Remote healthcare solution

Country of origin | India

Health problem addressed

70% of the rural population in India has very poor access to healthcare. 76% of the medical facilities are concentrated in urban areas, and there is an overall shortage of medical personnel. Thus rural patients are left to semi- and non-qualified practitioners, creating a huge disease burden.

Solution description

The technology enables rural patients to reach urban doctors through a telemedicine solution. This comprises of a modular data analysis unit (MDAU) - a USB powered multiparameter diagnostic device which captures ECG, temperature, heart & lung sounds, SPO2 and BP, and communicates with the remote doctor through a low bandwidth audio/video/data conferencing. The solution allows for the integration of the whole healthcare delivery ecosystem to provide meaningful service. The solution also captures the workflow of delivery processes and enables resource optimization by capturing and analysing operational service delivery data.

Functionality

A rural operator carries out remote consultation for the patient at the village using the internet with a doctor sitting anywhere in the world. Doctors remotely control the MDAU device to obtain medical parameters, provide a prescription to the patient, and store medical records. The solution also supports supply-chain management, lab reports and referrals.

Developer’s claims of solution benefits

This solution works at extremely low bandwidths (32 kilobits/s onwards) for real-time audio/video/data tele-consultation, thereby reaching places where other existing solutions cannot reach. It is very easy to use by a village operator, is extremely power efficient, and works out of USB power, and comprehensive solution linking multiple providers (doctors / pharmacies / labs / hospitals), and addresses 75% of healthcare needs at the point-of-care at a fee of less than 1 USD.

Future work and challenges

Future work includes working closely with healthcare service delivery partners and e-governance players to define and implement large scale projects; enhancing the technology with further diagnostics as well as ground-level delivery processes to capture them better; identifying and building relations with partners having complementary solutions (hardware and software); integrating a mobile based bluetooth enabled telemedicine solution, as even 32 kilobits/s bandwidth is not available in all of rural India; and changing the business model to include software-as-a-service.

User and environment

User: Physician, nurse, midwife, technician, community health worker, self-use/patient

Training: On-site individual/group training, video-conferencing/desktop sharing application based e-training that takes 2 to 4 hours

Settings: Rural, urban, primary (health post, health center), secondary (general hospital, at home)

Solution specifications

**Solution is used to support:** Decision support systems, Diagnosis and treatment, Electronic Health Record/ Electronic Medical Record, eLearning/mLearning, Health research, mHealth, Patient monitoring, Telemedicine

**Software/Hardware requirements:** Medical device connected to USB port of PC/Laptop. Windows operating system on the PC/Laptop, an internet connection for telemedicine. Minimum 32 kilobits/s internet speed for real-time audio / video / data tele-consultation. Fixed static IPs at both ends for professional edition, and at server in enterprise edition.

The specific software that comes as part of the solution, is proprietary. It has been optimized for usage in low-resource and low-skillset environment (e.g. video conferencing and real-time data transfer can work at a bandwidth as low as 32 Kbps). The license fee depends on number of clients and scale of the network.

**Standards:** HL7, ICD10

**Currently used in:** Primarily in India, few countries in Africa, Central & South America and Southeast Asia


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