Choosing the Right Handheld Computer: Guidelines for Success

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The Rise of Information Management

The rise of the Web and e-mail have dramatically increased the amount of information available to everyone. The pace of decision-making has also at the same time increased tremendously. Managing the information in your life or your business, keeping it under control, and recalling the most important item when you need it, is becoming the key to success in the new millennium.

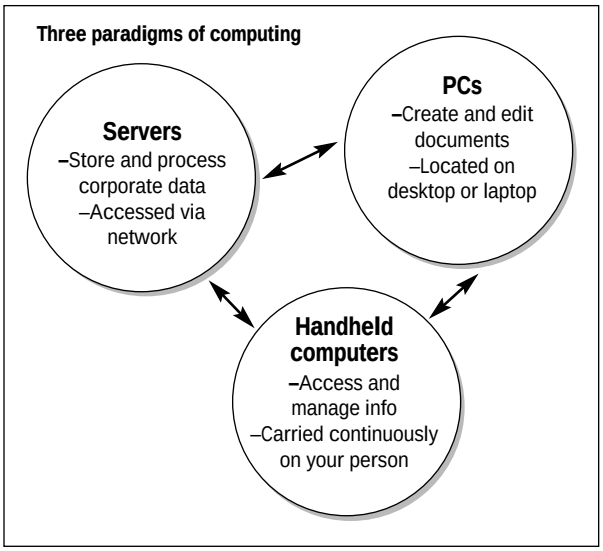
The need to manage information better is leading to the development of new types of computers. Palm, Inc. is leading the way to that new world.

Handheld computing is completely different from traditional forms of computing. Unlike personal computers, handhelds are not focused on creating and editing documents like spreadsheets, presentations, and so on. And unlike servers, handhelds are not focused on storing and processing huge masses of corporate data. Instead, handhelds focus on helping users to easily access and manage the key information they need wherever they are, so as to make better business decisions, and to make their lives easier and more productive.

Palm OS®: The Handheld Computing Leader

Palm, Inc. was the first company to design a handheld computer from the ground up for information management. The result has been a tremendous market success. Palm, Inc.'s worldwide market share is 78%.* Moreover, Palm, Inc.'s software developer base has increased by 500% in 1999 to more than 50,000 with more than 7,000 programs.

*Source: International Data Corporation, December 1999



The Palm OS platform has been embraced enthusiastically by some of the most innovative companies in the world, giving users tremendous innovation and the freedom of choice. Companies selling Palm OS handhelds today include IBM, Handspring, Qualcomm, TRG, Franklin-Covey, and Symbol Technologies. Nokia and Sony are also currently working on new Palm handheld-based products.

How to Select a Handheld Computer

In personal computing, users consider price and performance as the most important purchase criteria. The more powerful the computer, the more productive users become.

With handhelds, price and performance still matter but other functionality is even more important. The most critical features of handhelds are based on simplicity, wearability, and mobility. Palm™ handhelds excel in all three areas.

Simplicity means that handhelds need to be usable intuitively. This goes beyond the ease-of-use issues in personal computing. PC users may have to spend several seconds trying to find a menu command or to figure out how to perform a function, which is acceptable in a usage session that may last for hours. But handheld users trying to jot down phone numbers or find sales information need immediate results.

Those instant results come from several features in Palm handhelds:

—*Responsiveness*. A PC's speed is commonly judged by the megahertz or "clock speed" of its processor. The higher the clock speed, the better the computer. However, this specification can be very deceptive in handhelds. Faster megahertz ratings consume more battery power, so users don't necessarily want handhelds with the highest clock speed. Also, operating systems that are adapted from the PC world typically have a lot of processing overhead because they were originally designed for a different environment. That can cause some handheld systems with high clock speeds to perform very sluggishly. What really matters is the responsiveness of the handheld system -- how quickly it can switch to a new task and display new information.

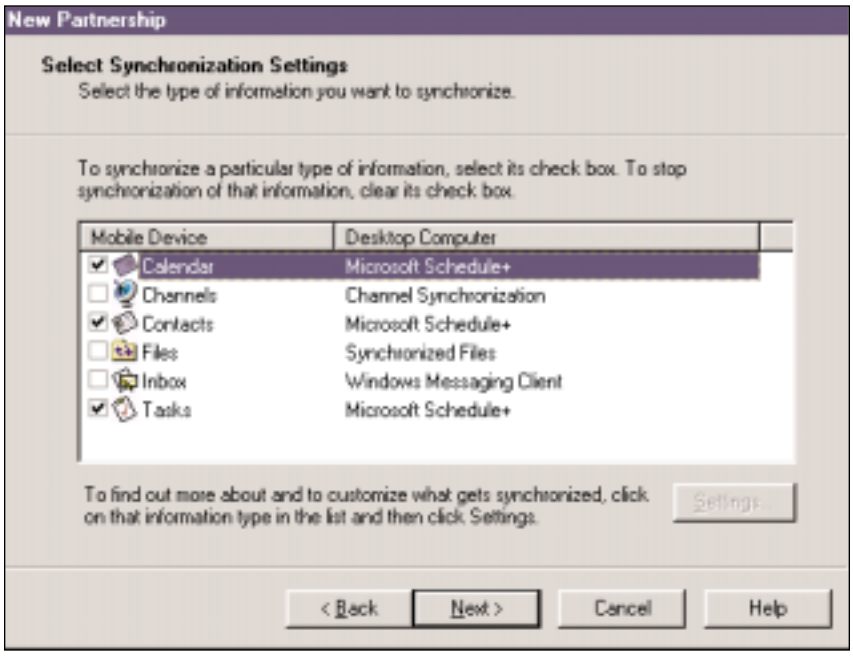
—*Appliance interface*. The desktop user interface of personal computers was designed to imitate a real-world desktop where users would create documents. It's intended for use with a mouse, a keyboard, and a large monitor. This desktop metaphor breaks down when it's forced onto the smaller screen of a handheld. That's why Palm OS® systems use an appliance-style interface in which functions are presented as a series of buttons that users can tap. This interface enables users to quickly get to the exact function that they need.

The Palm™ Launcher (left) uses buttons to display all of the handheld's functions. They're easy to find and easy to tap. In contrast, the Windows CE Start menu force users to navigate through a series of cascading menus to select a function. Note the much greater complexity of the Windows interface when forced into a small space -- 19 menu items and 27 clickable interface elements are visible in this single screen.

—Efficient use of screen space. The smaller screen size of handhelds requires very careful use of space. The Palm OS® user interface hides menus and other interface elements until they're needed, and intelligently compresses displayed information to show what users need most. In contrast, the Windows CE interface always displays the menu bar and other interface elements, and does not have intelligent compression.

Here's the same set of calendar entries, displayed on both Palm OS® and Windows CE handhelds. Because the Palm OS interface hides unneeded interface elements and compresses information (in this example, hiding the unused hours between 3pm and 8pm), an entire day's calendar can be viewed all at once. On the Windows CE display, the whole day cannot be seen at one time, and the individual calendar entries cannot be read in their entirety.

—*Smart synchronization.* Users depend on their handhelds to protect their most important personal and professional information. If their handhelds are lost or broken, users must be able to quickly restore the information. That's why Palm Inc.'s synchronization software is designed to be simple to use, and designed to automatically keep a copy of all the user's data files. Windows CE, in contrast, does not synchronize memo entries. Instead, users have to know how to perform a separate backup of their handheld files, something that does not happen automatically in the standard setup of Microsoft's ActiveSync software. It's unlikely that users who are new to handhelds will understand that synchronizing a Windows CE handheld saves only some of their data. This issue is compounded by the Window CE's limited battery life to potentially put the users' data at risk.



This dialog box shows the standard settings for Windows CE's ActiveSync. The default behavior is to copy onto the PC only calendar entries, contacts, and tasks. All other data is at risk unless users know to either add it to the synchronization list or perform a backup. And some files, such as memo entries, cannot be selected for synchronization at all. They must be protected by a separate backup.

Wearability means that handhelds must be so small and lightweight that they can slip easily into a pocket or a purse. The users have to be able to carry them comfortably on their person all day. This concept goes far beyond the notions of portability in personal computing. A typical laptop PC weighs several pounds, and must be stored in a briefcase or luggage. Even the lightest laptop PC is definitely not wearable.

—*Weight and size*. The Palm™ V handheld weighs about four ounces and occupies about five cubic inches. It's small and light enough to be easily slipped into a pocket or purse and be carried all day. In contrast, a typical Windows CE handheld weighs 8 to 11 ounces, and occupies around 14 cubic inches. It's too large and heavy to be carried comfortably in a pocket.

	Weight (oz.)	*Size (cu.in.)*
Cassiopeia E-100	9	13.5
Compaq Aero 2110	10.9	13.7
HP Journada 420	8.8	14.7
Philips Nino 510	8	13.4
Compaq Aero 1520	5	8
Psion Revo	7	13.6
Palm™ IIIe handheld	6	10.5
Palm™V handheld	4	5.6

—*Battery life*. To be carried continuously and trouble-free, handhelds must be able to go on typical business trips without recharging. Since there are no hard disk drives in handhelds, running out of battery power can mean losing data. The battery life of Palm™ handhelds under normal conditions is typically measured in weeks to months. Battery life of Windows CE handhelds varies tremendously, but is normally shorter than that of Palm handhelds. The shorter battery life can put users at the risk of losing their data.

Hours of continuous use	Hours : Minutes
Palm™ V handheld	27:51
Palm™ IIIx handheld	23:46
Psion 5mx	14:25
Compaq Aero 2130	9:48
HP Journada 420	3:39
Philips Nino 500	2:59

Source: PC World UK, October 1999

—*Efficient use of memory*. In a PC, more memory is always a good thing. In handhelds, memory is a double-edged sword. Adding more memory uses more battery power, and therefore increases weight, and adds to cost. It's much more important to look at the amount of usable memory, and how efficiently it's used. Operating systems adapted from the PC world typically need much more memory just to download, so systems with a lot of RAM may actually have relatively little usable space. For example, when the same information is loaded into a Palm OS® and a Windows CE system, it consumes up to four times as much memory on the Windows CE system:

	Palm OS	*Windows CE*
25 to-do items	2K	5K
One month of appointments	6K	26K
Ten memos	5K	6K

Mobility means that users can get to the data they need quickly at any location. Palm, Inc. is the leader in mobile data access, with a wide range of options.

—The Palm™ VII handheld is the first handheld computer with built-in wireless connectivity. Palm VII handheld users can send and receive e-mail, and access a wide array of Web-based information and commerce services, through a technology called Web Clipping. Web Clipping also allows companies to easily create applications to securely route corporate information and software tools to their employees. Since Web Clipping is based on existing Web standards, it's very easy to support and use. Other handheld systems offer wireless add-ons, but the user generally has to do the service configuration (a daunting task that Palm VII systems perform for users), and they force users to use standard HTML for Web access (which is extremely slow and awkward to use on a handheld) or WAP (Wireless Applications Protocol), which is faster, but is designed for the very tiny screens found on cell phones.

—*Wireless service*. Palm, Inc.'s Palm.net service supplies wireless information to Palm VII handheld users. It's designed to work seamlessly with Palm OS® systems, making it much easier for users to connect and set up their accounts.

—*Smart phone*. The PDQ smart phone from Qualcomm is the first combination of a complete Palm OS system combined with a cell phone.

—*Wireless modems* for the Palm™ III and Palm™ V handhelds offer e-mail connectivity and Web access. OmniSky's wireless service also gives Palm V handheld users access to most Web Clipping applications. Add-on wireline modems are also available for the Palm handheld family.

—Ethernet synchronization enables Palm™ handheld users to update their files over a network, without returning to their desktops at home. This feature enables a company with regional offices to allow travelling employees synchronize their data while they're on the road.

—Future growth path. Palm, Inc. has also partnered with the world cell phone leaders like Nokia to develop future Palm OS®-based cell phones. Palm, Inc. is also a member of the Bluetooth and WAP consortiums, organizations that are setting future wireless information standards.

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