It is possible that immunization and skilled-births may not have increased because they are already heavily incentivized by the government, with money incentives for the ASHAs. Indeed, CommCare was brought in to address the gaps not specifically targeted by these incentives already.

Cost Effectiveness Update

Dimagi's goal is to improve the cost effectiveness of frontline programs (FLPs). To this end, cost effectiveness of CommCare is interpreted as whether or not an FLP can become more cost effective through the introduction of CommCare. To determine this, Dimagi compares the percent change of cost from introducing CommCare to the percent change in effectiveness. If the former is greater than the latter, the FLP is more cost effective.

Updated Total Cost of Ownership

Following updates made to the Total Cost of Ownership model in February 2013, Dimagi continued utilizing this tool with new and existing organizations in India during the second year of the project. The list below summarizes the key changes:

2014 changes:

- Dimagi Software plan costs increased from \$0.75 per month per user to \$1 per month per user to align with the changes in the Standard Pricing Model.
- The default ratio for incremental field staff per CHW has been updated to one field staff member per 100 CHWs (this can and should be changed based on each organization's context). The default ratio was previously two field staff members per 500 CHWs. There was a large variance in these ratios across different organizations, but based on the organization's experiences to date, one field staff member per 100 CHWs has proven to be most successful.

The refined cost model is shown in attachment G as an Excel file with the updated inputs detailed in the table on the following page.



Figure 2: Field testing of CommCare in Banswara

Total Cost of Ownership for India

Scale of Operations	Year 1	Year 2	Year 3	Year 4	Year 5
Number of CHWs using CommCare	100	200	300	400	500
# People covered per CHW	1,000	1,000	1,000	1,000	1,000

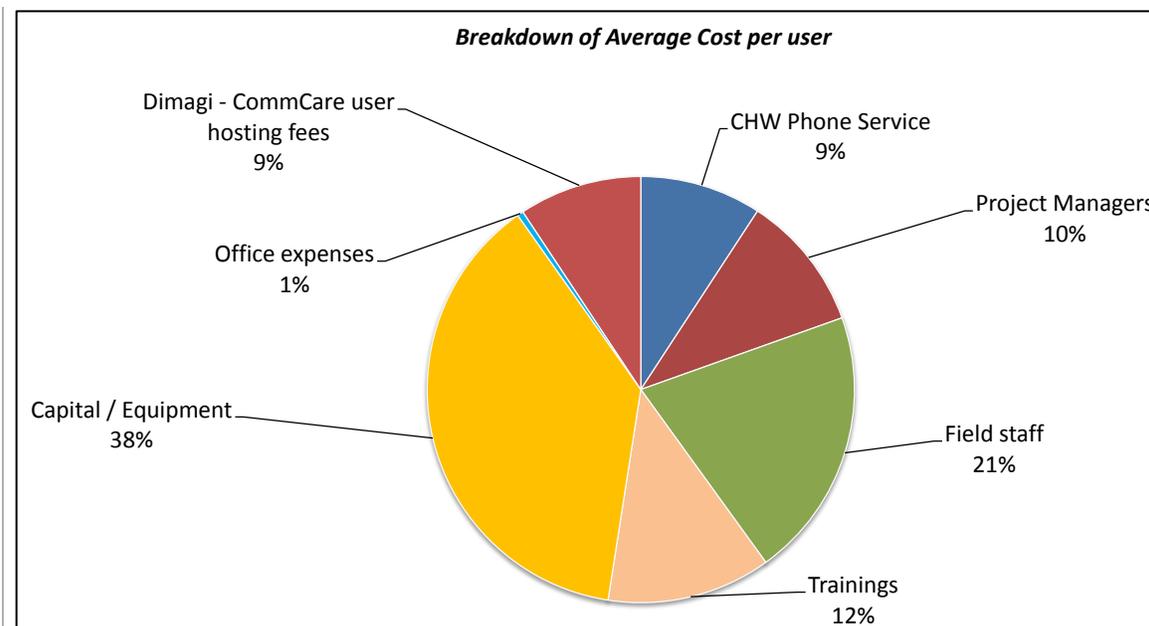
ADDITIONAL staff and office needed for CommCare	Units	Per # workers
Number of Project Managers per XX CHWs	1	500
Number of Field Staff per XX CHWs	1	100
Number of offices per XX CHWs	1	500

Changed 8/2014

DETAILED PROJECTED COSTS	Unit type	# of Units	Cost / unit (USD)
Annual Training Costs			
Attrition Rate	%	10%	
Per CHW			
Initial training days	days per year	2	\$ 8.00
Recurring training days	days per year	1	\$ 8.00
Per Project Manager			
Initial training days	days per year	4	\$ 15.00
Recurring training days	days per year	1	\$ 15.00
Per Field Staff			
Initial training days	days per year	4	\$ 12.00
Recurring training days	days per year	1	\$ 12.00
Monthly Operating Costs			
Per CHW			
Voice and data plan	monthly	1	\$ 1.00
Incentive / Salary / benefits	monthly	1	\$ -
Total monthly			\$ 1.00
Per Project Manager			
Voice and data plan	monthly	1	\$ 1.00
Incentive / Salary / benefits	monthly	1	\$ 550.00
Site visit/Transport costs	monthly	1	\$ 11.00
Total monthly			\$ 562.00
Per Field Staff			
Voice and data plan	monthly	1	\$ 1.00
Incentive / Salary / benefits	monthly	1	\$ 200.00
Site visit/Transport costs	monthly	1	\$ 22.00
Total monthly			\$ 223.00
Per Office			
Office Internet	monthly	1	\$ 25.00
Total monthly			\$ 25.00
CommCare Monthly per User Hosting fee			\$ 1.00
Equipment / Capital Expenses			
Capital Depreciation / Replacement Rate	%	10%	
Mobile Phones / chargers / SIM card & registration	Per Worker		\$ 95.00
Solar equipment for device charging	Per Worker	0	\$ 200.00
Netbook for Project Manager	per unit	0	\$ 250.00
Netbook for Field Staff	per unit	0	\$ 250.00
For Office			
GPRS Modem	per unit	1	\$ 66.00
Computer equipment	per unit	1	\$ 132.00
Total			\$ 198.00

Changed 2/2013
Changed 2/2013
Changed 2/2013
Changed 2/2013
Changed 2/2013
Changed 8/2014
Changed 2/2013
Changed 2/2013

The net impact of the above changes resulted in an Average Annual Total Cost of Ownership (TCO) of \$130 per CHW (previously reported at \$118 in Feb 2013 and \$99 at the start of the Project). The chart below shows the breakdown of costs by the key components based on the default inputs.



The TCO model continues to be an effective communication tool for organizations to understand the end-to-end costs of an mHealth solution (and also to help communicate these costs to governments, external donors, NGOs, and others). While the exact parameters of the model vary significantly across different organizations and should be adapted to each organizations’ set-up, the TCO model has been proven to be successful at enabling organizations to start planning for the high level costs of scaling and maintaining mHealth to support CHWs.

Updated Effectiveness Estimate

USAID-India Cost Effectiveness Study

Earlier this year, USAID India released an RFP for a cost effectiveness study of the CommCare project in Kaushambi, India. This study was expected to use existing information from CRS, as well as collect additional information to produce a detailed cost effectiveness evaluation of this project. It was originally expected to be completed by this time, but has been delayed. It is now moving forward again. On August 27, 2014 USAID India told Dimagi that “the procurement for the cost effectiveness study of CommCare is still underway and hopefully we will have the details by mid September. We estimate that the study will begin some time in early October 2014 and will end in June 2015.” Dimagi will keep the DIV team updated on progress and send on any results as soon as they are available.

Effectiveness estimate from CRS midline result

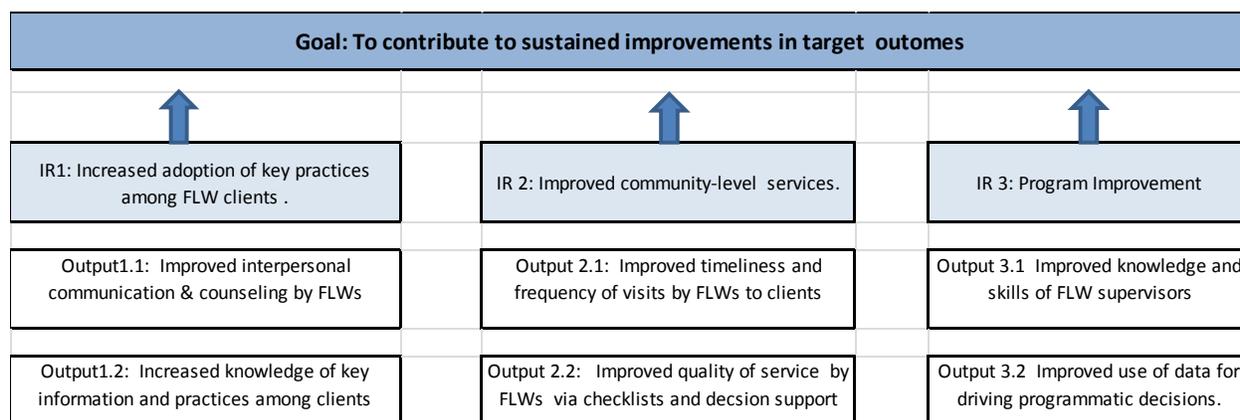
The analysis of the CRS midline provides a good deal of information about the impact of introducing CommCare, with very large gains seen in home visits (26% increase), counseling (63% increase), and percent of women with knowledge of two or more delivery danger signs (62% increase). The lowest of these values, 26%, will be used for the estimated improvement in effectiveness from CommCare.

Modelling and Monitoring Effectiveness of CommCare Deployments

During the course of this grant, Dimagi has identified the need for a theory of change framework to model and monitor the effectiveness of CommCare deployments. It is informed by a logic model developed by Alain Labrique and Marc Mitchell for the mHealth Alliance, shown in Appendix A. An important point of this model is that the performance of FLWs is only one element of a complex health system. Even when CommCare increases the effectiveness of FLWs, there are many other factors that determine whether health outcomes are improved by the FLP, such as whether services and medical supplies are available. There are also many factors that influence FLW effectiveness, such as their pay, which are not directly improved by CommCare in most deployments.

Thus, it is challenging to calculate or fully model, in advance, the impact that CommCare will have on outcomes. However, it is possible to map out how CommCare can improve outcomes and to identify measurable indicators on intermediate outcomes that can be monitored in the early stages of deployment before improved outcomes would be detectable. By monitoring these indicators, an FLP can determine if the intermediate outcomes are indeed occurring, and to intervene if not.

The figure below shows a simple theory of change for how CommCare improves outcomes. In most CommCare deployments, the introduction of CommCare is expected to reinforce the knowledge of FLWs, improve their communication through increased credibility and use of multimedia, improve their coverage of clients, improve the quality of their visits through checklists and other decision support in CommCare, and improve accountability and supervision through the use of accurate real-time data. This will in turn lead to improved knowledge and behavior in clients, better service delivery, and strengthened supervision. All three of these will contribute to improved outcomes.



This theory of change should be used initially by frontline programs (FLPs) prior to deploying CommCare. The FLW would use this theory of change to identify gaps that CommCare has the potential to address in FLW communication, FLW knowledge, access to care, quality of care, and supervision. This theory of change should also be used to make explicit assumptions about how CommCare can or cannot help improve outcomes. For example, if an FLP wants to use CommCare to increase the uptake of iron tablets, then it must be confident that the supply of iron tablets is sufficient to meet increased demand.

The FLP can then set targets that can be monitored via the data reported by CommCare (e.g., the number of clients visited per month) or through additional surveys (e.g., a Knowledge Attitude and Practice survey administered to the target population). Dimagi finds that it is important for organizations to identify measureable indicators and set targets in advance. Earlier this year, Dimagi had initially set performance targets for organizations to reach to get additional scale-up support. However, these metrics were hard to reach because they had not been used from the beginning. Additionally, different targets were appropriate for different organizations. And some metrics needed to be substantially adjusted. For example, agriculture projects can usually expect an influx of CommCare activity primarily during harvest periods and not year round. The table below shows each of the indicators in the theory of change and how it can be measured. In many cases, additional observational data must be collected. In some cases, CommCare data can be used to monitor the indicator.

While this framework does not allow an organization to calculate in advance the improvement in the effectiveness of CommCare, it can form the basis to monitor whether the immediate expected benefits are occurring. Organizations are encouraged to set targets for the indicators and use CommCare data or additional observation to track whether the introduction of CommCare is having the desired effect. For example, if the number or duration of visits by FLWs does not increase, it is unlikely that the target outcomes will occur.

As an example of how an organization might use this framework, suppose a FLP is considering deploying CommCare to improve maternal and child health. They would first identify the gaps in their current service delivery and use the theory of change above as a starting point to assess how CommCare could address them. If they believed the frequency and timeliness of visits was already high, they might remove or de-emphasize that aspect of the theory of change. Similarly, if they thought the primary barriers to improved maternal health were outside the control of their FLWs, then they might focus on those program areas first before deploying CommCare.

However, if an organization did believe that the benefits shown in the theory of change would improve with use of CommCare, then they should set targets for the outputs and intermediate outcomes in the theory of change. For example, they might set a target that each FLW would visit 12 clients per month. These targets should be monitored frequently as CommCare is deployed. If the output and intermediate targets are not being reached, then the FLP should investigate and either change how they are deploying CommCare, or consider changing tactics. If the output and intermediate outcomes are reached, then the FLP should monitor health outcomes to see if they improve as expected. If not, then the application of the theory of change should be revisited, e.g. by investigating other barriers to improved health outcomes.

#	Output	Measurement
1.1	Improved interpersonal communication and counseling by FLWs	Observation of FLW activities and/or client visits
1.2	Increased knowledge of key information and practices among clients	FLW knowledge tests
2.1	Improved timeliness and frequency of visits	CommCare data: number of clients visited per

	by FLWs to clients	month
2.2	Improved quality of service by FLWs via checklists and decision support	Observation of FLW/client visits CommCare data: duration of visits
3.1	Improved knowledge and skills of FLW supervisors	FLW supervisor knowledge tests
3.2	Improved use of data for driving programmatic decisions.	CommCare web usage data: usage of pre-scheduled worker performance reports and supervisory applications
IR1	IR1: Increased adoption of key practices among FLW clients	Household surveys CommCare: FLW-reported (project-specific) data on client outcomes
IR2	Improved community-level services	Household/community surveys
IR3	Program Improvement	FLW/Household surveys of home visit coverage CommCare data: frequency and duration of follow-up visits to FLWs by supervisors using the Supervisor App in CommCare

Analysis of CommCare Data

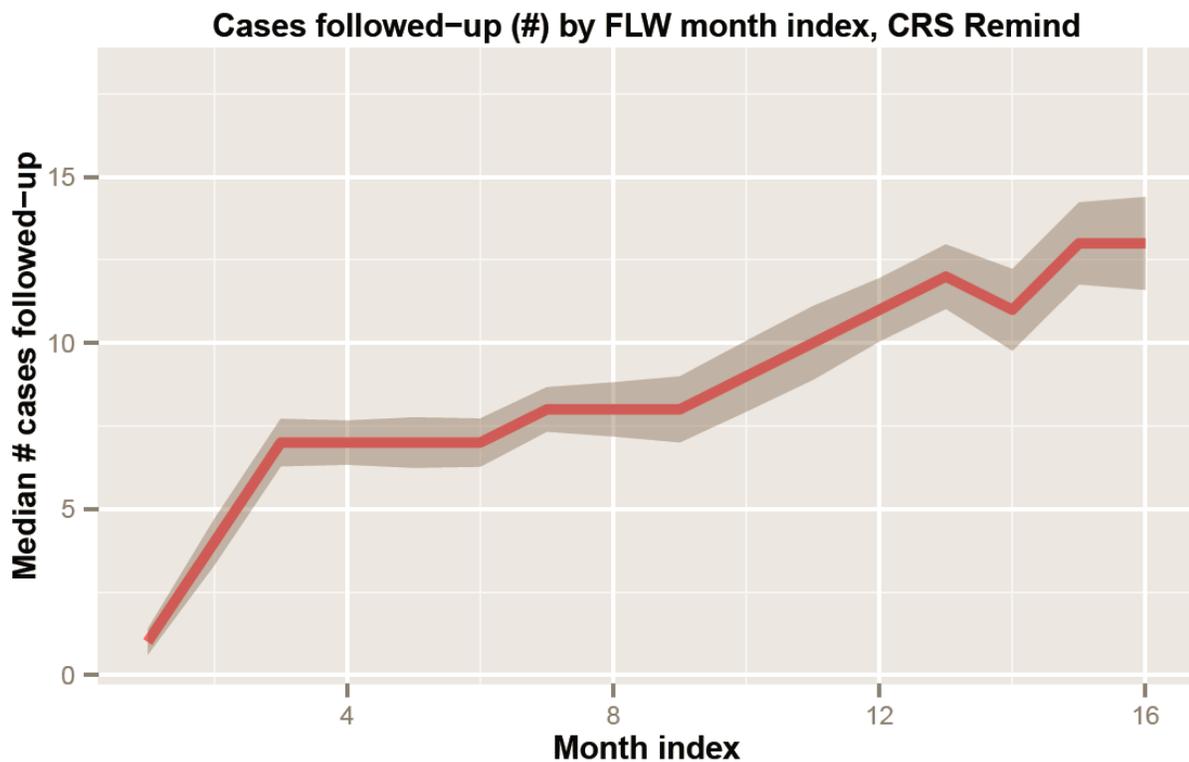
The table below shows performance results from several of our projects below. To assess the change in coverage, Dimagi computed the change in the number of clients seen over time by FLWs using CommCare. This is computed by calculating the number of unique cases that are visited (based on the forms submitted via CommCare) for each FLW for each month of usage. (Note that whenever an FLW started using CommCare counts as their month #1, the next month is their month #2 regardless of whether they were active or not.) The median value for months 1-3 was compared to months 9-12 to see the change over one year. In cases where CommCare was used for less than one year, the last 3 months were used. The table below shows the increase or decrease over time for each project. As shown in the table, the number of cases typically improves, though the amount varies considerably.

The change in median duration was also computed. It was interesting to note that this consistently went down from the initial months to the later months. This may reflect an increase in the efficiency of using CommCare over time, though it may also reflect a reduction in the full use of CommCare as the novelty wears off.

Project	MCH	# months using CommCare	# total users	Median #unique cases followed up in first three months	% change of # unique cases followed-up from first 3 months of usage to months 9-12 (if used for at least 1 year)	Median visit duration (minutes) in first three months	% change of median visit duration
Pradan	No	7	305	2	0%	30.8	-37%
CARE	No	6	42	6	833 %	3.9	-49%

Pathways							
LATA	Yes	15	19	4	100%	24.3	-75%
RDI-HIDT	Yes	11	16	4	325%	7.7	-71%
KGVK	Yes	18	15	1	600%	11.0	-16%
PCI	Yes	15	13	12	-33%	2.1	-18%
CRS	Yes	25	281	3	233%	9.3	-29%
Save the Children	Yes	35	84	3	166%	5.1	-51%

The graph below charts the change in the median number cases followed up per FLW for CRS-remind month by month for all months for which we had at least 150 users, with a 95% confidence interval. This shows a steady increase in the number of cases touched over time.



Updated Cost Effectiveness Table

The table below shows the updated cost effectiveness table from the original proposal submission. The estimate of \$1,500 total spent per FLW per year remains unchanged. The expected cost for deploying CommCare has risen slightly to \$130 per year.

Dimagi's experience and the data suggest that there is a great deal of variance in the benefit that CommCare can provide, and that it strongly depends on how CommCare is deployed and external

factors. For this exercise, the 26% increase in the rate of home visits in the CRS ReMiND project in Kaushambi is used as a strong indicator of increased coverage of the program.

Cost Effectiveness Table	
Estimated annual spend per FLW	\$1,500
Incremental Cost (% and \$)	\$130 / 8.6%
Expected Increase in effectiveness of program.	26%
Effectiveness leverage ratio	3.02

Pricing Model Update

Dimagi has fully standardized and publically released its pricing model since the original proposal submission. Dimagi now offers standard pricing for:

- Software Plans:** Software plans grant access to CommCare on Dimagi's managed cloud servers. This includes cloud server support, advanced features and SMS capabilities, automatic software updates, bug fixes and maintenance support, security updates, HIPAA compliance, and much more. For specific plan details please see (<http://www.commcarehq.org/software-plans/>)
- Implementation Service Packages:** If a project requires support from Dimagi staff, one can purchase an implementation service package. Experienced Dimagi staff members will work with the organization's team in-country to help develop mobile applications, provide implementation support, and build the staff's capacity to manage the project. Packages may also include custom reports and feature development. Our implementation service packages will remain largely unchanged. ALL implementation service packages include 12 months of software plans. See more here (<http://www.commcarehq.org/service-packages/>)

The chart below shows the URLs and screenshots showing the updated pricing model. These links are used directly in business development conversations and have been extremely valuable in being able to quickly communicate expected costs early in client conversations.

<http://www.commcarehq.org/software-plans/>

Software Plans	Community ⁱ	Standard ⁱ	Pro ⁱ	Advanced ⁱ	Enterprise ⁱ
Pricing*	Free	\$100/month	\$500/month	\$1,000/month	(Contact Us)
Mobile Users	50	100	500	1,000	Unlimited / Discounted Pricing
Price per Additional Mobile User	1 USD/month	1 USD/month	1 USD/month	1 USD/month	Unlimited / Discounted Pricing

Dimagi’s new software plans are based on a monthly subscription fee. We still offer a completely free version of CommCare. The "Community" edition of CommCare supports up to 50 mobile users and provides access to all the basic CommCare features. To add more mobile users or to access more advanced features, organizations can upgrade to a higher-level software plan. The above image shows our five software plans. Please refer to the CommCare Plan Details for details about each software plan's associated features. A brief description of each of our five software plans tailored to meet different partner and project needs is as follows:

- *Community*: For projects in a pilot phase with a small group (up to 50) of mobile users that require very basic CommCare features.
- *Standard*: For projects with a medium set (up to 100) of mobile users that want to build in limited SMS workflows and have increased data security needs.
- *Pro*: For projects with a large group (up to 500) of mobile users that want to build in comprehensive SMS workflows and have increased reporting needs.
- *Advanced*: For projects scaling to an even larger group (up to 1,000) of mobile users that want the full CommCare feature set and dedicated support from Dimagi staff.
- *Enterprise*: For projects scaling regionally or countrywide that require the full CommCare feature set. Organizations engaged in enterprise plans will receive discounted pricing and dedicated enterprise-level support from Dimagi.

Dimagi now also accepts Credit Card payments for the software plans and has built an automated billing system that manages the software plans and SMS costs. We see the Software Plan revenue model as our first step into Software-As-A-Service (SaaS) revenue streams, and an important area of growth for Dimagi’s long-term business model.

<http://www.commcarehq.org/service-packages/>

Service	Basic	Plus	Full
Cost	Free	\$25,000	\$100,000
Included Software Plan (See Plans)	Community Software Plan (FREE)	12 months of the Pro Software Plan	12 months of the Advanced Software Plan

- *CommCare Basic* (“You build, you manage”): For organizations doing a proof-of-concept evaluation or that have significant IT capabilities within their organization. Free community support is available to help organizations get started.
- *CommCare Plus* (“We build, you manage”): For organizations that have staff they can dedicate to utilizing CommCare in a deployment setting but do not have the IT capabilities to design and build the application.
- *CommCare Full* (“We build, we manage”): For organizations that are doing a full-scale deployment of CommCare and want Dimagi to take an active role managing and improving the performance of the program.



The service packages are adjusted by country, based on the staff resources and billing rates where we have local presence. For example, the PLUS package in India is ~\$15,000 instead of \$25,000, since it is staffed with local resources.

Additionally, we have standardized add-on service packages, which can be incrementally added to the existing PLUS and FULL service packages, for organizations that need additional support.

Program Management

Active Data Management Support (12 months)	Available at additional Cost - \$15,000
Software Development for New Features and Reports (12 months)	Available at additional Cost - \$25,000 per Block

Support & Maintenance

Direct phone support from Dimagi (12 months)	Available through Field Engineer Support
Additional Field Engineer Support	Available at additional Cost - \$15,000 Per Block

Dimagi will continue to adapt its standard product (software plans) and services (set implementation and software packages) offerings to meet partner/market needs.

Revenue

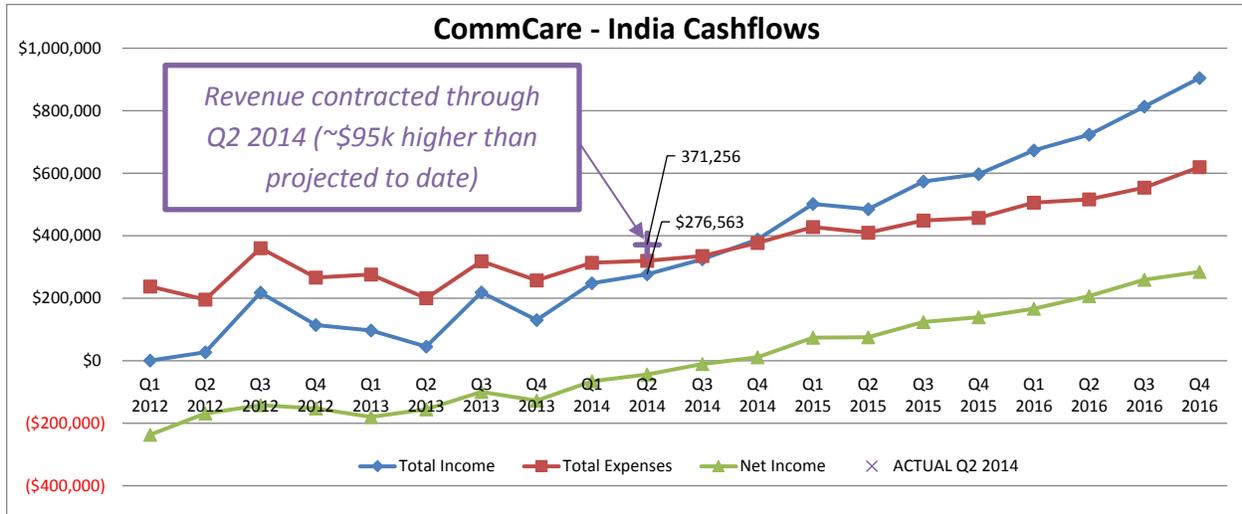
Through the duration of the project, Dimagi has converted 14 partner projects into paying customers. This has generated total contract amount to \$791,658 over 2 years, with \$371,256 directly derived from the Standard Pricing model outlined above. The table below summarizes the revenue generated over the course of the project.

REVENUE attributed to DIV2 Support	
Number of paid projects ¹	14
Total Contracted Revenue	\$791,658
Total Standard Revenue	\$371,256
Standard Services - Contracted Revenue	\$329,033
Product – Software Plan Revenue	\$42,222
Income Received to date	\$309,848

The total contracted revenue from standard offerings in the pricing model is on track and exceeds the projected business plan outlined in the project proposal. The figure below shows the prior revenue

¹CCDT:Mumbai Programs, Under The Mango Tree:Beekeeping, Save the Children:Thailand - School Monitoring, Catholic Relief Services:ReMIND CommCare India, World Vision Canada:India - CommCare, USAID India: Gender-Based Violence, World Vision:India - CommCare, World Bank:DM - Jharkhand Scale-Up, UCL:India - CommCare-CARING, NSF:India - CommCare-LifeFirst, Pradan:CommCare, CRS:CommCare-IRRAS, UCL:CommCare-Nepal, PHFI:CommCare-ANCHUL

projections from the proposal; the purple marker shows the \$371,256 in contracted revenue from standard offerings to date.



Success Stories

In this section, we highlight the results of some of the organizations that applied for additional support from Dimagi after the initial Proof of Concept package.

Rural Development Institute - Himalayan Institute Hospital Trust (RDI - HIHT)

RDI-HIHT works for maternal and newborn health in the difficult, mountainous terrain of the foothill of the Himalayas. Using CommCare has been a huge help for them as data collection was very difficult otherwise. As part of additional support provided by Dimagi in 2014, they were encouraged to increase follow-up visits to pregnant women and mothers. While only three ASHAs were actively following up with patients in May 2014, all ASHAs in the program now have a follow-up rate of over 60% through a better use of data. They also received the additional support of ten more phones, as they won the best video prize in the year two support application process. With this support, the program has been able to double its number of ASHAs and now 20 ASHAs will be equipped with a mobile health solution.

IHAT

IHAT deployed CommCare in Pali and Dungarpur, Rajasthan. The CommCare application screens pregnant women for HIV. HIV positive women are followed up throughout their pregnancy, and until their child is 18 months old. However, not all users were active. Dimagi and IHAT developed a strategy to improve this. Regular follow-ups over four months by Dimagi and IHAT's efforts led to successful performance improvement of their field staff. Dimagi is now providing IHAT with extra app-building support to improve the fit of their app to their evolving use cases.

Lata Medical Research Foundation (LMRF)

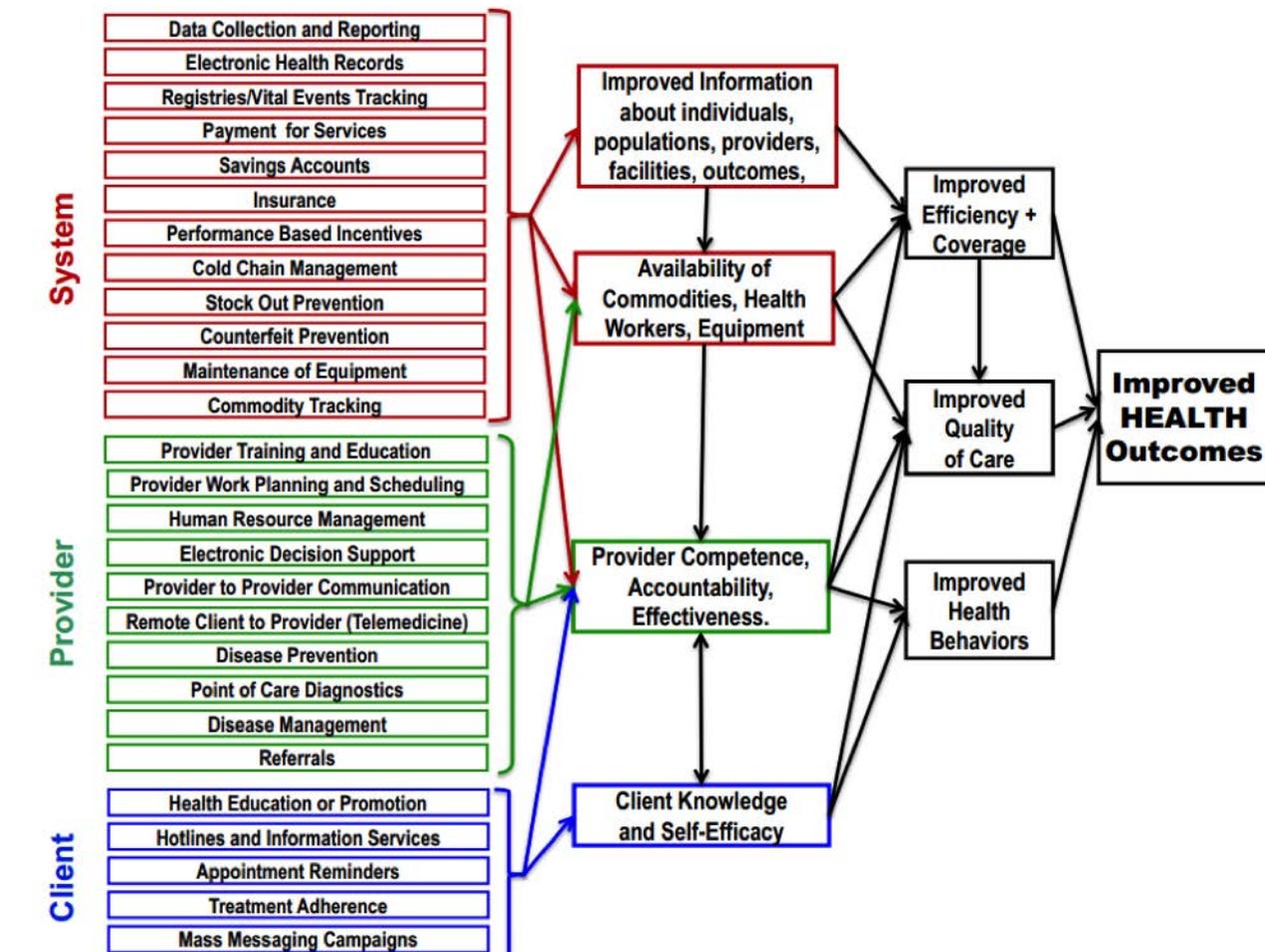
As described more extensively in Attachment H, LMRF uses CommCare as a tool in their research study on maternal and newborn health in Nagpur, Maharashtra. They started with 10 ASHAs. After receiving additional support and ten additional phones from Dimagi, their project has now scaled up to 20 ASHAs. Dimagi built the technical capacity of the project team. This additional weeklong training has given them the confidence to scale up on their own. They can now make app changes and conduct user trainings without waiting for help from Dimagi.

MCHIP

In their 'E-Supervision' app, medical supervisors use CommCare to facilitate remote submissions of Haryana State MCH-related immunization forms for village-level immunization days. Details of session monitoring and cold chain point monitoring for each immunization day are submitted to district-level government medical officers for review of service availability. Dimagi helped MCHIP scale by conducting user training for new users that were added. Unlike most projects, this project has a wide range of mobile user types, ranging from FLWs to doctors in the Government healthcare system. This led to challenges in training, which were overcome with customized training by Dimagi.

Appendix A: Logic Model

The following mHealth Logic model was developed by Alain Labrique and Marc Mitchell for the mHealth Alliance.



"Scaling CommCare to Deliver Community Impact"

Milestone 14 Report, 1 December, 2013

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Overview

Dimagi has completed Milestone 14 of the USAID Grant No. AID-OAA-F-12-00018, which consists of the following requirement:

- Launch 40 new programs or reach 8,000 new extensions workers using CommCare (whichever occurs first).

The sections below describe the activities Dimagi has undertaken to complete this milestone. All 40 programs launched under the DIV grant are summarized in Table 1 below. Launches 33-40 are described in further detail. The previously launched programs are described in detail in four previous Milestone reports (Milestones 3, 5, 7, and 10).

Activities

Improving Scale and Performance of CommCare Partners

In the first 16 months of this grant, Dimagi focused on launching mobile interventions with organizations, often through CommCare Proof of Concept awards. Dimagi also held an intensive, three-day workshop to build capacity organizations interested in using CommCare. The remaining eight months of the grant will focus on performance improvement and scale-up of CommCare deployments launched during Year 1. While this effort is not required for any of the milestones of this grant, it will increase the overall scale and impact of what Dimagi is able to achieve with the Stage 2 DIV grant.

Organizations that have received a Proof of Concept award or attended an intensive CommCare workshop will be eligible for performance improvement and scale-up support. Dimagi will soon launch an RFA to allow eligible organizations to apply for this support. Dimagi will support accepted organizations to improve the performance and scale of their CommCare program(s).

As shown in Table 1 below, the support available to each organization grows as the program increases in its level of maturity. The level of maturity is based on program capabilities and the number of active CommCare FLWs. An FLW is defined as actively using CommCare if they have over 20 form submissions and 80% of their cases are active in a 30-day period.

The maturity model in Table 1 represents an important exploration for Dimagi to help organizations go beyond the initial Proof of Concept stage of using CommCare.

At each maturity level, a program can select one of the available performance improvement packages. Note that some packages have a requirement of specific program capabilities. Please see the detailed descriptions for what is offered in each package and the required program capabilities in Appendix A.

Dimagi will also help organizations procure phones for additional users through phone matching and access to loans. These programs are described in greater detail in Appendix B.

All awarded organizations will also be offered an invitation to visit Kaushambi, Uttar Pradesh where Catholic Relief Services and Vatsalya have scaled CommCare in two blocks. The project is in the process of scaling, has government buy-in, demonstrates a strong supervision component based off of CommCareHQ performance reports, and has a large number of program capabilities. Participating organizations will be able to interact with ReMiND project staff members to learn from their experience supporting a mobile program.

The official RFA will be launched in early December of 2013.

Table 1: Performance Improvement Packages & Financial Support to Scale at Each Maturity Level

CommCare Program Maturity Level	Level 1	Level 2	Level 3	Level 4
Number of Active Users Required at each Level ¹	10	20	40	75
1. PERFORMANCE SUPPORT PACKAGES				
Programs can select one performance improvement package from the available options at their maturity level. As programs mature, more options for performance improvement packages become available. Refer to Appendix A for more details.				
Worker Performance Monitoring	Ü	Ü	Ü	Ü
CommCareHQ Technology Capacity Building	Ü	Ü	Ü	Ü
Application Refinement	-	Ü	Ü	Ü
Outcomes Monitoring	-	Ü	Ü	Ü
New Mobile App for Supportive Supervision	-	-	Ü	Ü
Program Scale-up Strategy Consultation	-	-	Ü	Ü
Training of Trainers	-	-	Ü	Ü
SMS Reminders ²	-	-	Ü	Ü
Performance Feedback Service via Call Center ³	-	-	-	Ü
New Mobile App for CommCare Evaluation	-	-	-	Ü
2. SCALE-UP SUPPORT PACKAGES				
Once a program reaches a given maturity level, the financial support listed below will become available in order to support an organization to reach the next level of maturity.				
Phone Matching up to # of Mobiles Specified	5	10	-	-
Access to Loans for up to # of Mobiles Specified	-	-	50	100

¹ User fees will apply depending on the number of users. Below 50 users, CommCare is free. Projects with more than 50 users should refer to CommCare Software Plans (<http://www.commcarehq.org/software-plans/>).

² This program offers 250 free messages per month sent and received via www.commcarehq.org. Any messages exceeding this limit will be billed at 1.056 INR per message.

³ This service will not be available until March 2014.

Logistics Proof of Concept Packages

On October 21st, Dimagi opened a Request for Applications for five organizations to apply for a Proof of Concept package for CommTrack. CommTrack is an extension of CommCare that has the ability to track stock levels at supply points. While this effort is not required for any of the milestones of this grant, it will increase the overall scale and impact of what Dimagi is able to achieve with the Stage 2 DIV grant.

The RFA (<http://www.commtrack.org/poc/commtrack/>) was designed to give organizations the opportunity to use mobile technology to strengthen their supply chain across multiple sectors, and help build capacity for organizations to implement mobile solutions for improved logistics and supply chain over SMS or a mobile application. Like organizations that received CommCare POC packages in Stage 1 and Stage 2, these five organizations will receive 10 free phones, free hosting on Dimagi's cloud-based server, and a month of support (including two weeks of on-site support) from Dimagi's India-based staff to design and deploy a customized application.

BASIC, PLUS, and FULL Support

Dimagi helps organizations launch CommCare through three levels of support.

BASIC Support: With BASIC Support, an organization builds the CommCare application on their own and conducts training of frontline workers (FLWs) with little to no field support from Dimagi. Dimagi provides training to the organization and technical assistance to build and deploy the CommCare project.

PLUS Support: With PLUS Support, Dimagi builds the application, or the majority of it, and conducts or supports any FLW training. All organizations launched with a POC package are categorized as PLUS support.

FULL Support: With FULL Support, Dimagi builds the application and provides additional support, such as project management, Active Data Management, custom reports, or additional field time beyond what is included to launch PLUS projects.

Milestone 14 Launches

Table 1 below summarizes the new programs that have been launched with CommCare under this grant. For each launch, the following information is provided:

- **Organization:** Name of the partner organization that is implementing a CommCare project
- **Location:** District and state in India where the CommCare application is being deployed
- **When Launched:** When the CommCare application was launched
- **Sector:** Describes what development sector the CommCare application addresses (e.g. Health, Agriculture, Finance, etc.)
- **Focus Area:** Indicates what focus area within the sector the CommCare application addresses (examples within health include MNCH, sexual health, malaria, etc.).
- **Project Type:** Indicates whether the project was with BASIC, PLUS, or FULL support.

Contact information for the organizations listed in Table 1 is available upon request.

Table 1: Summary of Programs Launched Under Dimagi's Stage 2 DIV Grant

Organization	Location	When Launched	Sector	Focus	Project Type	CommCare User
1. Catholic Relief Services	Kaushambi, Uttar Pradesh	Sep. 2012	Health	Supervision	Full	Field Supervisors
2. CARE	Saharsa, Bihar	Nov. 2012	Health	Technical Support	Full	Technical Support Staff
3. SNEHA	Mumbai, Maharashtra	Nov. 2012	Health	Maternal Health	PLUS	Community Organizers
4. KGVK	Ranchi, Jharkhand	Feb. 2013	Health	Maternal Health	PLUS	Community Mobilizers
5. World Renew/EFICOR	Bangalore, Karnataka	Mar. 2013	Health	Maternal Health	PLUS	Saahiyas
6. Swasti	Sahibganj, Jharkhand	Mar. 2013	Health	Sexual Health	PLUS	Peer Educators
7. Aarohi	Nainital, Uttarakhand	Mar. 2013	Health	Maternal Health	PLUS	Accredited Social Health Activists (ASHAs)
8. SNEHA	Thane, Maharashtra	April 2013	Health	Household Tracking	BASIC	Urban CHWs
9. Marie Stopes India	Bareilly, Uttar Pradesh	April 2013	Health	Family Planning	PLUS	Interpersonal Communicators (IPCs)
10. Comprehensive Rural Health Project	Jamkhed, Maharashtra	April 2013	Health	Maternal & Child Health	PLUS	Village Health Workers
11. SKNMC/Johns Hopkins	Pune, Maharashtra	April 2013	Health	Household Tracking; Empowering Women	PLUS	Hospital staff
12. Pollinate Energy	Bangalore, Karnataka	April 2013	Energy	Affordable Energy	PLUS	Pollinators
13. St. John's Research Institute	Bangalore, Karnataka	May 2013	Health	Domestic Violence	PLUS	Auxiliary Nurse Midwives (ANMs)
14. UNION	Ranchi, Jharkhand	May 2013	Health	Tuberculosis	PLUS	Rural Health Care Providers; Lab Techs
15. Durbar	Calcutta, West Bengal	May 2013	Health	Sexual Health	PLUS	Peer Educators
16. PCI Global	Moradabad, Uttar Pradesh	May 2013	Health	Mother/Newborn Post-partum Care	PLUS	ASHAs
17. Indian Institute of Health Management Research (IIHMR)	Muzzafapur, Bihar	July 2013	Health	Maternal & Child Health	PLUS	ANMs
18. Lata Medical Research Foundation	Nagpur, Maharashtra	July 2013	Health	Maternal & Child Health	PLUS	ASHAs
19. Indian Health Action Trust (IHAT)	Udaipur & Jodhpur, Rajasthan	July 2013	Health	Maternal & Child Health/HIV	PLUS	Outreach Workers (ORWs)
20. Operation Smile	Nagoan, Assam	July 2013	Health	Nutrition/Surgery Follow-up	PLUS	ASHAs
21. GOAL India	Purulia & Jalpaiguri, West Bengal	July 2013	Health	Malaria Surveillance	PLUS	Community Mobilizers
22. Going to School	Nine districts	July 2013	Education	Tracking Schools'	PLUS	District Coordinators

	in Bihar			Progress		
23. Maternal and Child Health Integrated Program (mCHIP)	Hisar, Haryana	August 2013	Health	Immunizations	PLUS	Medical Officers
24. Myrada	Chikballapur, Karnataka	August 2013	Health	Maternal & Child Health; Nutrition	PLUS	Anganwadi Workers (AWWs)
25. SNEHA	Mumbai, Maharashtra	Sept. 2013	Health	Nutrition	BASIC	Community Health Worker
26. World Health Partners	Bihar and Uttar Pradesh	Sept. 2013	Health	Tuberculosis	BASIC	TB Monitoring and Field Officers
27. Digital Green	Madhya Pradesh	Sept. 2013	Health	Nutrition	BASIC	Community Organizers
28. Catholic Relief Services	Bihar	Sept. 2013	Agriculture	Rice Farm Tracking	PLUS	Village Level Animators
29. ABHAS	Delhi, NCR	Sept. 2013	Education	Attendance; Progress on Content	PLUS	Teachers
30. Narotam Sekhsaria Foundation	Maharashtra	Sept. 2013	Health	Tobacco Cessation	PLUS	Researchers; LifeFirst program staff
31. PHFI / IIPHD	Delhi, NCR	October 2013	Health	Maternal and Child Health	PLUS	Urban ASHAs
32. Ekjut	Jharkhand	October 2013	Health	Nutrition	PLUS	Training Nutrition Advisors
33. Spandan	Khandwa, Madhya Pradesh	October 2013	Health	Nutrition	PLUS	Frontline Workers
34. HIHT – RDI	Dehradun, Uttarakhan	October 2013	Health	Maternal and Child Health	PLUS	Accredited Social Health Activists
35. Rxe Health Enablers	Throughout Karnataka	October 2013	Health	Maternal and Child Health	PLUS	Medical Mobile Units
36. Ambuja	Darlaghat, Himachel Pradesh	October 2013	Health	Maternal and Child Health	PLUS	Sakhis
37. CARE Death Registration	Throughout Bihar	October 2013	Health	Data Collection	BASIC	CARE Staff; Household Surveyors
38. Oxford Policy Management	Throughout Bihar	November 2013	Health	Nutrition, Maternal and Child Health	FULL	Anganwadi Workers
39. CRS-CBDP Baseline Survey	32 villages in Orissa	November 2013	Disaster Preparedness	Disaster Preparedness	BASIC	Enumerators
40. Pradan	Odiya, Madhya Pradesh, West Bengal	November 2013	Livelihood	Agriculture, Governance, Animal Rearing, etc.	PLUS	Village Level Extension Officers

Dimagi’s Milestone 3, Milestone 5, Milestone 7, and Milestone 10 reports described the first 32 organizations that launched CommCare applications under this grant. Launches 33-40 are described in greater detail below.

Launch #33: Spandan

Spandan's CommCare application replaces complicated child growth charts with an application that informs mobile users of a child's nutritional status. CommCare follows the Community Management of Acute Malnutrition (CMAM) model and utilizes weight-for-age, weight-for-height, and mid-upper arm circumference calculations to triangulate malnutrition for local children. Based upon the results of each measurement, a child can be referred to a local supplementary feeding program through India's Integrated Child Development Scheme or, if they are deemed severely malnourished, to a Nutrition Rehabilitation Center. A Dimagi Field Manager wrote a [blog post](#) about this project as well.



CommCare training for Spandan

Launch #34: Himalayan Institute Hospital Trust – Rural Development Institute

The Himalayan Institute Hospital Trust and the Rural Development Institute are using CommCare to create a reproducible community-based health care delivery system to reduce maternal and child morbidity and mortality, and to improve the general health of area's population. This application is identical to the CommCare application that fellow POC recipient Aarohi is using in Nainital, Uttarakhand. Like Aarohi's application, ASHAs use the CommCare application to: 1) collect data and provide counseling messages geared towards pregnant and lactating women and children, 2) access post-partum counseling messages about breastfeeding, child nutrition, and immunizations, and 3) to monitor the health of children who are less than two years old.

Launch #35: Rxe Health Enablers

Rx eHealth Enablers (RxEHE) is an Indian company that works in the healthcare and mobile health sectors. RxEHE worked with Dimagi to build tools for their Medical Mobile Unit. The application contains three modules: Gestational Screening; video-enabled Patient Education; and Field Staff Training. The Gestational Diabetes Screening Checklist for pregnant mothers (GDSC) is used by the medical mobile unit to screen for risk of gestational diabetes in the first two trimesters of pregnancy (between 0-23 weeks and 24-28 weeks). The screening tool is equipped with an algorithm to quickly determine risk by assessing entered values for blood sugar levels, weight, and other risk signs. Identified diabetics are supported through counseling and routine visits by the Mobile Unit over the course of their pregnancy. RxEHE is field-testing the use of videos in the patient education module and training module for field staff in CommCare. The videos teach users about pregnancy management, diabetes management and screening for gestational diabetes. RxEHE's staff demonstrated a great interest in learning how to use CommCareHQ application building tools. Dimagi's Field Managers spent a significant time on-site teaching their technical team how to build, edit, modify and manage the application themselves.

Launch #36: Ambuja Cement Foundation

Ambuja Cement Foundation (ACF) is the social development arm of Ambuja Cements Ltd., and works exclusively with rural communities in a variety of development sectors, including health. Ambuja is currently using CommCare to improve mother and child health outcomes in Darlaghat, Himachal Pradesh. Himachal Pradesh does not have ASHAs, the equivalent are Sakhis who are trained by Ambuja



During a CommCare training, Ambuja's Sakhis reviews the Pregnancy Checklist with a pregnant woman.

Cement Foundation. Sakhis carry out health activities for 250-320 people in each village. Using CommCare, Sakhis track the health of pregnant women and infants up to the age of 42 days. The Ambuja application contains three brief videos to be shown to pregnant women for home-based counseling. The videos discuss the importance of taking iron folic acid, making visits to the Auxiliary Nurse Midwife, and birth preparedness.

Launch #37: CARE Death Registration

While deploying a large-scale maternal, newborn, and child health initiative in Bihar, CARE staff noticed a dramatic underreporting of deaths. They observed that approximately one third of users hadn't reported a single death in over a year. In response, CARE staff designed their own survey using CommCare without Dimagi support to collect data about deaths in villages. With the application, users can go house to house, collect information about recent deaths in households, and determine why these deaths aren't being reported. 20 people are currently conducting the household surveys.

Launch #38: Oxford Policy Management

Oxford Policy Management (OPM) has deployed a CommCare as a tool to facilitate data collection for Conditional Cash Transfer for pregnant mothers. Under the Bihar Child Support Programme (BCSP), women receive approximately \$5 a month throughout their pregnancies and until the child is 3 years old, provided they use certain public health services like antenatal check-ups, and comply with appropriate behaviors, such as exclusive breastfeeding for the first six months.



Anganwadi Workers learning how to use CommCare

CommCare is being used to provide Anganwadi Workers (AWWs) with a reporting tool to enable rapid, accurate and efficient conditional payments to pregnant mothers in one district in Bihar. The application

has three parts, including a 1) growth-monitoring calculation tools, 2) a repository of behavior change communication videos, and 3) a case management function that helps AWWs calculate what services each of her beneficiaries needs to receive each month. The application also generates reports on instructions for cash transfer payment, service availability, and service delivery. Most of the data is collected during periodic vaccination days, and the payments go to the pregnant mothers for up to three years after pregnancy to encourage good health-seeking behavior and delivery spacing. By the end of the program, it is anticipated that nearly 15,000 pregnant women and mother in Bihar will be registered and monitored for cash transfers. Oxford Policy Management's CommCare application was featured on [OPM's website](#), and a Dimagi Field Manager wrote about the program in a recent Dimagi [blog post](#).

Launch #39: CRS-CBDP Baseline Survey

Catholic Relief Services (CRS) designed and built a self-start application without Dimagi support to support their Community-Based Disaster Preparedness (CBDP) baseline survey in Orissa. The CBDP baseline survey has 75 questions and is designed to encompass various domains that would be pertinent to leveraging CRS's disaster response efforts in Orissa, including Water Sanitation and Hygiene (WASH), livestock care, demographic information, and seasonal crop cultivation, among other domains. Following ten days of surveying village members, nine enumerators have obtained baseline data for over 650 respondents from 32 villages in two geographical target areas in Orissa. Program supervisors also perform daily checks of incoming data to keep track of the villages covered per day, number of male and female respondents, how long it takes each enumerator to complete the survey, and to conduct a random question analysis. Instead of using phones, the enumerators use tablets to collect information from different village members.



Using CommCare for a household survey

Launch #40: Pradan

Professional Assistance for Development Action (PRADAN) is a non-governmental organization in India in seven of India's poorest states. PRADAN promotes Self-Help Groups, develops locally suitable economic activities, mobilizes finances, and introduces systems to improve livelihoods of the rural poor and sustain their progress. Pradan is using CommCare to support the work of 30 village level extension workers, with the possibility of scaling to 300. Village level extension workers enroll households in various livelihood activities (agriculture, governance, animal rearing, etc.) and then track the progress of clients. Pradan is planning on integrating data collected from CommCare with their existing medical information system, which will provide the reporting needs for the project. In the long term, they are looking at mobile reporting to promote successful activities with their village level extension officers.

Appendix A: Details of Performance Improvement Packages

Table 2: Detailed Description of Performance Improvement Packages and Program Requirements

Level 1: 10 Active FLWs		
Packages	Description	Program Requirements for this Package
Worker Performance Monitoring	<ul style="list-style-type: none"> Strategic implementation of CommCareHQ performance reports to strengthen supervision and monitoring processes Integration of reports with supervisory processes 	<ul style="list-style-type: none"> Existing or planned supervisory hierarchy and monitoring framework documented
CommCareHQ Technology Capacity Building	<ul style="list-style-type: none"> Creation of a technical staffing structure needed to support CommCare at scale Training for technical staff on remote management of application(s) for a larger number of users Basic training on application modification using Dimagi's online app builder on CommCareHQ 	<ul style="list-style-type: none"> Completion of Beginner's Tutorial for application building by technical team Roles, responsibilities, and competencies of technical staff at organization documented
Level 2: 20 Active FLWs (includes above packages)		
Application Refinement	<ul style="list-style-type: none"> Review feedback from pilot and make modifications to application as necessary Quality assurance and testing prior to application release Training on updating media using CommCareHQ's Multimedia Manager 	<ul style="list-style-type: none"> Description of content changes, including questions, question order, logic, translations and media using Dimagi's standard specification tools (i.e. definition files, worksheets)
Outcomes Monitoring	<ul style="list-style-type: none"> Creation of customized offline report in Excel for 5-10 key outcome indicators Optimization of mobile application to track desired indicators more effectively Support for developing an M&E strategy for indicators using CommCare Support for interpretation of outcomes data from CommCare 	<ul style="list-style-type: none"> Key outcome indicators for program documented Existing or planned M&E strategy documented Identification of person(s) at organization responsible for M&E
Level 3: 40 Active FLWs (includes above packages)		
New Mobile App for Supportive Supervision	<ul style="list-style-type: none"> Integration of a mobile application to be used by field based supervisors to provide supportive supervision, monitor quality of FLW service delivery, and track technical issues on FLW phones 	<ul style="list-style-type: none"> Existing or planned supervisory hierarchy and monitoring framework documented
Program Scale-up Strategy Consultation	<ul style="list-style-type: none"> Dimagi and organization's program managers will work together to develop a program strategy for effectively using CommCare at all levels of your community program to improve workforce performance and program management 	<ul style="list-style-type: none"> Description of roles and responsibilities of program managers and key decision makers, including government stakeholders for the program. Log frame and/or implementation timeline documented. Updated Total Cost of Ownership model
Training of Trainers	<ul style="list-style-type: none"> Capacity building for trainers at the organization to scale CommCare widely across program. Access to training facilitation guides, CommCare 	<ul style="list-style-type: none"> Completion of user inventory for new FLWs must be completed SIM procurement complete for new

	<ul style="list-style-type: none"> manuals and FLW handouts. The training will include instruction on phone preparation, installation and basic troubleshooting. 	<ul style="list-style-type: none"> FLWs. If materials are needed in local language, partner to provide translation services.
Level 4: 75 Active FLWs (includes the above packages)		
Performance Feedback via Call Center	<ul style="list-style-type: none"> Registration for Dimagi's outgoing Call Center Service that provides FLWs performance feedback on a weekly basis (service only available after March 2014). 	<ul style="list-style-type: none"> Key FLW performance indicators documented Existing and/or planned supervisory hierarchy and monitoring framework
New Mobile App for Evaluation	<ul style="list-style-type: none"> Support an organization to develop tools that measure the effectiveness or impact of the CommCare intervention Examples include Client KAP surveys, knowledge improvement surveys, and mobile skills improvement 	<ul style="list-style-type: none"> Indicators for measuring effectiveness or impact of CommCare documented Identification of person(s) at organization responsible for M&E
SMS Reminders	<ul style="list-style-type: none"> Design, implementation, and training to set-up SMS reminders via CommConnect 250 free messages per month sent and received via CommCareHQ. Any messages exceeding this limit will be billed at 1.056 INR per message. 	<ul style="list-style-type: none"> Basic outline of desired SMS communication workflows



"Scaling CommCare to Deliver Community Impact"

Final Report, December 2014

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Overview

This is Dimagi's final report for USAID Grant No. AID-OAA-F-12-00018. This report covers:

- A summary of all project implementation activities
- Next steps that will be required to achieve the intended 10-year scale up plans
- End of project results on all metrics
- A final Performance Management Plan (PMP)

The following text elaborates on each of the topics listed above.

Summary of Project Implementation

With the Stage 2 DIV grant, Dimagi has changed the mServices landscape in India. In just two years, this grant supported 58 new programs to start using CommCare, and over 3,100 Frontline Workers (FLWs) have submitted over 2.3 million forms using the mServices tool. Under the DIV Stage 1 grant, Dimagi focused on seeding mHealth with 11 programs throughout India. With our Stage 2 grant, we designed a standard implementation package that was then awarded to 45 programs in different sectors. In the grant's final eight months, we focused on supporting some of these programs to scale up from their pilots. We also held workshops and exposure visits to take CommCare to a wider audience. Instead of being limited to large, international non-profit organizations, CommCare is now accessible for organizations of every size and sector. Of the 58 new projects, 13 autonomously deployed CommCare without any assistance from Dimagi staff. Access to mobile apps for their community workers is no longer a distant dream for Indian NGOs.

In planning the implementation of Stage 2 grant, we set a goal to implement CommCare with 40 programs over the course of two years. In September 2012, Dimagi released a Request for Applications (RFA) for programs in India to receive Proof of Concept (POC) packages to use CommCare. The POC package was awarded to 45 programs over the course of the RFA's two rounds. We laid the foundation of successfully deploying 11 mServices programs in India under DIVI. This helped us in selecting partners for the Stage 2 portion of the grant. We had the chance to choose partners based on whether we thought CommCare was a good fit for their project and would lead to increased impact for their program. We were able to launch 40 projects within the first 16 months of the project, achieving our goal much farther ahead of time than we anticipated. The feedback from these projects helped refine our training methods and the features on the CommCare website. We then focused on scale-up of the projects and developed special support packages for this purpose.

Dimagi expects to reach the goal of 8,000 FLWs using CommCare in India in the future. Dimagi will need a project with the government or a few deployments with larger numbers of users, while at the same time providing those groups the time to scale from piloting the technology. As of August 1st, 2014, Dimagi had a total of 3,100 FLWs using CommCare in India. However, two of the projects started under this grant scaled in the months since August. Dimagi currently has about 4,000 FLWs through

December, with another 500 expected in the next few months. Additionally, there are two RFPs being issued by the governments of the states of Bihar and Uttar Pradesh for a mobile job aid for front line workers expecting to reach at least 10,000 FLWs which Dimagi is pursuing.

In the last eight months of Stage 2 grant, we invited applications from the deployed projects for additional scale-up support from Dimagi. 12 programs were selected for scale-up support based on their ability and interest for scaling-up in the grant period. Our experiences helping groups scale up has led us to develop a CommCare maturity model for how programs can adopt mobile technology. The maturity model helps organizations understand their program's progress in adopting CommCare along a spectrum of five stages, from demonstration to sustainable scale. With this framework, Dimagi and our partners establish a long-term vision for an mServices program in order to track, demonstrate, and improve progress towards specific goals. The stages of maturity are divided into five stages. Each stage is assessed across six areas. Based on the maturity of the project in each area, the model highlights areas where specific activities can be used to improve maturity towards target goals agreed upon between Dimagi and our partners. Dimagi can provide the skills and effort to work towards those goals, or support our partners in meeting them independently of direct Dimagi involvement.

Beyond launching 58 new projects, the highlights from this grant include:

- **Bihar RFP for its Integrated Performance Management System:** During the summer of 2013, the Government of Bihar (GoB) agreed to scale the CommCare work in Saharsa with CARE-India based off of positive feedback from their work to date. The GoB and CARE worked together to allocate a new budget, establish a new planning committee, and rename the scale up work to be the 'Integrated Performance Management System'. The new CommCare application was to incorporate content to cover more of the health workers in the state, primarily with the addition of nutrition focused questions and reports. The GoB created a Request for Proposal for the software vendor. The first RFP was released in August of 2014, but was rescinded. The second version of the RFP was released in late November of 2014. The government expects to scale the work to 10,000 workers shortly after the RFP winner is announced, and will assess scaling the software statewide (100,000 workers). This provides a strong endorsement of mHealth's value to FLWs in Bihar.
- **USAID Gender-Based Violence Project:** A POC package was awarded to St. Johns Research Institute to explore the use of mobile phones to screen, identify and refer women experiencing gender-based violence. Through collaboration with the Research Triangle Institute, the project was geared to help women access government primary health care services in Bangalore, including antenatal care, immunizations, and general services. Seeing positive usage of mobile phones and early signs of data, Dimagi and RTI co-applied for a USAID RFP to address technological and program innovations to address gender-based violence in Bangalore and beyond. USAID granted \$498,928 for a three-year term to Dimagi, who is prime on the project, with St. Johns Research Institute and Research Triangle Institute as the implementing partners

to innovate how technology can address gender based violence with advocacy and research activities. Read about this scale-up here: <http://1.usa.gov/1yZO9mo>

- **Jharkhand Government Scale Up** : Dimagi was able to incorporate all of its best practices in building mobile apps for RMNCH+A (Reproductive, Maternal, Neo-Natal, Child, and Adolescent Health) to develop a best of breed RMNCH+A mobile app. This was possible by leveraging support from a \$100,000 grant given by the World Bank India Development Marketplace (WB-IDM) and from our new partnership with MCHIP that came out of a POC in Haryana. In order to promote advocacy, consultation, and consensus building, Dimagi held a 40-person workshop in Ranchi in February 2014, wherein the Mission Director presented our tools and gave an overview of our evidence base. After receiving the written endorsement of the Jharkhand Rural Health Mission Society (JRHMS), Dimagi field-tested and deployed this app to 240 FLWs in Chandil block of Seraikela, a designated high-priority area. Following this deployment, JRHMS submitted a request to scale this intervention to seven additional districts in Jharkhand. In parallel, POC partner EFICOR is working with Dimagi to deploy this application in another Jharkhand block. The WB-IDM grant started in June of 2013 and will go through April 2015.
- **Catholic Relief Services' ReMiND project**: In 2011, Catholic Relief Services (CRS) and the Kaushambi district government in Uttar Pradesh established the Reducing Maternal and Newborn Deaths (ReMiND) project to improve prenatal and postnatal care delivery. CRS worked with Dimagi and its local implementation partner Vatsalya to develop a customized, mobile health (mHealth) application for frontline health workers using CommCare. The project started under our Stage 1 grant and received scale-up support under this Stage 2 grant, and now runs in 2 blocks of the Kaushambi district of Uttar Pradesh. Since the 10 person pilot, the ReMiND project has successfully matured from an initial proof of concept to a scaled mobile tool for over 250 community health workers. The success of this project was detailed in our Milestone 13 report.
- **Exposure visits**: In the final 8 months of this grant, Dimagi designed exposure visits where scaling-up POCs were invited to attend a day-long workshop in Kaushambi to learn about the implementation and scale-up of CRS' ReMiND project. The organisations found it very useful to learn from the ReMiND success story and to listen to the implementation challenges that ReMiND faced in its scale-up journey. Dimagi shared some takeaways from other scale-ups and provided a platform for programs to discuss their issues and solutions with each other. These visits were highly appreciated by the POC participants. The day-long exposure visits were conducted 5 times at the ReMiND project site in Uttar Pradesh. We have discussed holding more exposure visits at other project sites in future. A blog by Dimagi Field Manager Abhishek Prateek provides additional detail about the Exposure Visits: <http://bit.ly/1yZOeX9>
- **CommCare Exchange**: All awarded POC organizations were asked to share their CommCare applications on the CommCare Exchange (www.commcarehq.org/exchange), an open source, free repository of apps that can be downloaded and modified for use by any program. It is a good starting point for self-starts and new partners to use CommCare. As of now, we have over

45 apps on the Exchange. Out of these, more than half are in the health sector and about 15 focus on maternal and child health (MCH).

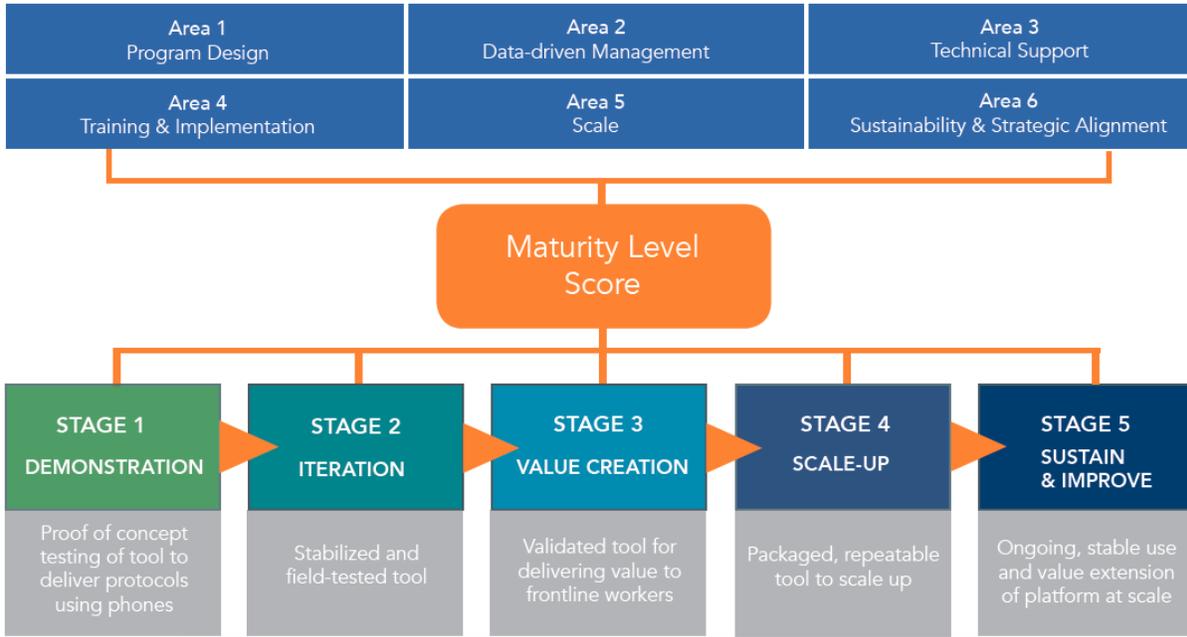
Maturity Model

One important outcome of the Stage 2 grant has been a new Maturity Model. In the course of implementing these CommCare POC projects in India, Dimagi has worked with partner organizations to better understand how to best use mobile technology in frontline programs, effectively use mServices data for program improvement, and how an organization's mServices needs change as its their projects progresses. Dimagi has used this experience to create a Maturity Model aimed at identifying and overcoming barriers that prevent information and communication technology (ICT) projects from delivering value at scale.

The Maturity Model helps organizations understand their program's 'maturity' along a spectrum of five stages, from demonstration through sustainable scale. The model helps in determining the barriers and key next steps for new and existing partner organizations to move beyond a project's demonstration phase and into more sustainable and scalable work. With this framework, Dimagi and partner organizations establish a long-term vision for an mServices program in order to track, demonstrate, and improve progress towards specific goals. Knowing where an mServices project falls on the maturity spectrum allows partners to determine which activities are needed to reach the specific goals of the project. This framework results in:

- Improved planning by providing a clear roadmap to sustainable projects at scale. This includes the 1) ability to plan for the roles and responsibilities and effort required at each stage of maturity and 2) the ability to understand the needs and capabilities required of a project at each stage of maturity.
- Improved scale-up activities tailored to the specific needs of each organization. Whether performed by the partner or Dimagi, activities are matched to the specific needs of the program to get partners to their target maturity level

The stages of maturity model are divided into **five stages**. Each stage is assessed across six areas. Based on the maturity of the project in each area, the model highlights areas where specific activities can be used to improve maturity towards target goals agreed upon between Dimagi and partner organizations. Dimagi can provide the skills and effort to work towards those goals, or support organizations in meeting them independently of direct involvement with Dimagi. Additionally, Dimagi assesses an organization's level of maturity across **six areas**. Based on this assessment, the organization is assigned a "score" and a maturity stage that describes how to reach their target maturity level.



Dimagi Maturity Model DRAFT October 2014 Contact: Matt Theis mtheis@dimagi.com	Stage 1 Demonstration	Stage 2 Iteration	Stage 3 Value Creation	Stage 4 Scale-Up	Stage 5 Sustain & Improve
Program Design	New content, small number of use cases	Refined content based on field iteration	Validated content used by frontline workers	Frontline worker content stable, new supervisor content created and iterated	Additional use cases added to technology platform
Data-Driven Management	Data collected but not used to improve workforce	Data accessed, but rarely applied	Data accessed and periodically used for performance improvement or evaluation	Data accessed and regularly used for performance or evaluation	Increasing levels of automation for data-driven management. Data used to improve program design
Technical Support	Limited technical capacity among program staff	Technical resources trained, starting to use training in the field	Technical resources certified and regularly conducting basic support	Technical resources fully capable, but still need limited external support	Technical resources fully capable of managing program independent of external support
Training & Implementation	Training and implementation policies not yet modified for mServices	Adapting training and implementation policies to mServices	Training and implementation policies adapted to mServices and used in practice	Training and implementation practices replicable under a cascaded approach	Training and implementation practices institutionalized and improvements can be rolled out iteratively
Scale	Designing and demonstrating with small number of users	Increasing adoption with frontline workers	Fully deployed with specific target users. Users demonstrating value	All processes documented and expanding to additional users	Fully deployed to target user base
Sustainability & Strategic Alignment	Focus within single organization with single source of funding	Building awareness, buy-in and support of the program. Aligning to national strategy	Seeking additional funding based on demonstrated value. Program aligned with national strategy	Expansion funding secured and expanding inline with national strategy	Core solution in national strategy receiving core programmatic funding

Figure 1: Breakdown of the five stages and six areas of the Dimagi Maturity Model

To learn more about the maturity spectrum and where an organization falls along it, Dimagi has developed an initial assessment survey. Depending on the results of the maturity survey for both new and existing mobile deployments, Dimagi will work with an organization to develop a roadmap for scale, including various service offerings tailored to the needs expressed in the survey.

There are three types of Performance Improvement packages offered by Dimagi: Certification by Role and Skillset, Capacity Building Services, and Technology System Strengthening.

- **Certification by Role and Skillset:** Certification consists of concrete learning objectives on how to use Dimagi's technologies and testing to ensure that individuals have the knowledge and skills required to carry out an mServices project. Through the CommCare certification program individuals can be trained and tested on key skillsets related to CommCare. Informed by the collective experience of Dimagi and its implementing partners, these learning modules cover a range of topics, such as the CommCareHQ Form Builder, Troubleshooting CommCare for Android, and Worker Monitoring Reports. Each module consists of a set of key learning objectives, which, once achieved, certify that a user has the requisite skills to successfully take on related responsibilities. All users are invited to take the certification test for CommCare Fundamentals - the basics of CommCare.
- **Capacity Building Services:** Many projects have specific gaps in their implementation that prevent them from increasing scale or improving impact. This service helps update existing processes and enhances staff capacity to optimize the value of mobile technologies. It may include services such as how to monitor worker performance, modify CommCare applications independently, or teach trainers how to train staff on Dimagi tools.
- **Technology System Strengthening:** Most organizations have a stronger understanding of how technology can integrate with their workflows after an initial mobile deployment. Technology System Strengthening introduces new technologies to strengthen or automate existing processes, such as how to use Excel to monitor programmatic indicators based on data collected in CommCare, how a supervisor can use a CommCare app designed for supportive supervision, or integration of SMS reminders.

Scale up Plan

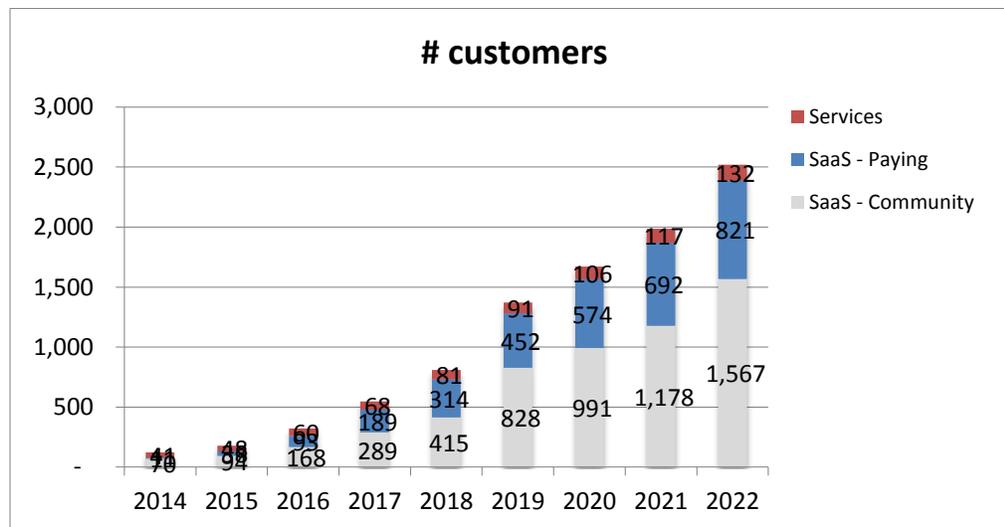
Five Year Plan to Become Independent of Direct Grants

CommCare is scaling rapidly across the globe. The funding from DIV allowed Dimagi to establish CommCare as the leading solution for supporting frontline workers. Direct grant funding from the Bill and Melinda Gates Foundation (BMGF) is supporting Dimagi to continue to invest in its cloud product. More and more organizations are deploying CommCare by themselves, and CommCare is being used to support an increasing number sectors such as emergency response, agriculture, education, and last mile distribution.

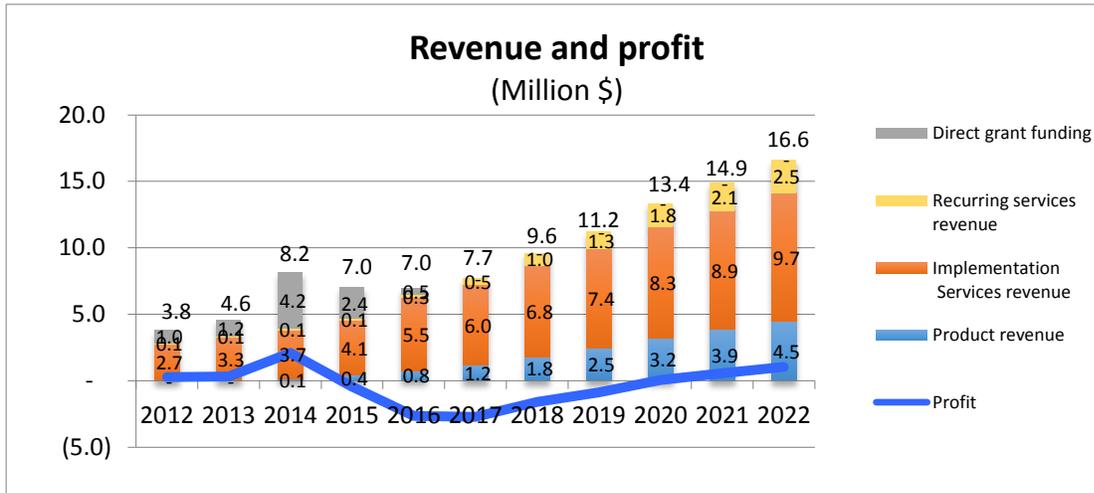
Currently Dimagi relies heavily on direct grant funding from DIV and BMGF. In 2014, we project that about 60% of Dimagi’s expenses will be covered through our services contracts (organizations contracting Dimagi to help them implement projects), 2% through SaaS (Software as a Service) revenue from the CommCare cloud product, 2% through recurring improvement services (like Custom reports) and the remaining 36% will be covered from our large direct grants.

Dimagi has developed a detailed five year plan to become independent of direct grants by 2020 while accelerating its scale and impact. Dimagi will invest in the five strategies for customer acquisition described below to grow its product revenue to \$3.2 million dollars per year by 2020, which will cover 24% of its total expenses. Additionally, 13% of Dimagi’s expenses in 2020 will be covered by expanding Dimagi’s recurring improvement services.

The remaining 63% of Dimagi’s expenses in 2020 will be covered by implementation services. We will continue increasing the number of implementation projects at a 15% annual average growth, as we believe that many new partners will require initial training and support to launch a CommCare mobile solution. It is also a critical element of our business model that allows us to learn from the field and further enhance our technologies. The target of 15% growth per year seems easily achievable compared to our average growth of 15% over the last 3 years.



This action plan will enable us to reach break-even in 2020 and become independent from grants going forward.



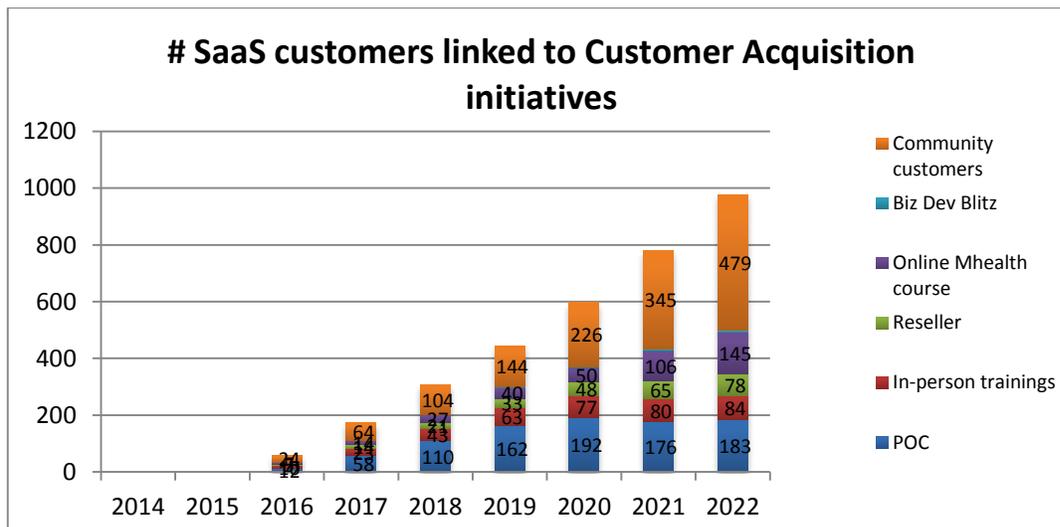
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Total direct grant funding	996,054	1,199,579	4,248,807	2,374,604	472,227	-	-	-	-	-	-
Total product	-	-	147,680	434,204	771,183	1,189,192	1,825,265	2,492,718	3,234,406	3,856,296	4,450,967
% total revenues without grants	-	-	4%	9%	12%	15%	19%	22%	24%	26%	27%
Total implementation services	2,747,253	3,260,959	3,654,094	4,078,167	5,450,228	6,008,577	6,837,883	7,387,598	8,346,516	8,893,081	9,650,052
% total revenues without grants	77%	93%	93%	88%	84%	78%	71%	66%	62%	60%	58%
Total recurring services	62,500	100,000	125,000	141,308	268,751	513,349	962,772	1,334,524	1,790,122	2,137,097	2,521,611
% total revenues without grants	2%	3%	3%	3%	4%	7%	10%	15%	13%	14%	15%
TOTAL REVENUE	3,805,807	4,560,538	8,175,581	7,028,283	6,962,390	7,711,117	9,625,919	11,214,841	13,371,044	14,886,473	16,622,630
YoY growth	-	-	-	-14%	-1%	11%	25%	17%	19%	11%	12%
TOTAL EXPENSES	3,526,212	4,235,081	6,085,312	7,477,046	9,599,724	10,440,869	11,231,200	12,086,002	13,306,788	14,332,086	15,576,967
YoY growth	-	-	-	23%	28%	9%	8%	8%	10%	8%	9%
PROFIT (before tax, FOREX, etc.)	279,595	325,457	2,090,269	(448,764)	(2,637,335)	(2,729,752)	(1,605,280)	(871,161)	64,256	554,388	1,045,662
Number of customers			122	179	320	546	810	1,371	1,671	1,987	2,520
Nb Service Customer			41	48	60	68	81	91	106	117	132
Nb. paying product customer (Self-starter and Service customer *conve			11	38	93	189	314	452	574	692	821
Nb. Community customers			70	94	168	289	415	828	991	1,178	1,567

Customer Acquisition Strategies

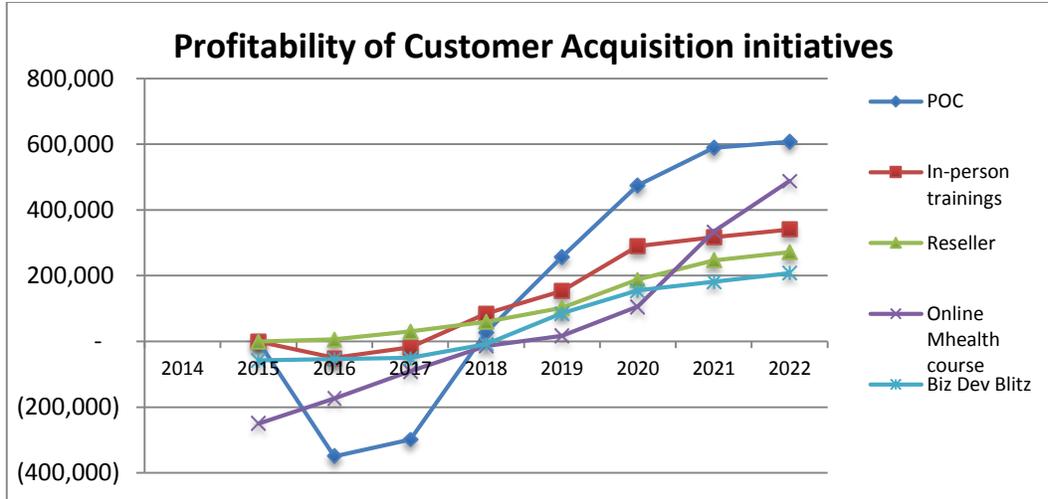
Dimagi has acquired enough expertise on partners' needs to develop a strong and scalable SaaS product. In addition, the market for mServices is maturing quickly with increasing proof of impact, and Dimagi's reputation in this market has reached a strong positioning. Based on our understanding of the market, our granular assessment of past and new targeted customer acquisition initiatives, estimates of attrition rates and conversion rates (from services customers to SaaS customers), we estimate that we can reach a total number of 1,565 SaaS customers, including 574 paying customers (the rest would be pro-bono) by 2020. This would require additional investment into our R&D to strengthen CommCare's features and user-friendliness, some additional internal infrastructure building, and a set of targeted customer acquisition initiatives. This will bring our share of SaaS revenue from 4% to 24% by 2020 and 27% by 2022.

Over the next 5 years, we will invest in the following five customer acquisition initiatives:

1. Developing new POCs in India and other countries, targeted at piloting new CommCare use cases in new sectors, such as in the last-mile distribution of social goods, agriculture and supply-chain services. These POCs would help position Dimagi into these new markets made of a high proportion of private sector actors, with a high potential for paying SaaS customers.
2. Organizing in-person trainings in various countries with about 15 prospect-organizations represented. If well targeted, these trainings should allow for a good conversion (about 20%) into SaaS customers, at minimal costs (same trainings replicated across countries), while allowing Dimagi to keep being abreast of users' feedbacks.
3. Setting-up an online mHealth course and certification module for 200 participants a year. Similarly to the in-person trainings, this course and certification modules would lead to a good conversion rate into SaaS customers and potentially to the creation of some certified resellers. This online course would also be a good marketing device to further promote CommCare.
4. Building a reseller network: organizations with certified CommCare users, able to train other organizations on ways to implement CommCare. This would allow us to scale up more rapidly our number of users.
5. Developing new country-markets with business development trips a year with staff travelling from our "anchor" offices (Delhi, Cape Town, Maputo, Dakar). This strategy would primarily bring additional implementation services customers.



These customer acquisition initiatives will break-even in 2018, after initial upfront investments into training materials, POCs and online course platform and the ramp-up in new customers.



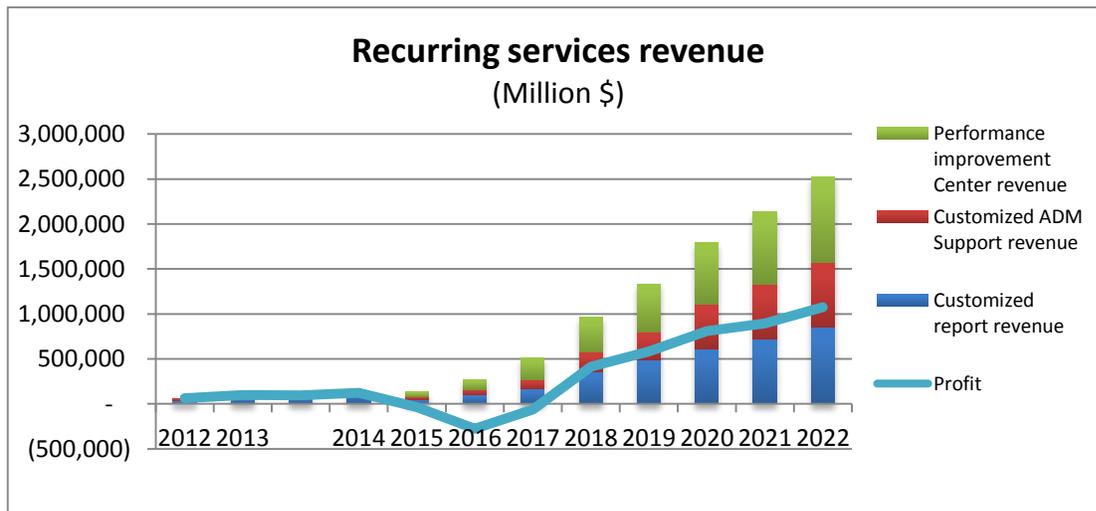
	2014	2015	2016	2017	2018	2019	2020	2021	2022	
POC										
Number of POCs per year		30	35	40	38	25	15	0	0	
Additional biz dev costs to convert POC		\$30,000	\$30,000	\$30,000	\$30,000	\$30,000	\$30,000	\$30,000	\$30,000	
# Additional customers per year		-	23	77	92	100	105	65	85	
% attrition rate of product customers				16%	16%	16%	16%	15%	15%	
P&L POC										
Revenue		-	88,000	211,710	435,678	604,777	702,623	636,653	655,494	
Expenses		-	437,670	510,000	407,670	347,670	227,670	47,670	47,670	
Profit		-	(349,670)	(298,290)	28,008	257,107	474,953	588,983	607,824	
Profit margin			-397%	-141%	6%	43%	68%	83%	83%	
In-person trainings										
Number of workshops per year		5	8	10	10	10	5	5	5	
Average # organizations attending workshops		15	15	15	15	15	15	15	15	
# Additional customers per year		-	14	20	31	33	38	32	40	
% attrition rate of product customers				19%	19%	19%	19%	18%	18%	
P&L workshops										
Revenue		-	13,896	80,018	274,819	268,917	458,128	427,498	450,994	
Expenses		-	64,000	97,670	180,140	115,340	167,810	110,680	110,680	
Profit		-	(50,104)	(17,652)	84,679	153,577	290,318	316,818	340,314	
Profit margin			-361%	-22%	31%	37%	63%	74%	75%	
Reseller										
Number of certified reseller trained per year		4	4	4	4	4	5	5	5	
% resellers trained selling CommCare		50%	50%	50%	50%	50%	50%	50%	50%	
% attrition in resellers selling CommCare				40%	40%	40%	40%	40%	40%	
# Additional customers per year		-	10	15	20	26	42	86	96	
% attrition rate of product customers				22%	22%	22%	22%	23%	23%	
P&L Resellers										
Revenue			16,260	40,782	69,755	111,824	200,912	259,506	284,191	
Expenses			10,125	10,125	10,125	10,125	12,656	12,656	12,656	
Profit			6,135	30,657	59,630	101,699	188,256	246,850	271,535	
Profit margin			38%	75%	85%	91%	94%	95%	96%	
Online mHealth courses & certification										
Yearly investment		\$ 150,000	\$ 100,000	\$ 40,000	\$ 20,000	\$ 20,000	\$ 20,000	\$ 20,000	\$ 20,000	
Project Manager support # FTE		2	Salary cost	\$ 40,500						
Number of students per year		30	40	100	100	200	200	200	200	
Unit price		\$ -	\$ 100	\$ 200	\$ 500	\$ 500	\$ 500	\$ 500	\$ 500	
# Additional customers per year		-	13	13	20	26	42	90	103	
% attrition rate of product customers				14%	14%	14%	14%	13%	13%	
P&L Online certification										
Revenue			44,020	66,787	180,879	177,583	318,162	454,362	617,084	
Expenses			250,000	217,670	157,670	194,800	160,920	212,470	120,000	
Profit			(205,980)	(150,883)	(76,791)	(17,217)	157,242	241,892	497,084	
Profit margin			-465%	-226%	-42%	-10%	49%	54%	79%	
Biz Dev Blitz										
Trip cost in new country		\$ 10,000	\$ 10,000	\$ 10,000	\$ 10,000	\$ 10,000	\$ 10,000	\$ 10,000	\$ 10,000	
Number of new countries targeted		0	3	4	5	5	5	5	7	
Number of trips per year			3	3	3	3	2	2	2	
Number of new B2B clients per year per country			0.7	1.0	1.2	1.8	2.4	3.2	3.1	
# Additional customers per year			2	2	2	3	3	4	3	
# of product customers										
# of implementation services customers			2	4	6	9	12	16	19	
P&L Biz Dev Blitz										
Revenue		125,000	250,812	377,350	529,545	683,137	937,978	1,093,949	1,250,921	
Expenses		182,470	304,940	427,410	537,550	597,690	782,630	912,770	1,042,910	
Profit		(57,470)	(54,128)	(50,060)	(8,005)	85,447	155,348	181,179	208,011	
Profit margin			-46%	-22%	-13%	-2%	13%	17%	17%	

Recurring improvement services

Dimagi is planning to develop on-going support services to help our SaaS customers make the best use of CommCare and increase the efficiency of their programs as they scale. We expect that the revenues from these services will generate 13% of our total sales by 2020 and 15% by 2022. We have already been testing customer demands on these services in the past couple of years and have been generating 3% of our revenues, without structuring and productizing the offering.

Those three services will be:

1. Customized report: Most of our customers need to track their impact, which is a key benefit from using CommCare software. However each customer has specific needs for a customized report, which can't be built into the software's code. Our tech team has the capacity to develop these customized reports and we will charge a fee per month to build and aggregate these reports on a monthly basis.
2. Performance improvement centers: Most of our customers have a need for on-going support on impactful ways to use CommCare applications and CommCare HQ. Those centers will function as a call-center that customers can use on-demand
3. Customized Advanced Data Management support: Thanks to CommCare HQ technology, each customer can track with precision and in real-time CommCare's usage by its end-users and beneficiaries' data to optimize both management and decision-making processes. When customers subscribe to this service, we will run for them those customized analyses, leveraging our internal technological and data-mining capabilities.



Investment needed to Reach Break-even

This detailed projection gives us confidence that our five year plan will allow Dimagi to reach a sustainable model and become independent from direct grants by 2020. This strategy will allow us to grow our impact significantly, to a total of 220,000 users in 2020 and 320,000 users in 2022. (Note that the number of beneficiaries is much larger than the number of users.)

The five year plan will involve strategic investments in building up SaaS customer base through an active customer acquisition strategy and an enhanced software technology and developing new recurring improvement services for our SaaS users). In our current model, this includes \$3.4 million of customer acquisition costs, \$0.8 million of recurring services development, and \$3.6 million to support additional software development, business development, and strategic management of CommCare. The total needed investment is \$7.8 million.

Key Partnerships

In addition to the above plan, Dimagi will continue to build upon its many partnerships and engage governments and researchers to scale and improve CommCare.

A particularly important partnership is our work with MOTECH Suite—a collaboration with Grameen Foundation, funded by BMGF. The MOTECH Suite leadership has recently engaged the OpenHIE leadership team to work together on interoperability standards. Rough agreement has been reached for the MOTECH Suite team to provide OpenHIE compliant Registries for health providers, facilities, and patients. This collaboration has the potential to unify much of the work on eHealth and mHealth around interoperability standards and shared data.

Dimagi will of course prioritize work with the governments in the countries we work to scale CommCare. Dimagi's partners often lead these discussions. World Vision has been an especially strong partner (through the MOTECH Suite) and is actively engaging the governments of Sri Lanka, Sierra Leone, and Zambia in discussions of how to scale CommCare and integrate it into those countries health systems.

Dimagi of course looks for further partnership with USAID. One important example is the potential to work with USAID in Myanmar to provide CommCare as an mHealth platform. Dimagi will build upon its current partnership as well. Dimagi is currently the lead mobile technology partner on prominent projects with over \$300 million dollars from USAID and other donors, including grants to Pathfinder International (PI), EngenderHealth, University Research Center (URC), and NCBA-CLUSA. These partnerships will allow Dimagi to rapidly diffuse innovations in HIV, Maternal and Child Health (MCH), Family Planning (FP), fistula, and agriculture.

End point metrics

Having reached the end of this grant, we report on the following metrics. Note that these metric were more carefully defined in the Implementation plan submitted under Milestone 1.

Metric 1. Leveraged partnerships in India: *This is defined as the Dimagi partnerships formed (or expanded) in India since the beginning of this grant other than those new programs launching CommCare.*

- **USAID India Gender Based Violence grant:** Dimagi has increasingly collaborated with the USAID Mission through both Stage 1 and Stage 2 funding from DIV. USAID India secured a \$498,928, three-year grant to support Dimagi to scale innovations in Gender Based Violence. This grant builds directly off of the Proof of Concept project supported by the DIV Stage 2 grant with St. John's Research Institute in Bangalore, who is a partner on the grant. In addition to partnering with St. John's Research Institute, Dimagi also partnered with the Research Triangle Institute and Breakthrough on this initiative.
- **World Bank India Development Marketplace:** Dimagi submitted and won a two-year grant from the World Bank based off of ideas created and tested during our Stage 1 and Stage 2 grants from DIV. Through this grant, we are already working to expand our partnerships in Jharkhand that were originally fostered under the DIV Stage 2 Proof of Concept RFA. We are currently working closely with mCHIP and the government of Jharkhand to figure out how best to bring CommCare to the Jharkhand's FLWs to improve maternal and child health. As of the end of the DIV Stage 2 grant, there were 240 FLWs in Jharkhand using CommCare, along with their supervisors. In addition, 27 district-level officials are using CommCare on web and mobile to register and track critical data on FLWs across Jharkhand, and have registered a total of 13,900 additional FLWs into the system so far. Dimagi is currently in discussions with the Government of Jharkhand to scale to seven additional districts. This will require procuring sustainable funding under the Performance Implementation Plan (PIP) for upcoming years as the work is passed to the government to own. In the most recent developments, the government has requested additional information on the nature of this intervention, which has been provided and submitted in the supplementary PIP.
- **Grand Challenges in TB-Control:** Dimagi and DIV Stage 2 partner UNION have received additional funding and support from India's IKP Knowledge Park, USAID, and the Bill & Melinda Gates Foundation through a Grand Challenges grant to expand and strengthen their original POC. In Hazaribagh, Jharkhand, Rural Health Care Providers and Lab Technicians are using CommCare to identify, refer, and improve DOTS adherence of tuberculosis patients. Through this new grant, additional functionality will be developed for the mHealth intervention. This includes developing SMS functionality to send patients lab results, additional IVR counseling and IVR reminders, integrating the WHO DOTS protocol to assess DOTS adherence, and creating a knowledge library for FLWs.
- **Bill & Melinda Gates Foundation (BMGF):** During the course of this grant, Dimagi has expanded its relationship with BMGF, building off of our work with the BMGF-supported CARE International project in Bihar. Dimagi recently secured additional core funding for the CommCare platform (as part of the MOTECH Suite) and is currently working with BMGF on a multi-year grant to support the development of this technology.

- **Microsoft Research India:** Dimagi has collaborated with Microsoft Research, including co-authoring a research study on how FLWs use the phones that run CommCare for other purposes. This research was accepted as a short paper for a ICTD 2013
- **CARE International:** Dimagi's CommCare deployment was the largest to date when it began in 2012. Launched in July 2012, the CCS was implemented in Saharsa, Bihar. It was deployed alongside a 2-year RCT assessing the impact of FLWs using CommCare to improve health outcomes in maternal and child health in the area. The site currently has over 550 FLWs using the system, supported by 58 supervisors and 12 managers, aiming to deliver health and nutrition services to a population of 400,000. CARE approached the Government of Bihar this past March with a note to further scale CommCare from its current location in four blocks of Saharsa District. Read more about the original project in this case study developed by Dimagi and CARE: <http://bit.ly/1w6Cocl>
- **Oxford Policy Management (OPM):** OPM approached Dimagi at the beginning of the DIV Stage 2 grant to leverage CommCare to investigate the use of financial incentives to beneficiaries and frontline workers to focus on nutrition and maternal and child health. Currently, 410 FLWs are using CommCare at village health and nutrition days to guide themselves and track attendance and access to critical services. This data is being used to calculate conditional cash transfer payments to beneficiaries and performance-based pay incentives to the FLWs.
- **SNEHA:** Through DIV Stage 2 funding, Dimagi's relationship with SNEHA, an NGO based in Mumbai focused on the nutrition of mothers and newborns, has blossomed. Dimagi has been able to build capacity within SNEHA to not only launch their own POC, but also to build capacity so that SNEHA can build and launch applications on their own. CommCare now forms a critical part of the Management Information Systems, and we have built the capacity within their organization together for them to be able to effectively use and benefit from the technology.
- **Pradan:** Pradan is one of the largest and most well known NGOs in India. Pradan started with a CommCare pilot under the DIV Stage 2 grant. After testing their work with self-help groups for improved livelihoods, they have scaled their application to 600 users, making it one of Dimagi's largest projects in India.
- **Digital Green:** Digital Green focuses on improving agricultural practices through the dissemination of videos. Digital Green has grown significantly in India in the last few years, and is now beginning to implement its model in Africa. As part of their work, Digital Green employs a rigorous, data-oriented approach that CommCare has helped strengthen. The grant has dramatically strengthened the working relationship of Dimagi and Digital Green. Most recently, Dimagi has been providing Digital Green with implementation support as it self-launches CommCare with frontline livelihoods workers associated with the Department of Rural Development in Andhra Pradesh. The government has equipped many workers with mobile devices, with the potential to scale to 1,500 users. Dimagi is now a sub to Digital Green on a large USAID-funding to bring new agricultural practices to 1 million farmers in Ethiopia.

- **BBC Media Action:** Dimagi worked initially with the BBC World Service Trust (BBCWST, now BBC Media Action) as part of the Stage 1 DIV grant to user-test videos on a mobile handset. Since then, Dimagi has been able to further engage and build a relationship with the BBCWST in India, as a result of jointly scaling mobile technology work. Dimagi is now working with BBC and Grameen Foundation on nationally scaling Interactive Voice Response (IVR) in India.
- **Catholic Relief Services** Our Stage 2 DIV grant has helped Dimagi expand its relationship with CRS, including participating in joint discussions with the Mission Director of National Rural Health Mission about possible scale up of our work in Uttar Pradesh. The ability to show the scale and diversity of partnerships that we have formed under this grant has helped stimulate interest at the government level to bolster existing projects. The Mission Director has expressed a strong interest in supportive supervision and the potential of mobile tools to support new cadres of FLW supervision staff, namely ASHA Facilitators and Block Mentors in Uttar Pradesh. CRS is currently working to deploy supervision apps to ASHA Facilitators in all eight blocks of Kaushambi district and 1 block in Lucknow.
- **World Vision:** Dimagi started working with World Vision on a Stage 1 DIV grant. Since then, World Vision has engaged Dimagi in a Master Services Agreement, and begun to deploy CommCare to support its maternal, newborn, and child health and nutrition projects in over 10 countries in Southeast Asia and Africa. The work that began in India, and the discussions that have continued as a result of that project, has led to numerous offshoots, and renewed interest in scaling our work together in India as well.
- **UNICEF and FHI360:** This DIV grant helped establish Dimagi's partnerships with UNICEF (Facts for Life) and FHI 360 (the Improving Health Behaviors Program) to put their high quality behavior change counseling videos on CommCare apps. This would increase exposure in rural low-resource contexts to these materials while also strengthening the content of CommCare apps. Several of our partners in Jharkhand are currently using these videos, in addition to the Ambuja Cement Foundation in Madhya Pradesh.

Metric 2. FLWs from leveraged partnerships: *This is defined as the number of new extension workers in India using CommCare through the leveraged partnerships since the start of the project.*

Of the 3,118 FLWs using CommCare in India, 1,040 were using CommCare at baseline, and 2,156 are part of the 58 CommCare projects that were launched by Sept 1, 2014. The remaining 962 FLWs using CommCare are from Dimagi's leveraged partnerships in India.

Metric 3. # programs scaling: *Of the new partnerships created over the previous 12 months, the number of programs that piloted CommCare that are now scaling. This is defined as a program that is increasing the number of CommCare users to a target level that is beyond the number in the pilot effort and has committed to using CommCare through the life of their program.*

There are nine programs that meet this requirement. IHAT/Impact, Krishi Gram Vikas Kendra, Lata Medical Research Foundation, MCHIP, Oxford Policy Management, Rural Development Institute -

Himalayan Institute Hospital Trust, SNEHA, St. Johns Institute for Research, and the International Union for TB and Lung Disease

Metric 4. # programs at scale: *Of the new partnerships created over the previous 12 months, the number of programs that piloted CommCare that are now at-scale. This is defined as a program that has reached the specified target number of CommCare users defined for the scaling effort and has committed to using CommCare through the life of their program.*

There are eight programs that meet this definition: ABHAS, Public Health Foundation of India, SNEHA (a separate project from above), UCL and Ekjut, Going to School, Johns Hopkins, Spandan Samaj SevaSamiti, and the CARE project within Bihar (treated separately from the state-wide scale up from the Bihar RFP).

Performance Management Plan

Below is our updated Performance Management Plan (PMP). The PMP is divided into three sections: Scale Up Monitoring, Performance Monitoring, and Usage. These numbers are estimates of the exact values on Sept 1, 2014. They are all at or below the value as of Nov 2014.

Note that we have investigated the low follow up rates (metric 12 and 13) for several domains and found that the explanation for the low follow up rates was that certain cases did not require follow up. We will not be using this metric in the future.

Area	#	Indicator	Baseline (Sept 2012)	Nov-12	Feb-13	Jun-13	Sep-13	Dec-13	Feb-14	May-14	Final	Aug. 2014 Target
Scale Up Monitoring	1	Number of new programs in India using CommCare	0	1	5	16	24	40	53	58	58	40
	2	Percent of new programs that try CommCare in India that are using it after one year	0% (0/0)	0% (0/0)	0% (0/0)	0% (0/0)	0% (0/0)	100% (3/3)	88% (7/8)	77% (20/26)	68% (23/33)	70%
	3	Number of new programs using CommCare in India that are scaling after 12 months	0% (0/0)	0% (0/0)	0% (0/0)	0% (0/0)	0% (0/0)	66% (2/3)	50% (4/8)	31% (8/26)	26% (9/33)	40%
	4	Number of new programs using CommCare in India for at least 12 months that are now at scale	0% (0/0)	0% (0/0)	0% (0/0)	0% (0/0)	0% (0/0)	33% (1/3)	25% (2/8)	27% (7/26)	24% (8/33)	30%
	5	Percent of BASIC CommCare programs in India	28% (5/18)	25% (5/20)	9% (2/22)	15% (6/41)	6% (3/50)	16% (11/68)	21% (17/81)	26% (24/92)	26% (24/92)	40%
	6	Percent of PLUS CommCare programs in India (includes POC packages)	61% (11/18)	60% (12/20)	64% (14/22)	68% (28/41)	80% (40/50)	72% (49/68)	69% (56/81)	64% (59/92)	64% (59/92)	50%
	7	Percent of FULL CommCare programs in India	11% (2/18)	15% (3/20)	27% (6/22)	17% (7/41)	14% (7/50)	12% (8/68)	10% (8/81)	10% (9/92)	10% (9/92)	10%
	8	Number of FLWs that have used CommCare in India	1,040	1,061	1,134	1,332	1,647	1,988	2,545	2,736	3,113	8000+current value
	9	Number of clients seen by FLWs using CommCare in India	69,094	89,267	120,765	179,445	224,292	280,505	414,819	530,340	649,896	200,000
	10	Number of FLWs trained in Bihar to use CommCare	519	519	519	519	519	519	519	519	519	500
	11	Number of FLWs trained in Kaushambi to use CommCare	116	122	122	318	318	318	318	318	318	285
Performance Monitoring	12	Percent of clients seen in last 60 days (proxy indicator for on time visit percentage)	74%	58%	71%	57%	58%	53%	49%	33%	31%	70%
	13	Percent of clients seen in last 120 days (proxy indicator for percentage clients who are still active)	93%	95%	92%	73%	72%	75%	76%	48%	44%	80%
Usage	14	Percent of new CommCare programs in India actively using ADM	0% (0/0)	0% (0/0)		0%	0%	40% (16/40)	58% (31/53)	57% (33/58)	43% (25/58)	n/a
	15	Percent of new CommCare programs in India actively using the Call Center	0% (0/0)	0% (0/0)		0%	0%	5% (2/40)	2% (1/53)	7% (4/58)	7% (4/58)	n/a
	16	Average number of clients seen by each FLW using CommCare in India	66	84	106	135	136	141	163	194	207	n/a
	17	Total forms submitted	227,511	417,120	638,872	911,302	973,507	1,328,033	1,767,163	2,059,612	2,329,085	n/a