P-15: Wireless-enabled telemedicine system for remote monitoring

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Introduction
Telemedicine services are increasingly utilized by patients, clinicians, and institutions. In this paper we describe the design and implementation of wireless-enabled telemedicine system using Bluetooth. Our proposed system will provide doctors with the ability to monitor, diagnose and help their patients in case of emergencies remotely over the Internet. The system is capable of receiving a serial stream of data and extracting relevant packets from the measurements of the patient's vital signs. The implemented software allows patients to easily access their doctors and to send their data via Internet. The system is fairly low-cost, fully functional and user friendly.

Material and Methods
Our wireless enabled system offers a two way communication between the patient and the doctor. In this system, we made a package of two systems, one for the patient and the other for the doctor. The patient's system provides him with two options. The first option is to transmit his vital signs wirelessly via Bluetooth to the computer where the data is sent through the internet to the health organization database where it can be saved. The doctor can later access this data from his computer. The second option employs the use of a PDA instead of the computers to send the data. So we used mobile phone technology, namely, short message service (SMS) instead of the internet to send the patient's information to the doctor.

Results
We believe that it is very important to start such a technology in Romania. Of course the system needs further work to improve its functionality and to be able to manufacture and market it. We could make further improvements by adding the capability of sending and displaying images as well as videos through this system. This will necessitate making the system integrable with HIS, PACS and RIS. Being extremely cost effective, gives the system very good edge when compared to the products available in the market.

Discussion
In this paper we presented the prototype of a system that allows any patient especially an elderly to be monitored by his far away doctor. The system also allows the doctor to monitor, diagnose and help their patients in case of emergencies remotely over the Internet. A patient could measure his vital signs through a module connected wirelessly via Bluetooth to his computer. The patient could then send his data through the internet to be saved on a database in the healthcare organization. At any time the doctor could log in and access the data of his patient. He could chat with the patient or consult with another doctor. The implemented software allows patients to easily access their doctors and to send their data via the Internet. The system also allows the patient to send his doctor his data through an SMS if the patient does not have a computer around so he could use any PDA for this purpose.

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