Assessing Enterprise Requirements for Handheld Computing

Executive Overview

Innovative organizations looking to gain competitive advantage through mobile computing choose solutions based on the Palm OS®.

Palm, Inc., the handheld computing leader, provides comprehensive solutions through alliance partners and offers unmatched ease-of-use. The result is superior investment protection and safety, improved productivity through interactive communication, and lower total cost of ownership. Unlike competitive offerings that focus on offering a "PC in your pocket" with all its inherent complexities, solutions based on the Palm OS are designed to best meet handheld computing needs, are broadly adopted by key partners across industries, and provide superior mobility and breadth of application synchronization choices.

The Palm OS is the standard for handheld computing, a new form of computing focused on helping customers manage, access, and collect information and mine the richness of the web—at any time, in any location.

Products based on the Palm OS are the worldwide leaders in handheld computing, with more than 70%

Handheld computers are really making information that is much more pervasive and readily available…

Corporate information that you need to do your job can now be had on this device so that you have the information wherever you are…

These devices really give them that power right in the palm of their hand…

that's really going to change the way people do their jobs in the future.

— Jill House,
IDC, April 2000

market share worldwide (Source: *IDC,* 1999). As *PC Week* puts it, "The Palm OS from Palm, Inc. has become the hands-down favorite in the palm-size market." (October 29,1999)

This remarkable success is driven by Palm's unique approach to handheld computing. Rather than trying to squeeze all the features of a personal computer into a tiny package, Palm OS based handhelds are designed specifically for information management. By treating handheld computing as a separate form of computing, with its own design rules, Palm, Inc. is able to define the de facto platform for handheld computing and set the foundation for mobile E-business solutions.

In this paper, we will discuss a wide range of topics that will provide your organization with a strong foundation for handheld computing decision making. Key issues that require consideration in assessing enterprise requirements for handheld computing include:

- Enterprise-ready handheld management
- Security beyond the desktop
- Rapid innovation leveraging a powerful development environment
- Superior IT investment management
- Broad enterprise application support
- Unparalleled flexibility—the freedom to choose

We'll cover issues that organizations are facing that are driving them toward an E-business model, the evolution toward mobile E-business, the challenges that the mobile millennium creates for organizations, and Palm's vision for helping organizations manage this complexity. You'll learn how Palm OS® based solutions provide organizations with the right mix of capabilities that allow them to fully take advantage of the handheld's mobility to gain competitive advantage and manage your organization's bottom line.

Customer Issues Drive Handheld Decisions

In any organization there are a number of stakeholders for whom handheld computing solutions can offer significant value.

CEOs Choose the Palm OS® to Maximize Value

It's about enhancing shareholder value through sustainable competitive advantage and sound business management. Solutions based on the Palm OS provide enterprise customers with competitive advantage by enabling better customer service, foster sales, improved employee productivity, and lower overall costs leading to greater shareholder value. Today's organizations are tapping into the power that E-business solutions offer. Palm, Inc.'s ability to offer the mobile component to E-business provides a vital capability in extending enterprise applications to a mobile workforce.

CFOs Choose the Palm OS to Maximize Return on Investment

Palm's mobile computing solutions provide an unmatched combination of reliability, higher return on investment, lower overall support costs, and superior investment protection into the future.

Business Leaders Choose the Palm OS to Get Their Jobs Done Better

Solutions based on the Palm OS provide organizational leaders with the resources to empower a mobile workforce. Palm OS based solutions offer innovative value that employees will quickly grasp and put to use.

IT Leaders Choose the Palm OS for Safety, Security, and Flexibility

Palm OS is the safe choice for handheld computing. Palm leads the way in handheld computing, providing innovative IT organizations with a flexible and customizable mobile computing platform, complete solutions through industry-leading alliance partners, and superior ease of use.

New Business Challenges

A recent quote from CIO Magazine introduces the idea of a marketplace that is heating up as a result of the advent of the Internet and a global economy. It's clear that businesses everywhere are under tremendous pressure to meet heightened customer demands. An expanding global economy and the rise of the Internet have driven customers to expect instant access to information. Organizations that want to survive and thrive in this environment need to look for new ways to manage costs and create opportunities for competitive advantage. According to IDC, new issues are driving technology decisions:

- *CIOs today face myriad challenges; enterprises are more complex, work more in real time, are more interconnected and more online, and operate on a more worldwide basis.*

- *Users are also engaging in Internet time and have come to expect instant access to everything, every where. Users want access to data/information, and they want simplicity, flexibility, performance, and choice.*

- *In general, enterprises want a competitive advantage and a return on their investments. CIOs want lower costs, flexibility, manageability, and security. As a result, enterprise computing is consistently undergoing change.*

These important comments from IDC reports emphasize the increase in business pressures and that an organization's survival depends on managing costs and improving their competitive advantage. The right technology solutions need to meet all of these disparate requirements.
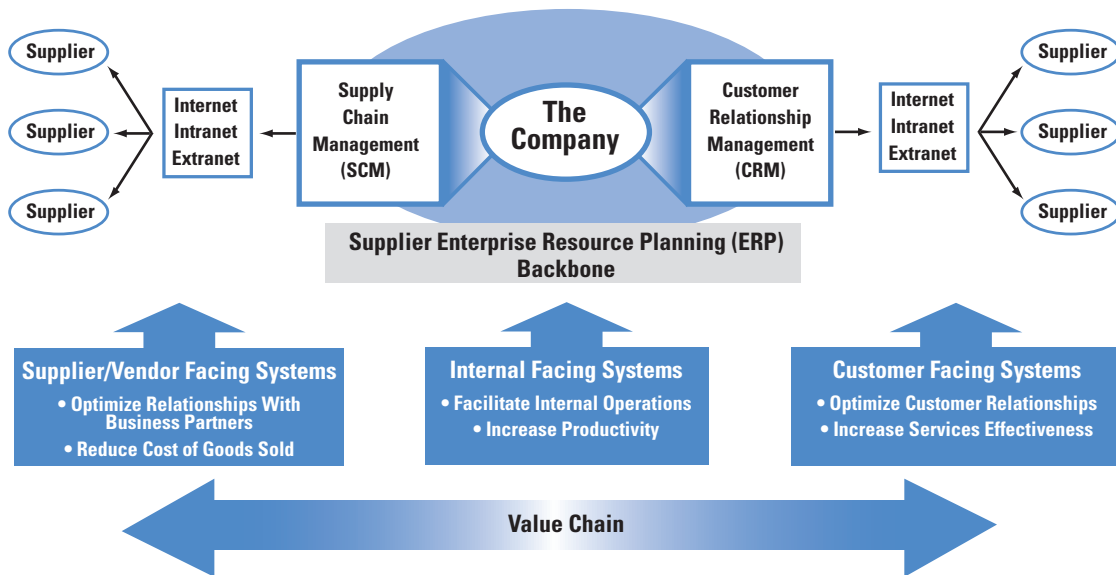
Transported and transformed by the Internet and global commerce, we've entered the 'Now Economy.

...an ever-changing era in which the customer is king, the world marketplace is the kingdom, and wired businesses everywhere are subject to 24/7 demand for constant information, customized products and instant electronic transactions.

— *CIO Magazine* web-site, March 2000

The Mobile E-Business Era

Palm, Inc. believes that handheld computing solutions based on the Palm OS offer critical value while meeting the needs of all organizational stakeholders. This is where Palm, Inc.'s vision for mobilizing E-business is providing organizations with the power they need to achieve their business goals. Before moving to the topic of "Mobilizing E-business," let's take a look at the relationship between an E-business model and fundamental organizational activities such as Customer Relationship Management (CRM), Supply Chain Management (SCM), and Enterprise Resource Planning (ERP). The diagram above represents this new business evolution.

In an E-business model, organizations begin to extend their information systems outside the organization. Outward-facing information systems enable connectivity with customers, suppliers, and distributors. The foundation of the E-business model is the ERP backbone, where core accounting, manufacturing, and HR applications exist. These applications reside within the enterprise and can be described as inward-facing systems that track the internal flow of information. The basic value that these applications offer is in helping the organization to operate efficiently and cost-effectively.

ERP applications are now being viewed NOT as comprehensive solutions, but as the backbone to which customer- and supplier-facing applications can be linked. In an E-business model, all data access, collection, and management takes place in a net-enabled environment. That means everyone—suppliers, distributors, resellers, employees, and customers—are all leveraging the Internet, intranets, or extranets to manage information. This complete connectivity between the sales and supply chain arms of the organization creates a complete value chain.

And yet workers, suppliers, and customers need to be bound to the desktop to take advantage of all this power. Palm, Inc. believes that for enterprises to fully take advantage of their investment in ERP applications, they need to not only better serve the customer, but also empower the customer to be better served by the enterprise. Palm OS® based solutions help to break the tethered, desk-bound model by extending E-business solutions to mobile workers. Whether your world is wired or wireless—or both—Palm OS solutions can help your employees, partners, suppliers, and customers get faster and easier access to information. The result—improved financial performance and a stronger competitive advantage.
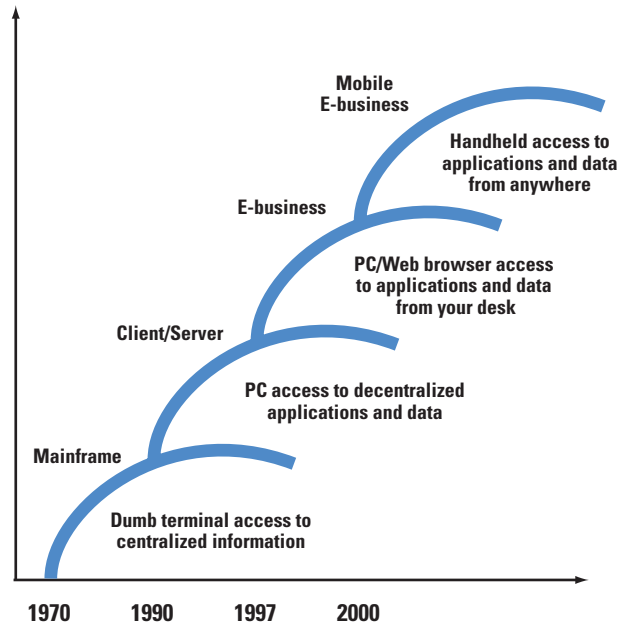
Mobilizing E-business—The Next Wave in Computing

In many ways, the mobile E-business trend is really a natural progression in an ongoing series of computing advances. Comments from Meta Group's report entitled *Entering the Mobile Millennium* (February 14, 2000) illustrate the challenges that organizations face as we move into this next phase.

- *During the next three to five years, the corporate computing world will be drastically altered. The move by internal users, external partners, and customers to mobile devices of many flavors will require substantial investment in infrastructure improvements for connectivity, band-width, and application mobilization.*

- *IT Groups will proactively establish mobile/pervasive computing architectures, standards, connectivity, and security services and remote management (2000-04).*

- *We expect more than 75% of knowledge workers to be mobile at least 25% of the time by 2003-04.*

- *By 2004, each corporate knowledge worker will have three to four different computing and information access devices that will be used to access various applications. Indeed within two to three years, 20 to 25% of knowledge workers will obtain a companion computing device (e.g., Palm, Inc.).*

What does all this mean? The mobile millennium will force organizations to face greater levels of complexity in attempting to manage mobile solutions. The challenge is to understand that handheld solutions are a unique step in computing evolution—a new model in which old rules no longer apply.

Mobile E-business — Handheld access to applications and data from anywhere

E-business — PC/Web browser access to applications and data from your desk

Client/Server — PC access to decentralized applications and data

Mainframe — Dumb terminal access to centralized information

1970   1990   1997   2000

The Palm™ Vision

Palm, Inc.'s mission is simple: a Palm™ handheld in every hand, enriching, empowering, and simplifying our lives at work and at home.

We're awash in information. The rise of the web and the proliferation of e-mail have dramatically increased the amount of information available to everyone, as well as increased the pace of decision-making. Managing the information in your life or your business, keeping it under control, and picking out the most important pieces when you need them are becoming keys to success in the new millennium.

The need to manage information better is leading to the development of new types of computers. Handheld computing is completely different from traditional forms of computing. Unlike personal computers, handhelds are not focused on creating and editing documents—text, spreadsheets, presentations, and so on. And unlike competitive offerings, handhelds are not focused on storing and processing huge masses of corporate data. Instead, handhelds focus on helping people easily access and manage the key information they need, wherever they are, to make better business decisions and live easier, more productive lives.

To enable customers to reap the benefits of mobile computing, Palm leverages our unique understanding of customer requirements, allowing organizations to leverage handheld computing capabilities so they can achieve strategic and financial benefits, improve organizational productivity, and ensure a safe and secure mobile computing environment—making it easy for workers to embrace new technology deployments.

Palm believes that six key elements are needed to assess enterprise requirements for handheld computing:

- Enterprise-ready handheld management
- Security beyond the desktop
- Rapid innovation leveraging a powerful development environment
- Superior IT investment management
- Broad enterprise application support
- Unparalleled flexibility—the freedom to choose

Enterprise-Ready Handheld Management

When assessing enterprise requirements for handheld computing, it's essential to ensure that your chosen solution offers true enterprise-ready handheld management capabilities. A strong enterprise-ready solution includes industry-leading enterprise system management capabilities, distributed handheld computing system management, and effective server synchronization capabilities.

Industry-Leading Enterprise System Management

Palm, Inc. understands the needs of the IT professional and so do our partners—partners such as Computer Associates (CA) and Tivoli Systems. Through our partners, Palm is able to provide IT organizations with industry-leading enterprise system management capabilities. We have worked together with Computer Associates and Tivoli Systems to help address the unique requirements of the handheld computer environment, resulting in these companies developing and bringing to market the next generation of system management for handheld computing.

Palm and Computer Associates teamed up in July 1999 to deliver solutions to deploy and easily manage large-scale, mission-critical Palm OS® solutions in the enterprise. CA's Unicenter TNG Software Delivery Option (SDO) and ShipIT empower enterprise administrators to optimize the management of their Palm OS platform by maintaining the OS, application, and file data being sent to and from the Palm handhelds, enabling them to become integral parts of a company's E-business infrastructure.

Additionally, CA has extended Unicenter TNG Asset Management Option (AMO) and AIMIT, to support the Palm OS. With Palm and CA's suite of management applications, IT professionals can establish and maintain control of their important new asset base as it is deployed for E-business applications in the enterprise.

Driven by the rapid increase in business applications that are based on handheld operating systems, handheld computers are becoming standard business tools in many of the world's largest organizations, creating a competitive advantage. Tivoli Systems provides end-to-end solutions that integrate technology management with handhelds. These solutions refine enterprise management of the industry leading Palm OS handheld computers. As part of Palm's strategic alliance with Tivoli, Tivoli recently launched the Tivoli Device Manager for the Palm OS platform. The Tivoli Device Manager for the Palm OS platform allow enterprises to quickly integrate and manage handhelds within their existing infrastructure, allowing larger and easier deployment of Palm OS handhelds while reducing support costs.

Distributed Handheld Computing System Management

Palm, Inc.'s competitors mistakenly believe that handheld solutions are nothing more than a shrunken-down PC. In reality, distributed system management at the handheld computing level has unique requirements above and beyond those required for the desktop environment. Palm and its partners understand this funda-

mental difference and offer a system management solution that truly addresses the unique requirements within the handheld computing environment. Treating a handheld computer like a PC from a system management perspective—or from any perspective—has proved to be a mistake. Handheld computing requires a unique approach. The failure of Palm's competitors to grasp the unique requirements of the handheld computing environment is the reason why competing solutions have never been successful.

Server Synchronization

The ability of Palm handhelds to access mission-critical information through a desktop computer, a corporate server, or the Internet is the key to their value as an enterprise solution. HotSync® technology allows the two-way flow of this critical information. To make the handheld computing environment enterprise-ready, IT organizations must maintain concurrency between information on the handheld computer and the source, which could be a groupware solution for e-mail and scheduling, business applications like CRM and ERP, or a database server. Palm has set the standard handheld technology synchronization with HotSync technology, linking the handheld to the end-user's desktop. The Palm HotSync® Server links the handheld to IT-managed and maintained Windows NT servers, providing not only "anytime, anywhere" data synchronization under the control of IT, but also adding device management capabilities and an industry standard platform for extending critical data and services to the handheld community.

Security Beyond the Desktop

Palm, Inc. has been working for years with leading third-party security providers to ensure that we have a complete enterprise offering. For instance, Palm offers public key infrastructure (PKI) support in Palm™ VII handhelds today for our wireless security capabilities. This includes transmission encryption that goes far beyond what alternative platforms can support today. Key considerations for effective enterprise security include support for next-generation encryption, broad third-party application offerings, and digital certificates.

Next-Generation Encryption

Palm has established a relationship with Certicom, a leading provider of next-generation encryption technology used to build strong, fast, and efficient security solutions. Certicom also works with major computing and communications companies, such as:

- Aether
- Sybase
- AvantGo
- Extended Systems
- Kyocera
- Iscribe
- Logon Health
- Confinity
- H&R Block
- BellSouth Wireless Data
- Pitney Bowes
- Oracle
- Puma
- ASL
- 724:Solutions
- Open Systems
- NTT
- Planet RX
- Visa
- TRW
- Hewlett-Packard
- VeriFone

These companies incorporate Certicom's technology into electronic commerce software and wireless messaging applications.

Broad Third-Party Application Offering

In addition to Certicom, Palm's comprehensive security solutions offering includes support for a wide range of third-party solutions. Palm enjoys the benefits of a highly secure leadership platform that provides a multitude of third-party encryption, security, and access control products available to the enterprise. These products offer:

- Device-level security through signature, password, key stroke
- Challenge response
- SSL, VPN or leased-line access behind the firewall

Palm's third-party solutions include:

- Cryptinfo
- Enforcer
- JotLoc
- Login Script Enhancement
- Restrictor
- Secure Memo Pad
- Sign-On
- TealLock
- e.ID for the Palm OS® platform
- JAWS MEMO
- Lock Me!
- OnlyMe— Access Security
- Secret!
- SecurID for the Palm OS platform
- SSL Plus for the Palm OS platform

Support for Digital Certificates

Digital certificates are being used today in Palm™ applications such as AvantGo browser and the Sybase database. Many more developers are currently adopting this security for advanced secured applications.

Ensuring Rapid Innovation—Tapping into a Powerful Development Environment

Ensuring rapid innovation means that your organization's handheld computing solution needs to be based on a powerful development environment that can help your organization get to where it needs to go. When selecting a handheld computing solution, make sure that the development environment helps to reduce application development complexity, has a clear operating system upgrade path, and offers true portability. In addition, consider solutions that are processor-independent, with clear platform momentum and a strong suite of developer resources.

Reducing Complexity

The experiences of large enterprise customers and leading software developers have proved that the elegance of the Palm OS® enables easier application development. In contrast, the inherent complexity of competing products requires extensive development resources and has resulted in a painful development process. Many developers, after trying and failing to develop applications for non-Palm OS platforms have embraced the Palm OS as a faster and more effective means of building viable enterprise solutions.

Clear OS Upgrade Path

Competing products have required developers to rewrite their code for every new release. That means developers and customers need to throw out their applications and begin again with every new operating system release. This is not the case for the Palm OS. Palm, Inc. has a proven track record for upgradability and investment protection while providing a clear OS upgrade path.

Targeting the Right Processor

Competing platforms place OEM vendors in a precarious situation in that they can utilize a wide variety of processors to support the operating system. Developers have to target a specific handheld for their development efforts. In many cases, manufacturers building non-Palm OS handhelds have discontinued their products or exited their businesses entirely. The Palm OS does not place this requirement on the developer community. Developers are free to create applications that will run on a tremendous variety of Palm ™ -branded handhelds as well as Palm OEM and licensee handhelds.

Platform Leadership

Developers prioritize their efforts based on market share. Palm's over 100,000 developers create a very interactive network of programming resources. Customers have more to choose from—more developers, a broader range of experience, more applications, and more possibilities.

Developer Resources

Palm offers a strong suite of software development resources:

- Pendragon and Puma's Satellite forms toolkits
- NS Basic
- GNU Tools
- CASL
- Palm OS Software Development Kit (SDK)
- PQA Builder
- Pylon Pro from Global Ware
- CodeWarrior
- J Designer Pro by Bullet Proof
- Support for kVM technology
- Synchronization Conduit Development Kit (CDK)

Palm's over 100,000 developers are the ultimate proof point. Thousands of them are enterprise developers, including enterprise application giants such as Siebel, Oracle, and PeopleSoft. In addition, Palm's strategic alliance with Sun Microsystems ensures that enterprise organizations can leverage their investment in Java developers, where Palm is working very closely with Sun Microsystems using kVM technology, a key component of the Java 2 Platform Microedition available on the Palm OS software.

Superior IT Investment Management

Your organization needs to investigate several important considerations when ensuring superior IT investment management. Return on investment (ROI) measures the productivity of an investment or profit center. Sound investment protection ensures that your technology investments offer long-term value.

ROI

Palm, Inc. has a wide range of referenceable customers who can demonstrate a clear return on investment for solutions based on the Palm OS® . For example, the Los Angeles City Fire Department achieved a 109% ROI and an 11-month payback for their inspection application. Grenley-Stewart Resources increased sales by 300% with a product locator application. The Fiat Credit Corp sales force automation solution paid for itself in 18 months. Other customers are able to document substantial process improvements. For example, Volvo quality assurance application turned a three-week paper-based process into a one-day automated process. The US Postal Service supply chain management application turned a three-month manual data collection process into a three-day process. Visit the Palm web site for more information on our growing list of customer successes at **www.palm.com/enterprise**.

Investment Protection

Palm has a better track record for investment protection than competitors because the Palm OS offers stronger forward compatibility. Alternative platforms continue to reinvent themselves, which means that both developers and customers need to abandon applications—often beginning again from the ground up—with every new release. Furthermore, since these competing handhelds operate using a wide range of processors, developers need to target an individual handheld when designing their application. In the event that the manufacturer discontinues their product or goes out of business, applications need to be discarded and redesigned for an entirely new handheld and processor.

Broad Enterprise Application Support

It's essential to ensure broad enterprise application support when assessing enterprise requirements for handheld computing. A strong offering will include support for corporate e-mail, substantial application breadth, and the ability to extend enterprise applications to the handheld environment.

Support for Corporate E-mail

Palm, Inc. believes in supporting all of the leading enterprise messaging solutions. This support allows us to integrate not only with Microsoft Exchange, but also with other leading e-mail applications such as Lotus Notes, Lotus ccMail, and Eudora. In contrast, our competitors only offer a pocket version of Microsoft Outlook and nothing more.

Palm supports Microsoft Exchange right out of the box with all Palm OS® based products, as well as mail synchronization on all Palm OS-enabled products. Palm also supports other mail servers through third-party solutions. They are:

- BeamLink
- EasySync for Lotus Notes
- Eudora
- Intellisync for the Palm OS platform
- MultiMail Conduit
- MultiMail PRO
- One-Touch Mail
- Palmeta Mail
- ProxiMail

Palm offers support for file attachments through third-party solutions such as MultiMail, JP Systems, OnTechnology, and Dataviz. In addition Palm's server synchronization capabilities offer access to mail groupware.

Application Breadth

There are currently more than 5,000 Palm OS® compatible programs that cover everything from e-mail and Internet access to databases, enterprise applications, spreadsheets, e-book readers, and games. Over 100,000 developers are actively working to create new applications for the Palm OS. New developers are signing on everyday.

Palm, Inc. competitors will have you believe that the only enterprise applications you will ever need are limited versions of both Word and Excel. Palm believes that your enterprise is more dynamic and your needs are greater than what is covered by these two applications. To fully realize the benefits of a handheld computer, you need applications that are equally dynamic and solve the varied needs of your particular organization.

Palm, Inc. competitors would like you to believe that the needs of your organization are the same as every other organization. With Palm OS based solutions, you can customize your handheld computer to your needs, adding only those applications that give you a competitive edge in your industry. And with the Palm handheld, you have a wide range of applications from which to choose, and the list is growing daily. Applications include the capability to view Word and Excel, using third-party programs on your Palm handheld.

Enterprise Application Extension

The Palm OS is supported by leading enterprise software firms, including Computer Associates, IBM, Lotus, Oracle, PeopleSoft, Remedy, SAP, Siebel, Sun Microsystems, Sybase, Tivoli Systems, and Vantive. In addition, Palm offers support for a wide range of additional capabilities through our alliances with Aether, Puma Technology, Ericsson, AvantGo, Extended Systems, Certicom, OmniSky, and Synchrologic.

Flexibility

The Freedom to Choose Palm, Inc. believes in true enterprise choice from many different perspectives, including hardware, infrastructure, and enterprise applications.

Hardware Flexibility

Palm has secured a number of key licensee relationships that extend the Palm OS® to new areas. They include Symbol Technologies, Kyocera, TNG, Handspring, Nokia, and Sony. OEM partners include Franklin Covey, Supra Company, and IBM. All of these products are powered by the Palm OS. This mix of hardware partners gives enterprise organizations tremendous flexibility. Organizations can select from a range of handhelds or mix and match based on their unique requirements. All of these handhelds are supported by Palm's system management alliances, including Computer Associates and Tivoli Systems. In addition, Palm OS solutions can take advantage of more than 500 hardware add-ons. Because enterprise customers are using handhelds based on the Palm OS to help them access and manage information in different ways, Palm has partnered with a very diverse family of companies to make Palm OS products. Handspring, Kyocera, Symbol Technologies, and TRG all create their own handhelds based on the Palm OS, while OEM partners IBM and Franklin Covey sell specially configured Palm systems. In November 1999, Nokia and Sony committed to extending the Palm OS in new directions—Nokia and Palm are striving to create Palm OS smart phones, and Sony and Palm are working together to combine the Palm OS with Sony's world-leading multimedia technology.

Application Flexibility

Palm actively supports established industry standards. For example, the Palm™ VII handheld adheres to HTML standards, and Palm's e-mail capabilities support standard mail protocols.

Infrastructure Flexibility

Palm has also developed the tools and support infrastructure needed for a corporation to deploy the Palm OS platform to thousands of employees. The Palm OS is supported by leading corporate software firms, including Computer Associates, Lotus, Oracle, PeopleSoft, Remedy, SAP, Sun, Sybase, and Vantive. Palm will soon offer a suite of handheld management products, including a synchronization server (which lets an IS manager monitor and drive the software configuration on a large base of handhelds) and an Ethernet cradle (which lets workers on the go update the information on his or her handheld without returning to a desk).

Summary

The remarkable success of Palm OS® based solutions is driven by Palm, Inc.'s unique approach to handheld computing. By treating handheld computing as a separate form of computing, with its own design rules, Palm was able to define the de facto platform for handheld computing and set the foundation for mobile E-business solutions.

In this paper, we discussed a wide range of topics to consider as a foundation for handheld computing decision making:

- Enterprise-ready handheld management
- Security beyond the desktop
- Rapid innovation leveraging a powerful development environment
- Superior IT investment management
- Broad enterprise application support
- Unparalleled flexibility—the freedom to choose

Palm OS based solutions provide organizations with the right mix of capabilities that allow them to fully take advantage of handheld mobility to gain competitive advantage and manage their organization's bottom line.

For More Information

To learn more about how the Palm, Inc., can help your organization, contact your local representative today or visit **www.palm.com/enterprise**.

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