The mobile computing paradigm is poised to revolutionize business. Today’s handheld computers bring data from the point of origin through the corporate network to the point of use. One mobile computing platform, the Palm Computing platform, is the undisputed leader. Developed by Palm, Inc., the Palm Computing platform powers over 6 million handheld computers from several hardware manufacturers. Used by professionals in all industries, the Palm Computing platform provides mobile workers with instant access to corporate data.

In this chapter, I’ll show you what makes the Palm Computing platform different from what has come before, and why it deserves a place in your enterprise. I’ll start by explaining why mobile computers are relevant to your business, whether you’re working in a Fortune 500 company or your garage. After reviewing the Palm Computing platform’s capabilities, I’ll recap the history of handheld computing in the enterprise, and then look at the Palm Computing platform in detail. Finally, I’ll close with a discussion of the three most important things the Palm Computing platform can bring to your business.

The Case for Palm Computing

Traditionally, portable computing—even “mobile computing”—has really meant using a laptop computer someplace other than in your office. Many professionals now use a laptop computer regularly in locations outside their
office, such as in a lab, at a client’s office, or in the field. For most users, this is an awkward proposition at best. Laptops are bulky, expensive, power-hungry beasts that impose the desktop mindset (posture, keyboard, mouse, screen, and applications) on a mobile user.

The vision of the Personal Digital Assistant (PDA) is what mobile computing is truly about. With a PDA, your information is in the palm of your hand. This appliance is small, easy to operate, and relatively inexpensive (in comparison to laptop or desktop computers).

The current trend in computing economics—Moore’s Law—is that a computer’s processing power is becoming smaller and cheaper over time. Named after Gordon Moore, this law isn’t a law in the traditional sense, but an observation that has held true for over forty years in the electronics industry: computing capacities per unit dollar double every eighteen months.

Moore’s Law

In 1965, the chairman of Intel, Gordon Moore, observed that the electronics industry was, and had been for some time, halving the required size of components every eighteen months. At the time, this was a largely historical statement; Moore later related that he had no idea that the trend would continue unabated for the next twenty years. In fact, many now claim that this trend can continue for at least another twenty with no fundamental changes in technology.

Moore’s Law has ramifications throughout information technology, because it documents a clear trend: Computers are becoming smaller, cheaper, and more powerful all the time. Today’s handheld computer is as powerful as a laptop from just a few years ago, and as powerful as a desktop computer only a scant few years before that.

This trend has driven a high adoption rate for end-user computing in the enterprise. The ongoing revolution in electronics makes the vision of the PDA reality. As you read this, this trend is continuing, bringing computing power from the enterprise desktop to the enterprise worker in the field.

The Palm Computing Platform

The Palm Computing device is a humble thing. It is simple. In today’s world of “gigathings” (multi-gigabyte drives, near-gigahertz clock speeds, and hundreds of megabytes of memory) it appears downright primitive. Small, with one of the slowest CPUs on the handheld computing market and a meager
handful of megabytes of memory, this puny device has won the hearts and minds of millions of users. Just how can that be?

**Palm Devices Are Simple**

Central to the philosophy of Palm Computing is *simplicity*. Users find Palm devices easy to operate and understand. These applications are designed from the ground up to be useful for mobile users, making access to information quick and convenient.

How the Palm Computing platform helps you keep your schedule provides an excellent example. Figure 1.1 shows a screen from a Palm Computing device viewing a daily calendar. Both screens resemble familiar tools like a day planner, but Palm Computing doesn't embellish these with confusing nonsense or frills that interfere with what you're trying to accomplish.

This simplicity is pervasive throughout the Palm Computing applications from both Palm, Inc. and the third-party manufacturers and developers that have made the platform a success.

The device is not only simple, but makes managing information simple. Whether on the go or at your computer, accessing or editing information is easy. The Palm Computing platform brought true data synchronization to the handheld market (more about that in the section “History,” later in the chapter). A person's contact information on your desktop computer is on your handheld; it's as simple as that. When information changes, all you need to do is drop your device in a cradle and push a button.

Synchronization on the Palm Computing platform is unprecedented in its simplicity. As a process, you simply drop your Palm in its cradle, which is connected to your desktop PC, and push the button on the cradle. Behind the

![Figure 1.1  A Palm Computing schedule.](image)
scenes, your Palm device and desktop computer synchronize data in all its databases, making sure both the Palm device and computer have identical copies of all information. Throughout this book, I’ll refer to this process as synchronization, although, as you’ll see, you can also synchronize via modem, Ethernet, and even wirelessly.

This simplicity translates to ease-of-use in the enterprise. Unlike many handheld devices, training costs are lower, because new users learn how to use the device and its applications quickly. The applications are easy to use, the interface intuitive, and operations simple. In fact, while all devices and applications come with manuals, few are read, because users can quickly intuit how things work. This ease of use and ease of access fosters a positive relationship between the device and users, making new users eager to use the device and easing adoption in many environments.

**Palm Devices Are Portable**

For a portable computer to be truly useful, it must be convenient to carry and use while mobile. While this may seem obvious, almost every mobile computing manufacturer has forgotten this at one point or another. You need only heft a full laptop case or attempt to use your laptop standing up to realize this.

By comparison, Palm Computing devices are generally the size of a deck of playing cards. Small enough to fit in a purse or shirt pocket, you can carry them almost anywhere. Comfortable to hold in one hand and operate with the other, the interface is crafted for use with a stylus and buttons, making it easy for you to use the computer while on the phone, walking, or otherwise occupied.

Unlike traditional mobile computers—laptops, clamshell devices, or slates—Palm Computing devices are so portable their users often wear them. While for some, this conjures up images of MIT students wearing elaborate head-up displays and handheld keyboards, the fact is that most Palm Computing users carry their devices everywhere, in purses, pockets, belts, or briefcases.

**Palm Devices Are Useful**

Because the Palm Computing platform is open, anyone can develop software for it. Thousands of companies and individuals have worked to create over five thousand unique applications for the Palm Computing platform, making the device truly useful to virtually everyone.

If you can’t find an application to solve your problems, you can create one. The software development tools—which we’ll discuss in more detail in Chapter 5—are publicly available to create new applications for the platform in high-level languages, enabling your staff or consulting services to quickly craft a reliable application tailored to your needs.
Palm Computing devices are now being used in solutions as diverse as law enforcement and inventory control, patient care and education. Figure 1.2 shows representative screens from just three of the thousands of applications available for the Palm Computing platform. Figure 1.2(a) shows an expense tracking application from Palm, Inc., Figure 1.2(b) shows an inventory sheet in Quicksheet by Cutting Edge Software, Inc., and Figure 1.3(c) shows a screen from a Web-based work-order management system viewed with AvantGo from AvantGo, Inc.

While many users originally purchased the product for its out-of-the-box functionality, using it to organize dates and calendars, these users quickly adapted the device to meet the needs of their working environment. In many cases, the Palm Computing platform has already entered the enterprise through the back door as employees increasingly buy these products for both work and personal use. This is simple testament to the fact that the consumers buying these devices find them useful not just for personal, but for corporate use.

Figure 1.2 Three Palm Computing applications.
Palm Devices Are Powerful

How can such a simple device be powerful by today’s standards? The vast majority of Palm devices in use have black-and-white screens, little memory, and simple processors. The truth is that combined with the elegance of the Palm Computing platform, these resources are well suited to mobile applications.

Palm, Inc. has streamlined the platform to run on lightweight computing devices with only meager power sources (typically, two AAA batteries, often fewer than needed by your TV’s remote control). Palm has carefully tuned the hardware and software to provide optimum performance to the user, typically outperforming more expensive handhelds with significantly more memory and faster processors as well as larger batteries.

Mobile users have a different expectation of a computer than a desktop-bound user. When mobile, you’re seeking answers, not desktop applications. Mobile users demand long battery times, high reliability, rugged operation, and low cost from devices offering simple interfaces. While certain users may require a specific feature (wireless operation, say, or positioning information through the Global Positioning System), few require these kinds of options. Most users are preoccupied with their surroundings—in a meeting, driving, on the phone, walking, or doing virtually anything else—so their demands of their mobile device are relatively modest.

Consequently, the Palm Computing platform’s resources are more than ample for mobile users. Users find that they have a device that does what they need when they need it, and users don’t bear the cost, weight, and other problems of features and options they don’t need.

History

While you don’t have to know the history of the Palm Computing platform to understand how it can help your enterprise, it’s worth a quick look at what came before. While some early adopters of handheld computers profited from their investment, many have lost, and the history clearly shows why the Palm Computing platform is different.

Before the Palm

Before the Palm, mobile computing was poised to create a new paradigm for computer use. As is often the case in the beginning of any change, the anticipated shift was evolutionary, rather than revolutionary.

In the late eighties and early nineties, you could divide the handheld computing market into two camps. In one camp, companies strove to bring tradi-
tional computing platforms, like MS-DOS, to handheld devices. In the other, companies were rushing to bring radically new handheld computing platforms to market to perform essentially similar computing tasks.

Such giants as Hewlett-Packard populated the former camp. They offered devices like the HP95LX, a pocket computer capable of running MS-DOS applications and an embedded version of the Lotus 1-2-3 spreadsheet. Other products from companies like Telxon used embedded architectures for specific vertical applications like inventory control or point-of-sales applications. These computers were largely extensions of the desktop computing metaphor, providing traditional computing resources in ever-smaller packages. These products solved many problems admirably, but did not truly meet the needs of the average enterprise user.

In the other camp, daring companies like Apple and General Magic recognized the need for new interfaces and platforms, but were unable to determine what was truly necessary. While revolutionary, products like the Apple Newton MessagePad brought too much functionality to the user. The plethora of features and options these devices offered overwhelmed a marketplace not yet ready for the opportunities that they provided. Worse yet, the high costs that these features required put these devices out of reach for most users. While on the right track, these vendors bore the cost of taking a shotgun approach to solving their customers’ problems. When they did, the cost to the enterprise was often high enough to thwart adoption.

By the mid- to late nineties, it was clear to the founders of Palm Computing, the company that invented the Palm Computing platform, what they needed to do. The one-step-forward-two-steps-back marketplace of the handheld computer had repeatedly frustrated the founders of Palm Computing, developers of simple software for handheld computers. Selling software like the Graffiti handwriting recognition system for major platforms, they’d seen one platform after another flounder. A founder of Palm Computing and entrepreneur, Jeff Hawkins, felt he knew what to do.

In the stuff of Silicon Valley Legends, you could soon see Jeff toting a little wooden block everywhere. At home, at the office, anywhere, he’d pull it out and make notes on it, pretend to check his calendar, or jot a quick reminder. As he did so, the concept for the Palm Computing platform grew clear in his mind.

The Pilot

Originally called the Pilot, the first Palm Computing device reached the market in the spring of 1996. The device introduced Jeff’s then-radical ideas: small, simple, and cheap. In a dramatic departure from most handheld devices, Palm Computing sold the PalmPilot as a desktop companion, not a full-fledged handheld
computer. Palm Computing expected users to own and use a desktop computer, and synchronize data between the Pilot and desktop.

While other handheld computers could connect and obtain information from the desktop, Palm Computing was the first to presume that the desktop would remain the primary point of origin for new information. This assumption lead to the requirement that data exchange be quick and seamless, requiring no more than the press of a button to ensure that the handheld had the same information that was on the desktop. Called HotSync, this process involves the reconciling of records in databases on the handheld and the computer, in much the same way you balance your checkbook at the end of the month. The desktop computer used a conduit, a library of code invoked during the HotSync procedure, to translate data from its format on the Pilot to a desktop format and back.

These early devices were astonishing for two reasons: they were cheap, and they were simple, even by 1996 standards. Priced under $300, these devices had either 128K or 512K of RAM and a black-and-white display. At the time, their competition was sporting upwards of a megabyte of RAM, grayscale displays, and price tags over $1000. Critics said that the Pilot would never succeed because of its limitations, while fans heralded the low price and simple synchronization.

The fans were right. The following year, Palm released follow-up products, the PalmPilot Personal and PalmPilot Professional. These sported more memory (a whopping half megabyte, capable of storing up to 5,000 addresses, memos, and calendar entries) and a backlit display for easy viewing in low-light settings.

At the time, these were only two of the many handheld computers available. In a confused market, the products stood out as inexpensive and easy-to-use. While consumers were experimenting with the concepts behind a companion device for their computer, a few fledgling developers began writing games, calculators, and other simple programs.

During the development of the Pilot products, Palm Computing successfully weathered their purchase first by US Robotics, Inc. in 1995 and by 3Com, Inc. in 1997 as part of 3Com’s purchase of US Robotics.

**The Palm Computing Platform**

In 1998, 3Com formally unveiled what is now known as the Palm Computing platform with the Palm III product. This product featured new hardware (2 MB of memory in a sleek new case) and new desktop synchronization software for Microsoft Windows, along with a renewed commitment to the Macintosh platform for desktop software following the initial product release.
Although still targeted primarily toward consumers, the Palm III attracted the interest of early adopters within the enterprise. This interest stemmed from two primary factors. First, by this time it was clear that handheld products running both Apple’s Newton Operating System and General Magic’s Magic Cap operating system were floundering. Enterprise buyers were hesitant to buy products with a limited life span, and third-party developers working on behalf of these buyers were eager to find a platform that would remain marketable. Secondly, many early enterprise adopters had already bought the product or one of its predecessors for personal use, and saw the makings of their solution within the product.

By this time, developers had proven the viability of the Palm Computing platform with the release of several hundred applications. In many cases, the new applications extended the platform’s capabilities beyond the anticipation of its founders, giving users the ability to email, manage spreadsheets and text, and browse the Web. Several conduits became available, including conduits to synchronize with other personal information management applications, and later, Microsoft Exchange and Lotus Notes.

**Diversity in Deployment**

The next year saw striking growth in the Palm Computing platform product line. In 1999, 3Com followed the release of the Palm III with the release of the enhanced Palm IIIx and the new Palm V. Half as thick and smaller than the Palm III, the Palm V’s size and industrial design made it an instant hit. In addition, 3Com announced the field pilot and subsequent sale of the revolutionary Palm VII, a wireless Palm Computing device capable of Web access over the nationwide Bell South Wireless Data Network.

Late in 1999, 3Com continued their momentum by announcing several hardware licensees, including TRG, Handspring, and Sony, as well as announcing color support in an upcoming release of the platform. Equally important from a business perspective, 3Com announced the intention to spin the Palm Computing division of 3Com out as a publicly traded company.

At the same time, companies including IBM, Oracle, and Sybase announced software products integrating enterprise databases with the Palm Computing platform, allowing the mobile user unprecedented access to enterprise data from the handheld while mobile.

**The Palm Computing Platform Market Today**

In many ways, today’s Palm Computing platform resembles its predecessors. From a software and hardware perspective, little has changed besides the
case. Under the hood, much of the hardware is the same, except within specific devices such as the wireless Palm VII. Today’s Palm Computing devices typically have between two and eight megabytes of memory, a grayscale or color screen measuring 2 1/2” on a side, run on two AAA batteries, and fit comfortably in a shirt pocket, purse, or belt pouch. With a single serial or USB port as well as an infrared port, these devices are capable of synchronization with desktop computers using a cradle, modem, or wirelessly, via cellular phone or a snap-on wireless adapter.

The market around the Palm Computing platform, however, has changed dramatically. There are now several companies including IBM, Symbol, and Handspring manufacturing Palm Computing platform devices, and more are doubtless in the wings with unannounced products. Over fifty thousand developers have registered their intent to develop software for the Palm Computing platform with Palm, with several thousand applications commercially available. Palm, Inc., now a public company, opened in public trading with a market capitalization of US $18 billion. Previous competitors like Apple Computer, Inc. are now allies, and the only serious competitor to the platform is Microsoft Windows CE, which is barely able to sustain the interest of 10 percent of the global market for handheld devices.

Multiple Platform Vendors

Key to Palm’s success in the enterprise market is the presence of multiple platform vendors. The availability of devices running the Palm Operating System from manufacturers spanning the globe provides three important features for business adopters:

It validates the long-term viability of the platform. Companies such as IBM, Sony, and Symbol recognize the potential of the Palm Computing platform. These companies have made the explicit decision to invest in the platform and create new products with their brand and unique features.

Multiple vendors ensure widespread availability of product. Buyers need not fear a single-source situation in which the units they need during a wide-scale deployment are suddenly scarce or non-existent. If one vendor is unable to provide the necessary hardware, you can substitute another with little impact on the remainder of a deployment, because all devices within the platform can run the same software.

Multiple vendors ensure variation in features. Instead of the one-size-fits-all offering from other handheld platforms with little variation between products, licensees have created vastly different products based on the Palm Computing platform. As you’ll see in the next chapter, “Hardware,” licensees have based products as diverse as a handheld inventory com-
puter with an integrated bar code scanner and a cell phone on the Palm Computing platform. Today’s Palm computing devices can meet almost any enterprise requirements. Moreover, all of these devices share the same underlying operating system, so software developers can easily move applications from one device to another and take advantage of a specific device’s features.

As I write this, Palm has no less than six devices on the market, Handspring two, QUALCOMM one, IBM two, and Symbol two, for a total of twelve devices from the top manufacturers of Palm Computing devices. I’ll talk more about these companies and their products in the next chapter, “Hardware.”

Multiple Software Vendors

A successful enterprise deployment involves not just hardware, but software. In fact, in most cases, the cost of software far surpasses that of hardware procurement. As of this writing, Palm, Inc. has reported over fifty thousand registered developers actively developing software for the Palm platform. While many of these are developing consumer applications such as games, electronic books, and similar applications, other developers include Tivoli, Siebel Systems, and Sun Microsystems, Inc. This second group of developers offers serious enterprise applications for the Palm Computing platform, allowing IT management to supervise the deployment of devices and access corporate data.

Multiple software vendors provide you with similar assurances to those you find when looking at the current Palm Computing hardware vendors. Equally important, however, are the software vendors that meet today’s information technology professionals’ needs.

These software developers understand the Palm Computing platform, the vertical markets they service, and the enterprise behind those markets. They have the experience to deploy custom solutions built from off-the-shelf components, merging systems like Oracle8 Server, Oracle Lite for the Palm Computing platform, and a custom forms application to bring enterprise data from servers to the handheld and back again.

I’ll talk in depth about the kinds of Palm Computing applications that are appropriate for the enterprise in Chapter 3 “Software.”

Multiple Desktop Platforms

Increasingly important in many businesses is a respect for multiple software platforms. While Microsoft arguably owns the desktop in many enterprises, this is not true in all. Moreover, you must pay increasing attention to platforms like Linux that provide high reliability, scalability, and usability at low cost.
Unlike other platforms like Microsoft Windows CE, the Palm Computing platform is desktop platform-agnostic. Users can use these devices with Intel computers running Microsoft Windows, Power PC computers running the Macintosh operating system, and Linux, along with other Unix-based operating systems like Solaris from Sun Microsystems, Inc.

By playing well with others, the Palm Computing platform lets enterprise developers pick and choose the right components for their solution. A design firm can deploy Palm handhelds for their graphics consultants with Apple Macintoshes to ensure better time tracking, while its software arm can use the same Palm handhelds with their Microsoft Windows computers. The desktop platform becomes less of an issue, letting the Palm Computing handheld coexist with different desktops, while still remaining a true desktop companion.

**Competition**

It would not be fair for me to recommend the Palm Computing platform to you unequivocally without at least a passing word on the competing platforms that are available today.

Other computing platforms—notably Microsoft Windows and Symbian—share some of the advantages of the Palm Computing platform in the enterprise. None, however, offers the combination of features, flexibility, and low cost that Palm devices do.

**Microsoft Windows CE**

Microsoft Windows CE is a lightweight operating system running on a number of subnotebook, pocket, and palm computers from manufacturers including Hewlett-Packard, Casio, and Compaq. As a platform, it has been available for almost as long as the Palm Computing platform.

These devices have varied capability and scope. Closest in size and features to the Palm Computing platform are the PocketPC products, looking strikingly similar to the various Palm Computing devices. These units typically provide much of the same software, along with pocket versions of Microsoft applications like Microsoft Word and Microsoft Excel. These devices have color screens, compact flash slots, and serial ports, along with software to synchronize with the desktop, much as Palm Computing platform devices do.

Microsoft has tightly integrated PocketPC devices with the Microsoft Windows operating system and with Microsoft products like Microsoft Outlook, Microsoft Word, and Microsoft Excel. Using these products, you can read mail on a PocketPC, view and edit spreadsheets or text documents, and carry data created on the desktop with you.
Although PocketPC devices appear to have many of the features of Palm Computing platform devices, these appearances can be deceiving. Unlike the Palm Computing platform, Microsoft Windows CE is strongly platform-centric, so most of the PocketPC features only work with Microsoft Windows products. On a PocketPC, the interface is strongly reminiscent of Microsoft Windows, often presenting you with arcane terminology or a cluttered display. These devices typically cost more than Palm Computing devices, and use both processor and memory less efficiently than Palm Computing devices. These problems leave you struggling as you try to use the device, and integrating with your applications is usually a time-consuming and expensive proposition.

Equally problematic are the devices’ manufacturers. Several manufacturers have released devices and subsequently abandoned the Microsoft Windows CE marketplace. Other manufacturers have had substantial distribution and support problems, making long-term adoption and use of PocketPC devices difficult. The devices themselves can cause headaches, because there’s little standardization over details like device size, I/O ports (while all devices have a serial port, for example, virtually no devices share the same serial connector or cradle), and other details.

For some, the close integration between Microsoft Windows and Microsoft Windows CE will be an obvious drawback. Corporate Macintosh and Unix users will have no recourse but to use a Microsoft Windows desktop if they’re using a Microsoft Windows CE device.

For other organizations, tight integration with Microsoft Windows is a siren’s song promising ease of integration and low cost of ownership. You’ll seldom realize this promise, however, as many have reported long synchronization times, random occurrences of data not synchronized, and other unpredictable problems. To be fair to Microsoft, their staff has worked long and hard to improve the quality of synchronization software, but it still lags far behind that of the Palm Computing platform. Furthermore, far fewer software packages synchronize with Windows CE devices than Palm devices, so Windows CE users must copy files manually between handheld and desktop.

The true problems of Microsoft Windows CE stem from a deeper source, however. Microsoft Windows CE attempts to bring the applications and features of desktop computers to a palm-sized form factor. This goal, while it sounds appealing at the outset, is substantially flawed for several reasons. Most users will not use a palm-sized computer in the same way they do their desktop computer. Mobile operation requires new user interface paradigms, as users interact with these devices in fundamentally different ways. Furthermore, offering desktop functionality in a Palm computer makes the overall system more expensive and more difficult to use. As the consumer, you’re stuck paying for features you don’t need and might not even use.
All of these issues—unpredictable hardware vendors, high cost, a lack of standardization for cases and products, and a poor understanding of the mobile user—lead to poor market growth. In turn, Microsoft Windows CE’s low market share has led to few third-party developers, greatly restricting the number of solutions available to you. Of course, this problem is cyclical, because users don’t buy products that won’t solve their problems, and the best software developers don’t write for products that aren’t selling well.

Some analysts have long claimed that Microsoft Windows CE will claim Palm’s market share, usually in conjunction with one of Microsoft’s annual product announcements highlighting a new release of Microsoft Windows CE. Time and time again, these predictions have been wrong. I believe this will continue to be the case as long as Microsoft and its partners continue to present the market with slimmed-down desktop computers.

Microsoft Windows

When you consider Palm devices for your organization, you’ve already recognized their advantages over laptop or portable computers running Microsoft Windows. You may not have considered industrial slate computers running Microsoft Windows, however.

A slate computer is about the size and shape of a paper notebook. It looks like a laptop’s screen with some extra buttons and interface ports along the sides. Inside the slate’s rugged case is an entire laptop computer, including a state-of-the-art Intel-compatible processor, memory, hard drive, and interface ports. These systems are very expandable, having serial, USB, and Ethernet ports in addition to one or two PCMCIA slots for expansion.

Slates run the latest version of Microsoft Windows or other operating systems, along with all the applications a desktop computer can. You’d use a slate just like a laptop computer, except that you input text with an on-screen keyboard or handwriting recognition.

Many companies offer slate computers, from small companies to the largest manufacturers like Fujitsu. These companies may intend the slate computer for mobile users, but that’s where the similarity between a slate and a Palm device ends. The size, weight, and complexity of a slate make it a wholly different device.

On the up side, anyone with desktop development experience can write software for a slate. Because it’s simply a repackaged portable computer, it can run virtually any application, although most users find that applications with interfaces tailored to pen input are the most useful. Adding these devices to your corporate network is no more difficult than adding conventional PCs. The most difficult part is making sure they aren’t misplaced.
These devices don’t have many of the advantages of Palm devices, though. They are bulky, often substantially more expensive than laptops with comparable features, and require frequent recharging. Thus, they may be appropriate for small deployments with very specific requirements, such as in a manufacturing setting, where a small group needs the expandability a slate computer can provide.

**Symbian**

Many companies have deployed Symbian’s EPOC platform in Europe and elsewhere overseas for mobile computers for several years. Running on a number of light-duty and ruggedized mobile computers from several vendors, EPOC enjoys a thriving, if small, market internationally.

Like other operating systems for mobile devices, EPOC has a small memory footprint, runs efficiently on low-power, low-cost processors, and manages power consumption aggressively to ensure long battery life. EPOC devices come with a host of preinstalled applications for personal information management, along with a word processor, spread sheet, email client, and Web browser.

In contrast to Palm Computing devices they have a clamshell form factor, folding open to reveal both the touch screen and a small QWERTY keyboard. These devices more closely resemble laptops than palm computers, and their applications and interface show this. Some devices, notably the Workabout series from Psion, are clearly portable industrial computers for a limited audience.

While Symbian understands the mobile market, devices running EPOC lack important features when compared with Palm Computing devices. The most obvious difference is the user interface, because EPOC devices have a keyboard as well as a touch screen. The EPOC interface, while more streamlined than a typical desktop interface, still isn’t ideal for mobile users. Moreover, the keyboard isn’t practical in a large number of settings, where you may be standing or unable to put the device down easily. Most EPOC applications have vestigial interface elements from the desktop world, making applications more difficult to use.

More important to you, however, is the lack of widely adopted synchronization and database integration. While the EPOC platform has support for both databases and synchronization with desktop computers, most developers have not moved to support these in their products. Consequently, deploying the EPOC platform in your enterprise will require an investment in custom software development.

Another drawback of the Symbian platform is the lack of a knowledgeable user base in the United States. As a British company, Symbian has made
many successful partnerships with European companies, but has met with considerable resistance domestically. While this has changed slowly as companies have licensed the EPOC core for their products, it’s unlikely that there will be a skilled pool of EPOC talent within the United States anytime soon. Without this talent, you’ll have trouble finding the applications and developers your enterprise needs for a successful EPOC solution.

To be certain, Symbian has made great leaps over the last eighteen months as they have worked to license EPOC to manufacturers building phones, personal organizers, and other devices. As this trend continues, they will likely continue to gain market share, although they will remain a distant second to Palm for the foreseeable future.

**Dedicated Devices**

A host of manufacturers including Telxon, Intermec, and Symbol sell handheld computers with a wide range of features and options. These systems have many of the same options that the Palm Computing platform does, including support for wireless data and bar code scanning. These products are often very rugged, capable of withstanding subzero temperatures, scalding heat, and impacts that would shatter most other devices, making them suitable for harsh environments.

These devices are not suited for general deployment, however, for a host of reasons. Chief among these reasons is their price. Because most vendors sell highly customized devices, units are expensive. Many will cost you many times what a Palm device would cost.

The high cost of these devices in comparison to the Palm Computing platform indirectly highlights an important feature of the Palm Computing platform: decreased total cost of ownership. Deploying and maintaining Palm Computing devices will cost you far less than deploying dedicated handheld computers for the same purpose.

A dedicated platform’s software development environments are closed, meaning you have to rely on the hardware manufacturer for access to development tools. In many cases, the only source of software for one of these devices is the hardware vendor, and software solutions are equally expensive. This closed environment leaves you with a single source for hardware and software, so in the future you can’t easily change vendors. This closed architecture often extends to peripherals, making interoperability between one vendor’s devices and another vendor’s devices difficult or impossible.

These factors make a Palm Computing device—especially a product like Symbol’s SPT 1500 or SPT 1700—an obvious alternative. The Symbol devices
offer a compromise of equal parts rugged construction and Palm Computing compatibility at a reasonable cost. Organizations needing rugged data collection with special-purpose devices may find, after weighing today’s options, that a Palm device is the best investment.

The Palm Computing Platform and the Enterprise

If you’re new to handheld computing technology, you may wonder exactly what the Palm Computing platform can bring to your enterprise. While of course the specifics will differ from business to business, handheld devices can play three key roles in your operation: integrating information, reducing redundancy, and data mobility.

Integrating Information

Handheld computers like the Palm computer let users integrate data with the real world. A handheld computer allows users to obtain, interact with, and modify corporate data at the point of origin, whether that be in the boardroom, a laboratory, or in the field.

Historically, much of this information, if a company managed it at all, appeared sporadically on paper, in one or more databases, and on paper again. This trail from paper to computer to paper causes many problems. Information is often lost, seldom available when you need it, and is frequently inaccurate. In general, either you must task additional staff with the entry and maintenance of this data, or there are few assurances that the data is meaningful. Both are costly—the regular outlay you make to ensure the validity of your information or the risk you take gambling on its accuracy. Properly deployed and supported, handheld computers allow you to streamline this process, bringing data management to the data source. This, in turn, reduces both transcription costs and errors.

Some organizations, notably those with large outside plant investments such as telephone operators and equipment rental firms, literally could not operate cost effectively or at all without the integration handheld computing can provide.

The Palm Computing platform extends this integration to a level of business heretofore unaware of its benefits. The low cost, ease of use, and wide adoption of the Palm Computing device offers a lower total cost of ownership in comparison to traditional handheld computers. This makes it an ideal tool for mobile employees like the sales representative or health care worker previously burdened with the information management required by their enterprise.
Reducing Redundancy

This integration has an obvious side effect: It reduces redundancy. Necessary in all manual processes, redundancy reduces the likelihood of errors in manual systems at the expense of each contributor. Because integrating information with its source increases accuracy, less redundant forms of information collection need to take place.

Redundancy disappears elsewhere, too. The single Palm Computing device becomes the mobile user’s primary access point for all corporate data, including aspects peripheral to a participant’s main function, such as human resource information and corporate communication. Just as the Web brought corporate users to a single source for information, handhelds can continue that focus when those same users are mobile.

Reduced redundancy leads to greater accuracy. With less information to sift through (and less conflicting information as well), you’re better able to see the true state of your company’s operation.

Data Mobility

A unique facet of handheld computing is the user’s increasing belief that the handheld becomes the repository of all data. As computers have become increasingly networked and handheld-desktop links increasingly synchronized and transparent, the mainstream users’ comprehension of where data actually lies blurs. Users no longer think about how and where they access information. Instead, their attention rests squarely on the information they seek. As these activities increasingly involve users at a variety of locations, users form the perception that the data moves with them, rather than residing on a particular device, desktop computer, or server. Throughout this book, I refer to this perception as data mobility.

Data mobility has an interesting repercussion for the enterprise. When coupled with positive experiences with the handheld device, users take additional ownership in the information they’re managing. Using a Palm Computing device, which is both friendly and customized by the user, enhances this perception of ownership. This ownership—as does any consensual ownership in the enterprise—helps enhance the employee-employer working relationship, creating a better organization.

Key Points

➢ You can easily learn to use Palm Computing devices and applications.
➢ Your staff can easily use Palm Computing devices in any setting.
There are a variety of Palm Computing devices and applications to meet your needs.

Your users are increasingly introducing Palm Computing devices into your enterprise through their own personal investment and confidence in the platform.

Your organization can likely afford the lower total cost of ownership associated with Palm Computing devices, even if other mobile computers have been out of reach.

Palm, Inc. has the partners, resources, technology, management, and vision to remain a significant player in the handheld arena for the foreseeable future.