

Mobile health monitoring partnership

The use of mobile technology is increasingly growing in developing countries like India and there have been several new researches and developments in this space. Nowadays mobiles are becoming an important ICT tool not only in urban regions but also in remote and rural areas. The rapid advancement in the technologies, ease of use and the falling costs of devices, make the mobile an appropriate and adaptable tool to bridge the digital divide. Primary Health Care Services using Mobile Devices have ensured improved access to primary healthcare and its gate-keeping function leads to less hospitalisation, and less chance of patients being subjected to inappropriate health interventions.



Amongst the many ICT options available to government to improve the efficiency & effectiveness of its delivery process of primary health care, mobile & wireless technologies offer some exciting opportunities for a low cost, high reach service. There is strong evidence that mobile technologies is instrumental in addressing slow response rates of government to citizen requests, poor access to services, particularly for low-income and marginalised populations in underserved rural areas.

Indian Institute of Technology Delhi (IITD), All India Institute of Medical Sciences (AIIMS) and Aligarh Muslim University (AMU) in collaboration with Loughborough University and Kingston College are working on developing a device to use mobile communication to exchange patient data to doctors directly.

The research, funded by UKIERI, is working towards developing a technology that allows the transmission of data representing vital signs such as the electrocardiogram (ECG), blood pressure and blood glucose level, so that the patient need not travel to a hospital for a check-up.

The research team is hoping to miniaturise the system, designing 'smart' sensors and mini-processors that are small enough to be carried by patients and able to acquire biomedical data from them. The network of sensors is to be linked via a modem to mobile networks and the internet, and to a hospital computer. The device will then be used by doctors to remotely monitor patients suffering from chronic diseases, such



as heart disease and diabetes, which affect millions of people across the world.

The project has very effectively achieved the objectives set for first two years. All experiments required to make the base of product developments have been carried out very successfully. The project is also getting great support from AIIMS in conducting experiments to check the efficiency of the system. A complete wireless Body Area Network has already been developed to acquire body parameters. This is the first milestone that has been achieved under the collaboration.

There have been many exchange visits under the project from both sides to carry work under the collaboration. These visits have played a very important role in developing the base for research work required for the outcomes. Exchange of ideas and expertise from both the ends has fostered India UK relationships. Senior members and students from both institutes have got an exposure to the culture of



of other country. The visits have also encouraged the sharing of resources available in terms of knowledge and expertise. It is very commendable to see how this project has got five groups together to work on a common objective. With boundaries broken between the groups it has become like one major group with complementing expertise. In the words of Prof Atul Vyas, Lead Investigator from IITD, *"The project has given a chance to interact and learn*

from each other's way of working".

The project has been successful because of effective use of complementary skills of all involved institutes. The skills are highly complementary with IIT, Delhi which has the expertise in electronic design, AMU in signal analysis, Loughborough in networking and Kingston in Medical methodologies. Combined with the clinical skills of AIIMS the mix of expertise has been highly suitable for the execution of the project. The techniques developed under the project are of global importance as they are applicable in all conditions. The successful outcome of the project will lead to more efficient use of clinician's time allowing more time on diagnosis rather than travel. This will broaden the reach of growing Indian population to expert medical practitioners and in turn enable them to get easy and quality diagnosis.



Looking at the area of work and its global implications, the team is planning to bid for other research grants to carry forward the activities. The team is therefore exploiting the global mobile communications networks because they can link anywhere to everywhere. In the UK, the project will allow a more patient-driven health service, as promoted by the Government to improve the efficiency of health care delivery. In

India, the project will link clinics and regional hospitals in remote areas to centres of excellence. As in the UK, the Indian Government is encouraging the integration of new and existing networks, much needed because of a large population spread over a vast area. Clinical trials of the system will take place in the UK and India over the next three years.