Using a Pocket PC to Implement Telemedicine for Homecare

Lou Ruffino

Mitretek Systems, Inc.

Abstract

The capabilities of modern Pocket PC products include wireless communications for personal, local, and remote transmission of vital signs and other significant data. There are many ongoing projects that describe the usefulness of detecting arrhythmias, apnea, and the physical events associated with a fall. The Royal Australian College of General Practioners as well as the TARDIS (Telemedical Application for Remote Distributed Interactive Systems) Project have identified the need for re-creating the clinical environment of an Intensive Care Unit for a clinician at some other location. Using the Pocket PC as a Web server enables the use of the Internet to affect a personal Telemedicine link to the clinician.

Using a Pocket PC as a wearable computer, and providing suitable plug-in modules for data acquisition and wireless communication, it is possible to sense a wide variety of vital signs, and immediately detect abnormal conditions, while simultaneously recording data leading up to the onset of the medical event. While the acquisition of low-level physiological signals in a noisy ambient environment is still problematical, the monitoring of an accelerometer, for example, may be very important in detecting a fall by a patient.

Similarly, the use of a Pocket PC operating as a Web server and camera can provide a means of viewing a patient, while simultaneously retrieving the history of vital signs accumulated in the course of patient monitoring. This application can serve to provide Telehealth care to the elderly as well as the infant in need of intensive care. In any case the Internet is used to convey the available data to a clinician for prompt and expert action.

The configuration of the sensor suite and the distribution of the information so acquired will be discussed, to describe the feasibility of using the Pocket PC to link to a Home Wireless LAN for purposes of Internet Access, or to access the Internet with a direct Wireless link.