CareGroup Healthcare Systems/ Harvard Medical School

The medical industry, with its mountains of data and complex regulatory and insurance requirements, is in need of automated solutions to help physicians. Doctors at CareGroup Healthcare Systems and Harvard Medical School are demonstrating how Windows Powered Pocket PCs provide a compelling solution.

Solution Summary

Industry
Health Care

Company Profile
CareGroup Healthcare Systems provides health care to residents of eastern Massachusetts through six hospitals, clinics, and other health care outlets.

Situation
Physicians at CareGroup grapple daily with an overwhelming amount of information. With a push from CareGroup's IT systems staff, the organization sought a way to automate much of the information flow that doctors encounter in their busy schedules.

Business Solution
CareGroup turned to software development company MDPad to create a "physicians assistant" using state-of-the-art mobile technology. MDPad deployed its application on the Pocket PC software platform, using the Microsoft Windows development environment.

Benefits

- Easy-to-use yet highly powerful substitute for traditional pen-and-paper processes, reducing re-entry of notes and eliminating prescription errors.
- Excellent system resources of Pocket PC software platform — including better memory, processing power, and user interface—enable powerful data access.
- Integration with back-end systems helps health care organizations expedite daily physician input with medical databases.

Medical Information Overload

Although U.S. doctors have the latest in medical and information technology at their disposal, the sheer volume of information stemming from advancements in medicine and pharmaceuticals is enough to overwhelm even the best-trained, most capable physicians. In the United States alone, it's estimated that medication errors account for more than 7,000 deaths annually, while drug reactions have an adverse affect on another 1.3 million Americans. In addition to medical information, health care professionals need to deal with insurance and government regulation information on a daily basis.

The physicians at CareGroup Healthcare Systems are acutely aware of the problem. Based in eastern Massachusetts, CareGroup is a large health care organization operating in six hospitals, as well as clinics and other facilities. CareGroup is partially staffed by faculty of the Harvard Medical School, and takes advantage of the prestige and expertise associated with this institution.

To address the issues surrounding medical information overload, CareGroup worked with independent software vendor MDPad on a solution. The result was a powerful, yet highly portable, workflow automation tool deployed on the Microsoft® Windows® Powered Pocket PC platform that doctors can use for several tasks: from writing prescriptions to ordering lab tests to printing bills for a surgical procedure.

"Getting more information into the hands of doctors at the point of care and using state-of-the-art technology to do this is a great goal, and this Pocket PC solution is paving the way to make it happen," says Dr. John Halamka, chief information officer for CareGroup and associate dean for information technology at Harvard Medical School.

Taking Health Care Out of "The Age of Pen and Paper"

The information management issues that vexed Halamka and his colleagues are not new to the health care field. Pankaj Merchia, who is both a physician and CEO of MDPad, has studied how to better organize information in health care organizations.

"Numerous studies of the problem have revealed two broad categories of physician errors," says Merchia, whose company is based in East Brunswick, N.J. "First, there are errors of commission, such as when doctors overdose a drug or prescribe a drug that has an adverse interaction with another drug that a patient is taking.

"The second is errors of omission, such as when doctors fail to order life-saving drugs. For example, even today less than half of patients with coronary artery disease are prescribed as simple a medication as aspirin, let alone more sophisticated drugs. In this day and age of computers and the Internet, we felt it was a tragedy that health care is stuck in the age of pen and paper. We wanted to do something about it."

Working closely with Halamka and other CareGroup physicians, the MDPad management sought a solution that could take advantage of the growing sophistication of mobile computing devices and the promise of wireless technology. But of the various platforms available to his company, Merchia says only Pocket PC really met the requirements and parameters necessary to deliver a compelling product to the medical community.

"Everyone who has tried to develop effective medical applications for Palm devices has faced failure because of all

"We wanted to develop an application that can handle data on thousands of patients, drugs, lab orders, charges, and medical records, and Pocket PC was really the only portable device platform that could deliver what we needed."

Pankaj Merchia, M.D.
Chief Executive Officer
MDPad

Microsoft Software Used

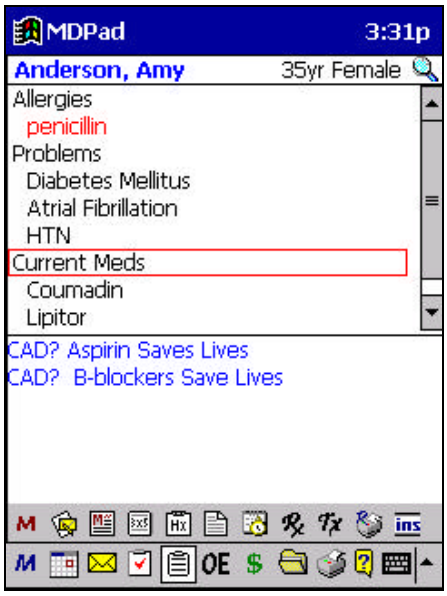
Microsoft® Windows® CE 3.0
Microsoft eMbedded Visual Tools® 3.0
Microsoft SQL Server™ 7.0

About Microsoft
Visit the Microsoft Pocket PC enterprise page on the Worldwide Web, at http://www.microsoft.com/mobile/enterprise/default.asp

About MDPad
Web site: http://www.mdpad.com
Voice: (877) 91-MDPad

About CareGroup Healthcare Systems

Web site: http://www.caregroup.org/



Doctors can access and organize patient information quickly and easily.

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its limitations, including memory resources, processing power, and the user interface," he says. "We wanted to develop an application that can handle data on thousands of patients, drugs, and lab orders, and Pocket PC was really the only portable device platform that could deliver what we needed."

Designing a Powerful Product for Users Plus Back-end Integration

Part of the Pocket PC's attraction was the array of hardware that could host the MDPad application. For the pilot trial, MDPad was deployed on Cassiopeia, Compaq, and Hewlett-Packard Pocket PC devices.

Using the Microsoft eMbedded Toolkit for Visual C++®, MDPad created an easy-to-use application with drop-down menus, check boxes, and other familiar Windows-based user functions. Doctors can easily access patient histories, obtain lists of medications for particular conditions, assign charge codes, and more. Unlike devices that are dedicated to specific tasks, physicians can also use the Pocket PC for common business functions such as maintaining schedules and contact lists.

After physicians enter data into their handhelds that are running MDPad *for Pocket PC*, they transfer the information via cradles to MDPad Servers or desktop computers running MDPad *for Windows*. Another benefit of programming within the Windows environment is that the code developed for the MDPad application could be reused; It was easily ported to desktop computers running Windows and Windows Terminal Server.

During the synchronization process, data goes in both directions: from the Pocket PCs to the desktop computers or servers, which in turn download new information to the doctors' Pocket PCs—including alerts such as product recalls, new medications on the market, and news that is relevant to a particular specialty. Doctors also have instant access to peer-reviewed diagnostic and therapeutic guidelines for thousands of medical conditions and important drug-interactions without having to access cumbersome volumes.
MDPad also provides a service by hosting Pocket PC-generated data on Microsoft SQL Server™ and by transmitting this data back to the devices of other physicians and nurses within a practice or other authorized practices.

Pocket PC Creating New Avenues for Practicing Medicine

Dr. Eugene Vaninov, a Harvard faculty member and CareGroup physician specializing in cardiology and geriatrics, was one of the earliest adopters of the Pocket PC-based solution. He says that when he started using the device in the early summer of 2000, it transformed his daily work routine.

"I use it every day for every patient that I see, and it saves me a tremendous amount of time," Vaninov says. "The bulk of my patients are elderly and need a lot of medications. This device saves time because each patient's demographics are already there, and I can simply pop up a screen that helps me go through the meds they are using and the ones I might prescribe. Then I write a prescription, and an infrared signal sends it to a printer in the office.

"It's saving me up to two minutes on each patient. I also take it home with me and have instant access to my patients' records in case they have to be seen by another doctor. I was reluctant to use it in the beginning because it was one more thing to learn, but it was so easy to start using and now it's saving me time. I don't know how I got along before without it."

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