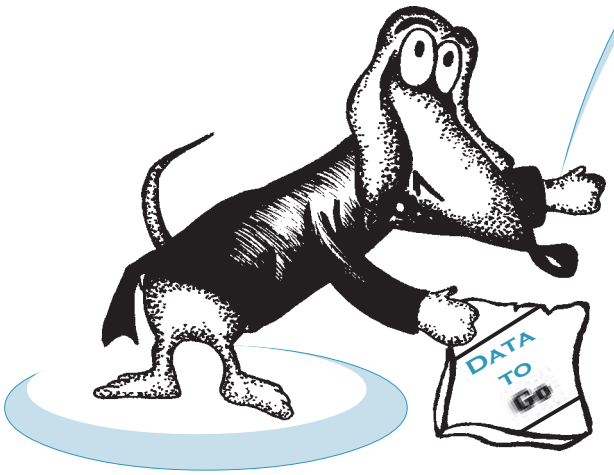
EM IT Insight

by Jill Barson Gilbert

Data to Go

HANDHELDS IN THE ENTERPRISE



In today's disconnected world, many organizations are seeking centralized management solutions to streamline business processes. The use of the handheld device as one element of a centralized management solution is on the rise, as personal digital assistants (PDAs) have matured from personal organizers to indispensable enterprise tools. This trend is mobilizing a new breed of worker with an array of mobile hardware solutions at his or her fingertips, from PDAs and phones, to miniature PCs, mobile terminals and electronic tablets, to rugged custom devices. Some solutions are wireless, and some must be connected to transfer data.

These devices not only assist in managing appointments and contacts, but also provide a tool for replacing paper-based business processes with forms-based applications. The increased efficiency and accuracy of capturing data into a computing device can result in increased employee productivity, faster business reporting for decision-making, and reduced operational costs (e.g., avoiding the need for data entry personnel).

Once you decide which systems to integrate with your environmental, health, and safety (EH&S) management information system, you may find that mobility is possible. Enterprise applications cover a broad range of software used to manage the internal and external operations of a business. Those most likely to be used to integrate EH&S systems with enterprise applications are known as "back-office" applications, which are used to provide industry- or domain-specific functionality. The back-office applications may be off-the-shelf or custom-developed. Mobility in a back-office application is required for enhanced data collection on the factory floor versus a front-office sales application, in which users need mobility when traveling from client site to client site.

In my April column (see "Data at Your Fingertips," *EM* April 2001, p 12), I addressed the use of PDAs (or handhelds) for capturing EH&S data, and in my August column (see "Sharing Data with Your EH&S Management Information System," *EM* August 2001, p 12), I dealt with integrating data from various facets of operations. In this column, I would like to discuss the importance of selecting the optimum mobile solution for your company's business processes—one that allows you to integrate data safely and efficiently.

SELECTING A DEVELOPMENT PLATFORM

The value of a mobile solution to the enterprise is based on the mobility and ease-of-use of the handheld device, the platform, and the unique ability of the solution to extend the functionality of mission-critical applications. Device ease-of-use, physical size and ergonomics, and the functionality of the application when used with a handheld device are the key criteria to consider when evaluating a mobile solution.

Today, the lion's share of handheld applications, whether off-the-shelf or custom, is developed in two platforms: Palm OS (operating system) and Windows Pocket PC (aka Windows CE). A third platform, Linux, is on the horizon, though it has yet to pick up steam. Some organizations have standards that specify a specific operating system for handheld applications, which leaves decision-makers with no choice. If your organization

does not have a preference for one operating system over another, how do you decide which one is best for you?

The ease-of-use and "feel" of the handheld device often dictates which platform an organization selects. After all, using a handheld is a personal interaction, and look and feel are important. User acceptance of the application is key to its success. Applications written using the two primary development platforms look, feel, and simply *are* different. The two PDA platforms were originally designed to compete in different markets, and industry experts believe that both operating systems cater to their target audiences. Today, these market lines are blurring and some of the features and functionality are meeting in the middle. Table 1 compares the two platforms.

Table 1. Pocket PC vs. Palm.

Characteristic	Pocket PC	Palm
Interface	Designed for color	Designed primarily for black and white; some color applications
Display	Larger area when not used for handwriting (character recognition)	Dedicated handwriting (character recognition) area limits size of display
Multimedia	Built-in capability for voice recording, multimedia files	Multimedia capability available through expansion modules
Speed for Daily Tasks	Slower and more complex	Faster
Memory	Requires more (up to 32 Mb)	Requires less (2-8 Mb)
Multitasking Operating System	Yes — allows data entry while other operations are performed in the background	No
Flexible Connectivity	Yes — more options	Yes — fewer, but still varied, options

Source: Byte.com (7/27/2000) and Microsoft Corporation, *Why Pocket PC?*, March 2001.

For the Pocket PC platform, developers can leverage their existing knowledge of common development languages such as Visual Basic and Visual C++ using the Microsoft development tool, eMbedded Visual Tools v.3. For the Palm platform, the primary language used is C, and there are a number of development tools available, including Code Warrior, AppForge, and Satellite Forms. A myriad of resources is available on the Internet to help developers who work with both Palm and Pocket PC platforms.

Here are some important design tips to consider when selecting a platform for your organization's handheld solution.

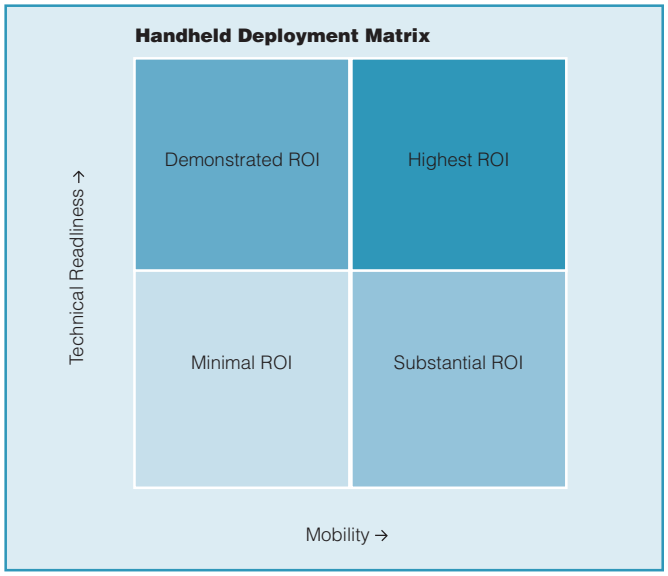


Figure 1. Organizations typically fall into one of four quadrants, depending on their level of technical readiness and required level of mobility.

The handheld application should

- be designed for the most value-added components of data collection and data management;
- contain user-friendly checklists and pull-down menus;
- use photos or simple graphics to enhance usability;
- minimize the need for the user to enter data in character-recognition mode;
- be easy to synchronize with desktop applications; and
- be intuitive and easy to learn.

On the other hand, it is also important that the application not try to replicate a complex application on the handheld device or replicate a complex form on a single handheld screen.

READY, SET, GO!

So you've decided that your organization is ready to integrate a handheld application with your EH&S software, and maybe some of your other enterprise business applications—ready or not? Manufacturers of both Windows and Palm OS devices provide guidance in assessing your organization's readiness to mobilize. The matrix illustrated in Figure 1 is taken from the *Palm Handheld Business Justification Quiz for IT Professionals* and shows how organizations fall into one of four quadrants, depending on their level of technical readiness and the required level of mobility. Organizations in the upper right quadrant are expected to achieve the highest return on investment (ROI). These companies are likely to have the back-end infrastructure to support a mobilized workforce and have much to gain from mobility. In sharp contrast, organizations that fall in the lower left quadrant, with low technical readiness and low mobility requirements, will get a minimal return on mobilization. Organizations in the other two quadrants can achieve demonstrated or substantial returns, respectively. Companies in these quadrants will need to invest in the back-end infrastructure to have successful mobile applications.

Information Technology (IT) managers realize that managing handheld devices is different from managing desktop software. How can the IT manager effectively manage disconnected equipment? How does he or she track the devices, and how does he or she deploy software upgrades to keep everyone on the same version? What about support for people on the go? What's the best way to configure the handheld? IT managers must have the tools to meet several challenges.

- **Device and software management** — IT managers need to track the location and condition of mobile devices, and devise procedures to support them remotely. They also need to provide software updates to a remote workforce. Commercial applications are available to "push" installations and content down to mobile devices when they are synchronized. For custom applications, the developers may write a custom data conduit. And don't forget about data backup and recovery!
- **Security** — IT managers need to determine the sensitivity of the information being used, and how it should best be protected. Three important considerations are access to the data stored on the device, how to secure data stored on the device, and how to ensure the integrity of the data that is transferred to and from the device. Virus prevention also falls into this category.
- **Synchronization** — To determine which synchronization process best fits the needs of the organization, IT managers need to consider what information is needed and gathered in each task, and how it will integrate into the organization's existing systems.

Centralized data management is possible in our disconnected world. Handheld devices can prove useful in an environmental management information system, provided that decision-makers are fastidious when selecting the device and take into consideration the platform employed on the device and the maintenance required to keep users mobile. Decision-makers must ask themselves whether the design of the application enables increased productivity, and whether they have the resources to effectively maintain the solution. If the answer is yes, you are ready, and your data are set to go!

About the Author

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