



Sana Mobile Health Platform

Description of solution

Sana is a mobile telemedicine solution designed to connect community health workers to medical specialists. It allows the transmission of any type of medical data - text, audio, video or photo - from a rural health worker to a remote medical specialist for real-time decision support, and for incorporation into an electronic medical record. The point of care platform is customizable and allows doctors to encode structured assessments onto smart-phones, or to use existing ones that have already been implemented. The biggest implementation of the Sana platform so far has been for the early detection of oral cancer in rural south India. It enables frontline community health workers to screen for precancerous and cancerous lesions by using Sana's clinical decision support tools in dental hospitals and primary health clinics.



Benefits of the solution

Sana offers a portable medical record and, with it, the ability to track patients more easily. It can extend the reach of specialists, by helping them support community health workers. In the case of the oral cancer project, early detection using the Sana platform facilitates streamlined referrals to specialists. Diagnosing oral cancer lesions at an early stage can reduce morbidity, mortality and cost of treatment. Such screening processes also increase awareness of risk factors for oral cancer among the population, such as smoking and betel nut chewing. Hospitals benefit by receiving more referrals to their specialists and increased market share by reaching patientse outside their usual catchment area.

Timescales and success to date

The solution was first implemented in June 2010 and more local health workers and support staff were brought on board in February 2011. By August 2010, up to 6,000 people had been screened for oral

cancer in the state of Karnataka. Around 300 patients were identified as high risk and their clinical data, including a photo of the inside of their mouth, were reviewed by an oral cancer specialist at a large tertiary care center. The plan over the next year is to scale the project to screen one and a half million people in the province of Karnataka..



Core technologies and standards

The Sana infrastructure provides two way communication between mobile devices and a web based data store. It is designed to make full use of available data transfer interfaces including SMS, WiFi, 3G, GPRS, and even a USB tether between the client and data store. This gives Sana the flexibility to make best use of available services dependent on current conditions and to transfer data even over poor or intermittent networks using an agile packetization mechanism. All components of the platform, including the mobile client and mobile dispatch server use open source software. Sana interfaces with OpenMRS, an open source medical record system used around the world, including in including South Africa, Kenya, Rwanda, Mozambique, Haiti, India, China, United States, Pakistan and the Philippines. Sana is currently transitioning to a XForms compliant implementation for messages and procedures which will increase the interoperability of the platform with other systems.

Solution delivery

To prove the concept, Sana has partnered with Narayana Hrudayalaya Hospitals and Mazumdar Shaw Cancer Center, Bangalore to set up an “Early Cancer Detection Program”, across the Indian State of Karnataka, with the long-term aim of scaling it across India as a self-sustaining social business. They are recruiting commercial partners especially mobile network operators and handset manufacturers, who will benefit from promoting the use of smart phones within the physician community.



Training community health workers to use the Sana platform

Overview of the organisation

Sana is a volunteer organization based in the Computer Science and Artificial Intelligence Laboratory at the Massachusetts Institute of Technology (MIT). The group partners with universities, social business ventures, government, NGOs and health organizations in resource-poor countries to assist with implementations of the Sana platform. The team consists of volunteers with diverse background – medicine, computer science, clinical informatics, health policy, social sciences, and business and operations management. It strongly believes that there is a need to bring together experts from various disciplines in order to design successful solutions. The technology is crucial, but not the sole focus of the organization. The team aims not only to improve clinical outcomes, but the health delivery process itself. To this end they also run a project-based course at MIT which gives students practical experience of designing, implementing, evaluating and scaling innovative mobile eHealth technology solutions.



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