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Final Copy of Case Study

Status:
Laureate

Year:
2013

Organization Name:
HP

Organization URL:
www.hp.com

Project Name:
eHealth Center (eHC) -- Rapidly deployable and fully integrated cloud-enabled health center

Please select the category in which you are submitting your entry:
Health

Please provide an overview of the nominated project. Describe the problem it was intended to solve, the technology or approach used, how it was innovative and any technical or other challenges that had to be overcome for successful implementation and adoption. (In 300 words or less.)

In India about 75% of health care infrastructure, medical manpower and other health resources are concentrated in urban areas where just 27% of the population lives. Most of the poor living in rural areas are isolated from the benefits of formal health care. The basic health care infrastructure in rural areas in India is based on the population norms of having one Primary Healthcare Centre (PHC) for every 30,000 and one Sub-Centre for every 5,000 people. However, the existing public health infrastructure is understaffed, poorly managed and cannot be monitored. The objective of this concept is to utilize the power of technology and partnerships and bring affordable and easily deployable healthcare services to rural and remote areas of India and all over the world. The eHealth Centre (eHC) has been developed and created by Hewlett-Packard (HP) and The Council of Scientific & Industrial Research (CSIR) India and has been successfully implemented with other partners in the Kaithal district, Haryana, to provide affordable healthcare in the remotest of locations. This is the first of its kind solution in the world

where a rapidly deployable cloud-enabled solution has been created. The solution is equipped with built-in electricity through power generators and built-in connectivity. The solution consists of a standard second-hand shipping container converted into a Health Centre which can be easily transported through land and sea and can even be air-lifted. The solution has all vital diagnostics equipment that is integrated directly to the Cloud-hosted EMR solution. The video conferencing solution that is built in can be operated by paramedics to connect with the specialist medical personnel providing medical consultation. The entire solution is designed to eliminate the need for highly skilled manpower at the remote location where the infrastructure is deployed.

When was this project implemented or last updated? (Please specify month and year.) Has it incorporated new technologies and/or other innovations since its initial deployment? (In 300 words or less.)

The first such solution has been deployed, with requisite permissions from state health authorities, in the Village Chausala, District Kaithal, Haryana, India. Chausala is a small village of about 10,000 people that did not have a functional primary health center upon our survey. We launched the project in November 2011, deployed fabricated and equipped containers in June 2013 and opened the doors for the first patients in August 2012. Over 4,000 patient visits were recorded in the first 100 days of operations. On December 11, 2012, the project has been officially launched and introduced in New Delhi with all stakeholders involved in this first pilot.

Is implementation of the project complete? If no, please describe the project's phases and which phase the project is now in. (In 300 words or less.)

This solution can address the need of access to healthcare services in rural, underprivileged areas; it can be deployed very quickly and at affordable cost. It can bring good quality healthcare services to the places where we have a shortage of infrastructure and healthcare personnel. We started in India but the idea is to extend the solution to the other parts of the world where the need is. The project is being rolled out in three major phases: First phase of the project was to pilot the solution and develop the collaboration scheme including innovations in the institutional structure to support the solution. It has created local governmental structure for the eHC that constitutes the village head and key people from the village to ensure management and upkeep of the solution. The second phase, in which we are now, is to proof that the solution is working, improve privacy and security of patient data on cloud and pilot the solution in a different setup (use refurbished Primary Health Center instead of containers). The third phase is utilizing this solution as a major vehicle for capturing the patient data and using them for reaches and disease surveillance purposes. We have now reached the stage where three major advances are possible. -- Scaling up in collaboration with health departments and medical colleges and integrating the health data with ongoing national unique identity programs to create public health databases. -- To build software utilities that can extract data from the Open EMR format, which is mostly intended for professional medical convenience, to relational databases designed for analysis. -- The last advancement will then be to set up automated analyses that can continuously sift through the data and identify anomalies or critical values and take appropriate actions, which could be, for example, a warning regarding an epidemic.

Please provide at least one example of how the technology project has benefited a specific individual or organization. Feel free to include personal quotes from individuals who have directly benefited from the work. (In 300 words or less.)

A study conducted by the Indian Institute of Public Opinion found that 89% of rural Indian patients have to travel an average of 8 km to access basic medical treatment, and the rest have to travel even further. We created a centrally fabricated health care delivery unit with the following attributes: shippable on demand to anywhere with minimal lag time; weatherproof with minimal installation requirements; self-contained and capable of working with erratic electric supply; operable by less-skilled medical manpower guided through telemedicine; working on a low-cost information technology-enabled health cloud that permits real-time monitoring and electronic workflow, while creating a health database that can be used for research and policy; assisted by automated decision support systems for identifying potential problems. Villagers from Chausala had no PHC before. They benefit from eHC and first results have overachieved our initial expectation as we have an average of 36 new patient registrations per day. Over 4,000 patient visits were recorded in the first 100 days of operations. Total number of new registered patients was 2,550 and total number of patient was 4,250, thereby averaging 1,100 patient per month. The eHC has provided many villagers an opportunity to get medical treatment for their chronic diseases. It has already reached its capacity utilization due to the heavy usage by the patients not only from Chausala but from the neighboring 14 villages spread over the area of 16 km. Patients demography obtained from the dashboard clearly shows that patients are coming from other villages because of the better quality of care they get there. Once we have data from a longer period of time (eHC is operational just 4 months) this will aid in disease surveillance by tracking disease patterns and risk factors and will help the government to analyse and act.

Would this project be considered an innovation, a best practice or other notable advancement that could be adopted by or tailored for other organizations and uses? If yes, please describe that here. (In 300 words or less.)

The eHealth Center (eHC) is a technology demonstrator. Specific technologies have been developed and integerated to make it a success. The first of its kind integration of the vital diagnostic equipment, usage of a centrally hosted EMR, monitoring and management systems, institutional support and integration with the government's health delivery system makes the solution viable. The solution can be rolled out by any or all of the partners or even by third parties who were not involved in the conception of this technology demonstrator. Not all of the partners involved in the current technology differentiator are commercial organizations. CSIR is a premier government research organization. So for future commercial rollouts, some of the partners may choose not to be involved. Some government agencies are extremely interested in adopting the eHealth Centre. The government of India has assured four rollouts in the current year 2013, for our next rollout in Lakhimpur we have made changes to the design of the interiors of the containers as per the requirements of NGO and to make it sustainable. We have also added Lab in Box (teaching classroom equipped with IT infrastructure) as the third container, where children from the neighboring villages will be given subsidized computer education and will also be used to provide health education to ASHA workers. The funds generated will be used to run the eHC. We also plan to introduce this concept to leading global NGOs, and in collaboration with governments to bring this solution to

regions in Africa or Southeast Asia where there is a need to address the lack of healthcare services and facilities in rural areas.

If there are any other details that the judges should know about this project, please note them here. (In 300 words or less.)

The eHC, capable of providing primary healthcare (PHC) services, was pre-fabricated within two half-size (20 ft x 8 ft) shipping containers, which are naturally weatherproof and sturdy and can be easily deployed. The design included a registration area for initial encounter and recording of vitals, two air-conditioned telemedicine studios with provision for minor surgery or wound care, a lab area and a pharmacy. Electrical generator-sets were incorporated for self-sufficiency. Telemedicine was to be enabled through the nearest mobile tower or through satellite. Thus, the design already envisioned the worst-case scenario of meeting health needs in inaccessible areas with a lack of physicians, electrical supply and wired broadband. The choice of 20x8 containers, referred to as half-containers, was governed by the fact that half-container trucks are smaller than full-size counterparts and can therefore more easily navigate hilly terrain and sharp turns on narrow roads. However, while the entire system was integrated with an internal power supply from a generator-set, fuel would still have to be procured locally along with solutions for sanitation and medical-waste-disposal. While one of our idealized designs incorporates wind/solar generators for power and crowd sourcing for increasing the scarce medical manpower pool, these are still on the drawing board. In our first pilot site electricity was available but only for a few hours a day; water was abundant, and interns from Agroha Medical College could rotate through the center as part of government-mandated compulsory rural service. Interns and student nurses, supervised over telemedicine, have been manning the eHC since August 2012, along with one registered nurse.