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[Return to Home Page](#)

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TRENDS

Pervasive Computing and Pocket Databases By Craig S. Mullins

Scott works as a DBA at a large financial services company. He does not get many vacation days and he was disappointed that he was in the hospital for minor surgery on his precious day off. The day had just begun and the lab technician was taking his height, weight, temperature, and blood pressure. But after each measurement she took out what looked like a Palm PDA and started fiddling around with it. Scott loves gadgets and his curiosity got the better of him, causing him to ask: "What are you doing with that?"

“I’m entering your readings into this gadget, here,” replied the technician. “We’ve had to do this for the past few weeks or so. It’s all about some new procedure for storing patient’s vital statistics.”

“But isn’t it only useful for you?” Scott asked. “I mean, if you’re just entering it into your gadget, then no one else can use the data, can they?”

“No, it doesn’t work like that. When I’m through entering the information – like blood pressure, temperature, height, and weight – I can send it to the doctor’s gadget, too. All I have to do is just point it at the doctor’s gadget and select this option to “beam” the data to the doctor. I carry this thing with me all day, recording patient information. But before I go home for the day I have to put this gadget in a little gizmo and press a button. The next day doctors, nurses, and I can pull your information up on our central computer system.”

“Sounds cool to me,” Scott said, translating the word gadget to PDA and gizmo to docking station in his mind. “Do you have any idea how it works?”

“Nope. But it makes life easier for me. I don’t have to worry about using that infernal PC system we used to use. It was always messing something up and we’d have to write everything down first, and then enter it into the computer. That wasn’t smart. And now we don’t have to worry about reading the doctor’s poor handwriting or losing file folders any more. I love it.”

Scott was intrigued. “Does everyone use them?”

“Yup, we all use them now. Even the nursing staff uses them when they make home visits to the elderly and disabled. And we have outfitted the emergency crew in our ambulances with the devices too.”

“Here is a practical application where an electronic gadget is making life easier,” thought Scott. “I’ll have to remember to tell this to my wife when she complains about that Palm Pilot I just bought.”

Help! They're Shrinking!

Most of us in the database management profession spend our days dealing with rapidly growing enterprise databases. These databases are used to support OLTP systems and e-business applications. As the usage of these systems grows, inevitably the data in those databases grows. But the example above outlines another growing trend – smaller, individual databases stored on PDA devices like Palm Pilots and PocketPCs.

We will probably never completely abandon the ever-growing, ever-more- complicated large enterprise databases upon which most of our businesses are based. But we will increasingly be supporting smaller, mobile pieces of those databases. Our culture and demand for immediacy will necessitate this trend. As our reliance on data and technology increases, our need for disconnected (or intermittently connected) devices will increase. Users of the technology simply will not tolerate having to be plugged in all the time.

Some call this pervasive computing. The overriding feature of this type of system is its portability. The devices can be carried wherever the user has a need to use it. And most of these applications will require persistent storage of data. In other words, they will need a DBMS.

Pocket Database Management Systems

Most of the major DBMS vendors supply versions of their products that run on the popular PDA devices of today: the Palm Pilot and the Microsoft Pocket PC. IBM's DB2 Everyplace, Oracle8i Lite, and Sybase Adaptive Server Anywhere are prime examples.

So, we may be stoking the fires to keep our large enterprise databases operating efficiently and providing service to our data warehouses, OLTP systems and e-business applications. But we are also going to be slicing those databases up into smaller, subject-oriented, personal pieces for deployment on pervasive computing

devices. And we will need to manage the flow of data into and out of these applications.

The biggest impact will be caused by trying to manage data synchronization from numerous individual PDAs to the centralized database. When should synchronization be scheduled? How will it impact applications that use large production databases that are involved in the synchronization? How can you ensure that a mobile user will synchronize his data reliably and on schedule? If remote changes are not synchronized how do you deal with centralized databases that do not contain up-to-date data? These are the questions to be faced by DBAs encountering pervasive computing applications.

And you thought you had your data flows all under control, didn't you?

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[Home](#).