Palm's Dual Expansion Architecture

Changing the Way We Live, Work and Communicate

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Introduction

Rapidly maturing technologies have brought the handheld industry to a watershed moment that promises significant growth, both in terms of market size and in powerful new uses for handhelds. The purpose of this paper is to give developers and decision-makers a deeper understanding of Palm's dual expansion architecture and how it applies to the future of the handheld industry. This paper will provide guidance on both the development and implementation of this new technology.

Handheld Market Overview – A Perspective On the Need for Expansion

Palm, Inc. is the undisputed leader in the handheld industry, based on any of several key measurements: number of units sold, software applications and hardware add-on modules available, and the number of registered platform developers. It is worth noting that Palm was not the first company to introduce a handheld. Judging by the success the company has achieved, the enormous popularity of Palm Powered™ handhelds and the loyalty of Palm OS® users and developers, Palm was the first company to develop a handheld that not only met people's needs but fit into their lives. Palm's continuing leadership in a space where many others have failed is due, in large part, to two strategic decisions made early in the company's history.

Expansion and Ease of Use

The first of these was the adoption of a rigorous design philosophy and aesthetic that engenders easy-to-use, wearable, and elegant products. In handhelds, there is always a trade-off between added functionality and other desirable aspects of utility and wearability, such as size, weight, and battery life. As a general rule, the more "stuff" is added, the heavier the device, the more power it needs, and so on. Palm's solution to this problem has from its inception been to add customization with add-on and plug-in expansion solutions. This approach enables Palm to meet the diverse needs of users while maintaining the core concept of a device that is light, wearable and easy to use.

Empowering the Palm Economy

"Palm's dual expansion architecture combines two powerful tools to create a whole solution that is greater than the sum of its parts."

The second key to Palm's success was the decision to base the Palm OS® platform on an open architecture, thus making it easy for independent developers to create software and add-on modules for the Palm™ handheld. The combination of these two decisions has resulted in unprecedented market acceptance. Today, more than 16 million Palm branded handhelds have been sold around the world, with 13,000+ Palm OS based applications and more than 100 hardware add-on modules available, designed by various members of the 19,000+ developer community. Palm is, indeed, the "platform of choice" — choice of end-users, choice in number of applications, add-on modules and solutions available, and the choice of developers.

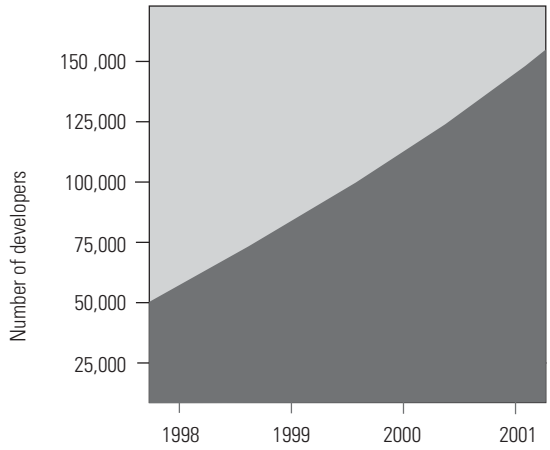


Figure 1. Palm's Developer Growth

Palm's Dual Expansion Architecture – Overview

Today, significant breakthroughs in expansion technologies have brought us to the next stage in the evolution of the handheld industry. These breakthroughs have sparked an explosion in the range of potential handheld uses, resulting in a corresponding rise in market demand for new solutions. Interactive access to information while on the go will soon become commonplace. New "expansion cards" now make it possible to manage and process staggering amounts of data quickly and inexpensively — on something a little larger than the size of a postage stamp.

The Palm Expansion Card Slot and Palm Universal Connector System

Palm's **dual expansion architecture**, unveiled in the spring of 2001, enables a sleek form factor that will integrate elegantly into a wearable handheld. The new architecture comprises two powerful and complementary expansion modes: the **Palm Expansion Card Slot** that accommodates both MultiMediaCard and SD cards, and the **Palm Universal Connector system** for hardware add-on modules that will be common to all future Palm

products. Both the card slot and connector support plug-and-play capabilities, making the technology transparent and providing an intuitive user experience.

End User Benefits

Palm has designed a solution that exploits these new technologies to the fullest extent and maximizes the benefits to individual users and enterprise customers. Of primary importance to IT organizations will be the ability to distribute software and proprietary corporate databases with a minimum of interruption to their mobile workers. Consumers will particularly enjoy the easy customization and adaptability of their handheld and the plug-and-play interoperability between various products in their household lives.

Flexibility in Development and Use

Palm's approach to expansion reflects the same values of simplicity, wearability, and connectivity as a Palm handheld itself and underscores Palm's commitment to flexibility and to being the development platform of choice. Starting with the Palm™ m500 series handhelds, users will have more choices from which to select the technology that best meets their needs. Further, the new architecture also makes it easier and more cost-effective to create software applications and hardware add-on modules for Palm handhelds. Developers can develop once and sell across multiple product lines thereby encouraging the development of yet more expansion options and allow users to get full value from their existing investments.

Technologies Working Together

Lastly, while the Palm Expansion Card Slot and the Palm Universal Connector system are each a powerful expansion solution in their own right, they can also be used in tandem. The dual expansion architecture allows users to plug in an expansion card and add on a hardware module at the same time. A user could plug in an expansion card containing regional roadmaps, for example, and attach a global positioning system (GPS) add-on module to the Palm Universal Connector System. The two expansion solutions would work interactively to pinpoint the user's location and provide location-specific information.

Expansion Cards

For the past several years, technology leaders have been investigating ways to exploit new, compact, and extremely efficient data storage and transfer capabilities known as expansion cards, especially with regard to their potential use in portable information appliances such as a handheld. Today, several variations of expansion cards exist; as with many other technologies, some versions are proprietary while others are based on an open standard.

It would be difficult to overestimate the potential of these technologies to change the way the world works and drive new product creation. By providing an extremely compact delivery medium for the distribution and exchange of information, expansion cards open an entirely new content-delivery paradigm for the Palm Economy, enabling myriad potential uses involving data distribution and exchange. Palm believes that the impact of

expansion card technology, especially formats that are compact, fast, reasonably priced and interoperable will be as significant and far-reaching as that of the compact disk.

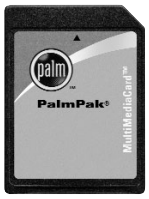
Because expansion cards offer flexible solutions that can provide both data storage and I/O access, the range of potential uses made possible by these cards is enormous. Using a handheld equipped with an expansion card, a user could make backup copies of his or her data; access an electronic book, maps, or another type of digital media. A Bluetooth™-enabled card could also provide wireless connectivity.

Palms Commitment to SD and MultiMediaCard

The Palm Expansion Card Slot, first introduced with the Palm™ m500 series handhelds, accommodates MultiMediaCard and SD expansion cards; both based on non-proprietary standards and developed by broad, multi-industry consortia. The new architecture integrates expansion cards seamlessly into the platform, extending the Palm user experience across all appropriately equipped Palm devices.

MultiMediaCard Expansion Cards

• **Size and Capacity -** MultiMediaCard media are technically the world's smallest removable solid-state memory solutions for mobile applications. MultiMediaCard media weigh less than two grams and are about the size of a postage stamp, 32 mm. long by 24 mm. wide by 1.4 mm. thick. The molded package has an easy-to-install, seven-pad (pin) serial interface, offering easy integration into various devices regardless of the microprocessor used.



About MMCA

The MultiMediaCard Association (MMCA) was founded in 1998, with 14 companies as original members, to promote the worldwide adoption of these sleek, slim, small and secure devices. The organization has grown rapidly and now has more than 80 member companies worldwide, representing all branches of mobile electronic applications, including semiconductor suppliers, software vendors, and manufacturers of products such as music players, mobile phones, personal digital assistants (PDAs), digital cameras, voice recorders, GPS navigation devices and more.

The MMCA developed and regulates open industry standards that define all types of MultiMediaCards, and drives worldwide acceptance of MultiMediaCards as an industry standard across multiple host platforms and markets. The organization ensures aggressively working toward full interchangeability and compatibility (including backward compatibility) between the cards produced by all MMCA members. The MMCA also promotes alternate sourcing. MultiMediaCards offer an unmatched array of features and benefits for compact removable storage media.

MULTIMEDIACARD SM
ASSOCIATION

In addition to Palm, the MMCA Board of Directors includes Ericsson, Hewlett-Packard, Hitachi, Infineon Technologies, Motorola, Nokia, SanDisk, Sanyo Electric, SCM Microsystems, and Siemens.

Capacities for MultiMediaCard media currently range from 2MB on the low end all the way through 64MB on the high.

• **Security -** MultiMedia Card media are currently SD Music Initiative (SDMI) Level 1.0 compliant. To obtain Level-2.0 compliance, the MMCA is proposing a new backwards-compatible standard called SecureMMC. The MMCA's goal is to implement a generic set of security commands that will accommodate the many requirements of future consumer, business and industrial applications (such as mobile e-commerce, banking and copyright protection), particularly when used in combination with portable devices.

• **Cost and Application -** MultiMediaCards use Flash technology for many times reusable recording applications, and ROM technology for playback-only applications, examples include reference materials such as books, dictionaries, encyclopedias, medical references, travel information, product catalogs, etc. Both technologies are fast for excellent system performance; energy efficient for prolonged battery life in portable products; and cost-effective for use in systems sold at consumer price points.

SD Expansion Cards

• **Size and Capacity -** Approximately one-fourth the size of a Compact Flash card and approximately the size of a MultiMediaCard, the SD card measures 32 mm. long by 24 mm. wide by 2.1 mm. thick. SD cards are nominally thicker than MultiMediaCards and have a nine-pad vs. a seven-pad serial interface.

Capacities for SD expansion media currently range from 8MB on the low end all the way through 128MB on the high. 256MB SD cards have already been presented in public demonstrations. This ultra-high-capacity card should be available early 2002. SD's ability to accommodate multiple layers of memory chips will enable even greater storage capacity in the future. A 512MB SD card is expected to be available late 2002.

About SDA

The SD Association (SDA) is an outgrowth of the MMCA and uses many of the standards developed and promulgated by that organization. The SDA is building on the success of the MMCA and taking the evolution of expansion card media to the next level, especially in the area of I/O. Like the MMCA, the SDA is an open industry standards organization. Its mission is to set industry standards for SD cards and promote wide acceptance of SD in a variety of applications. The SDA was established in January 2000 by industry leaders SanDisk, Toshiba, and Matsushita (Panasonic). Palm Inc., is a member of the SDA Board of Directors.

In its short existence, the SDA has grown to more than 400 members. More than 50% of the membership growth occurred in the first half of 2001. In addition to the founders, members include such powerhouses as Alpine, Canon, Compaq, Eastman Kodak, Hewlett Packard, LG Electronics, Motorola, NEC, Samsung, Sharp, Siemens and Thomson CSE, many of which are already planning the newest generation of consumer electronic devices that create, store, and communicate digital content in exciting new ways. The SD standard currently is being built into a wide range of new digital products, such as cellular phones, audio players, automotive multimedia systems, handheld devices, and video and still cameras.

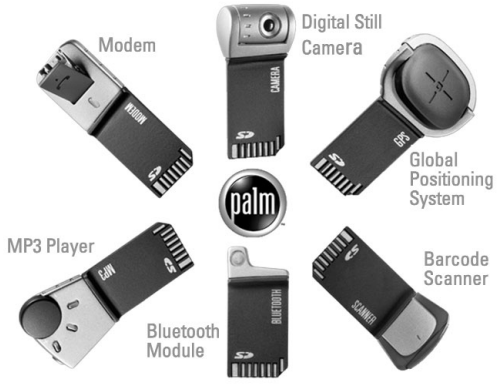
• **Security -** Although SD is an open standards technology, unique proprietary security functions have been incorporated into the SD card's controller, facilitating the secure distribution of content to devices. SD meets the copyright protection and performance requirements of the music and film industries and achieves SD Music Initiative (SDMI) Level-2.0 compliance, a highly secure protocol for the management of digital music distribution. In addition, the card features a physical protection tab on its outer edge; an easy way for users to make sure their data is write-protected.

• **Cost and Application -** The nonproprietary nature of SD card technology bodes well for enterprises, individual consumers, software and hardware developers, and content owners alike. The adoption of an industry standard assures developers of a larger pool of compatible devices, and speeds the time to market for new devices. Being the newer technology, SD is currently slightly higher in cost than MultiMediaCard media. However, the rapid proliferation of the SD capable devices is expected to produce economies of scale that will soon significantly reduce the cost of SD media.

SD is currently only available as Flash technology. High data transfer rates, extended capacities and optional I/O capabilities make SD an excellent choice for applications that require updateable storage and/or additional I/O functionality.

SDIO – Expanding Choice Exponentially

In addition to accepting SD and MultiMediaCard media, the Palm Expansion Card Slot will also accept SD Input/Output (SDIO) devices. Input/Output (I/O) is the ability to transfer data between a device such as a handheld and a hardware add-on module. In the not-too-distant future we might well see an SDIO device — as small as a matchbox — with a tiny digital camera on the top, or a barcode scanner or a GPS, to name a few examples. For many, the key benefit of SD and determining factor when choosing expansion technology is SD's I/O capability, something MultiMediaCard does not currently offer.



These are artists concepts and do not necessarily represent future products for Palm, Inc.

Figure 2. SDIO Module

• **Next Generation I/O Technology -** Thanks to the small size of SDIO cards (only marginally larger than SD memory cards), people will be able to carry several of these plug-and-play cards easily, plugging them in and popping them out as necessary. This versatility could enable consumers to customize their handhelds with cards that add digital camera functionality, the ability to track a current location and maps to find a destination, or reference materials such as books, music, etc. It would also enable consumers to transfer content easily to other SD technology capable consumer electronics products.

Palm believes that SD technology will evolve in much the same way as the PCMCIA plug-in card now in use by most laptops. Although originally intended to be purely a memory product, the I/O capabilities of PCMCIA quickly became the commercial driver for the standard and are viewed by many as responsible to a great degree for its widespread market acceptance. We expect the same to hold true for SD.

• **Multi-Function Capabilities -** The ability to combine memory and I/O capability in a single card is a distinct advantage for SDIO over pure memory devices. It could conceivably enable a new generation of products, such as a digital camera with flash memory, or a GPS unit with maps — all using a card slightly larger than the size of a postage stamp.

• **SDIO and Bluetooth™ -** One of the most exciting types of potential SDIO devices are those that use the Bluetooth™ protocol. Bluetooth, rapidly gaining momentum worldwide, is an open standard currently under development for short-range transmission of digital voice and data between devices including mobile phones, laptops, printers, handheld computers and other devices. For example, a Bluetooth enabled Palm™ handheld could easily transmit a phone number to a Bluetooth enabled phone for dialing. The converse also holds true. An incoming call containing caller identification information could automatically prompt a Palm handheld to locate and display caller information within its address book.

SD or MultiMediaCard – A Matter of Choice

Although MultiMediaCard and SD expansion cards offer many shared features and benefits, there are differences between the two technologies. The choice as to which offers the better alternative for a particular solution will depend largely on the application.

MultiMediaCards and SD media cards offer quick and easy access to, and storage of, large amounts of data. Similarly, both allow content to be shared among multiple devices. Both are elegant, cost-effective solutions that IT organizations can leverage to distribute and deploy proprietary databases and software content with a minimum of interruption to their mobile workers.

As we have said, MultiMediaCard and SD expansion media each have their advantages, depending on use.

• **The Primary Benefits of SD -** SD's primary benefits are speed, security, interoperability, and of course, its I/O capabilities. With a data transfer rate of up to 10MB/sec, it is faster than MultiMediaCard media and provides a very fast interface for both memory and I/O. Because of its added security features, the SD card in particular paves the way for ubiquitous use by presenting a convenient, cost-effective — and secure — method for the distribution of content of all types.

• **The Primary Benefits of MultiMediaCards -** The primary benefits of MultiMediaCards are cost and ROM capability. Since ROM is less expensive than flash technology, which is used in SD, ROM based MultiMediaCards would likely be the best choice for wide distribution of data, offering a significantly lower-cost alternative to either SD or MultiMediaCard flash cards. For example, games, reference materials such as books, music, etc. would all be good applications for distribution using ROM technology.

The Palm Universal Connector System – Making it Easier to Create Powerful Plug-and-Play Add-On Modules

The Palm Universal Connector system, the second element in Palm's dual expansion architecture, provides a common electrical and mechanical interface with fixed attach points for hardware add-on modules. Starting with the Palm™ m500 series handhelds, a single add-on module can be used across the entire product line, making it easier for developers and thereby facilitating the development of new add-on modules. In addition, the USB-enabled connection allows for plug-and-play, a key user benefit.

Today, more than 100 add-on solutions from such industry leaders as Kodak, Northstar, Novatel, and Shinei are available for Palm handhelds. The Palm Universal Connector system will make it easier for these and the other members of the Palm Economy to design Palm handheld compatible products going forward. By eliminating the need for multiple product-specific solutions, the common interface enables developers to build a single add-on module that will work with a complete range of products. In addition, it also enables developers to modify their current designs and product solutions easily and quickly for future models.

Key Benefits of the Palm Universal Connector system

• **Facilitates Development -** A single add-on form factor can be used across a complete product line, eliminating the costs associated with multiple, product-specific form factors. In addition, the Palm Universal Connector system also allows developers to use off-the-shelf components.

• **Speed -** Starting with the Palm™ m500 series handhelds, devices support the USB communication protocol. The new connector, which is proprietary and different from the standard USB connector, enables significantly faster communications that allow for faster synchronizations than the serial connector formerly used by Palm.

• **Plug-and-Play -** The Palm Universal Connector system enables Palm m500 series and newer handhelds to detect, recognize, and initialize a peripheral when it is attached – and even launch an application stored inside the peripheral – automatically. The peripheral can also store data files, such as a map or reference manuals, for use as needed.

• **User Experience -** The storage capability of plug-and-play allows developers to build drivers and other software into the peripheral, so the user no longer has to download files from a computer. It's an easy, elegant solution providing an intuitive user experience: simply attach the module, and go.

• **Design Integrity -** Customers and developers depend on Palm to deliver elegant solutions using transparent technology. Although we could have used the HotSync® port to perform I/O – a function for which it was not intended and as other manufacturers have done, we opted to design the new connection from the ground up. This approach enables the connector to supply power directly to the peripheral and support interrupts, a critical factor for efficient I/O and something that the HotSync port simply cannot do.

Expanding Possibilities for Mobile Professionals and Consumers

Palm's dual expansion architecture is expected to have a particularly significant impact on the use of handhelds by mobile professionals and consumers alike.

Applicability in the Enterprise and Vertical Markets

The use of a mobile work force as a strategic advantage has continued to gain importance. As businesses become increasingly competitive, they reach out to customers in new ways. Independent service vendors (ISVs) have long recognized the importance of the Palm OS® Platform in increasing productivity and enabling these mobile professionals. Key ISVs including Computer Associates, IBM, Oracle, SAP, Siebel and IBM have already created versions of their software products for the Palm OS. The increased memory and functionality afforded by dual expansion solutions will enable ISVs as well as in-house application developers to build applications that are richer and more robust than ever.

The possible applications for workers in the field are virtually limitless. We can also see the development of vertical customized handheld configurations for use as utility meter readers, barcode readers and highway toll transceivers, to name just a few possibilities.

• **Mobile Information Management -** The new mobile information management capabilities enabled by Palm's dual expansion architecture will raise the productivity of mobile professionals and speed the gathering and processing of information, to the benefit of customer and vendor, or patient and physician. For instance, the storage capacity of MultiMediaCard and SD card media now makes it possible to deploy a software upgrade easily and simultaneously to an entire mobile work force. By using an expansion card and a hardware add-on module together, the potential solutions are as varied as the applications to which they may be put.

• **Maintenance Automation -** As an example, a worker needing to replace a faulty part in an aircraft might plug in an expansion card containing the CAD files showing several views of the part, its location, how it is connected, how it is replaced, etc. Equipped with wireless capability and integrated with a scanner and a parts depot and repair program, the Palm™ handheld could also be used to identify the proper replacement and even note the change to the inventory.

• **Insurance -** An insurance claims adjuster could use a wirelessly enabled Palm equipped with a SDIO digital camera and voice recorder to capture all the information pertaining to a loss and transmit that information for processing.

• **Health Care -** In the health care industry, a host of applications to improve patient care come easily to mind. Imagine, a Palm handheld equipped with a heart monitor module could track the heart's activity and wirelessly transmit that data to the physician. Diabetics could use a handheld to track readings from an insulin and glucose wristband monitor to develop an accurate history of blood sugar fluctuations. Other beneficial and likely adaptations of this technology would be a fetal heart monitor, blood pressure monitor, and so forth.

• **Retail -** The use of specially configured handhelds could transform retail shopping. A sales clerk using a Palm handheld equipped with a SDIO barcode scanner and magnetic stripe or SmartCard reader could easily process retail transactions remotely. The scanner would read in each item's sales ticket information. The card reader would extract the consumer's credit card information. The Palm could finalize the amount and then infrared beam the transaction to a similarly equipped printer for the receipt and to the store server for later reconciliation. No more waiting in line at the cash register.

Applicability in Education

Education is another area where we would expect to see rapid proliferation and acceptance of customized handheld use. Expansion media cards and new networking protocols such as Bluetooth™ and 802.11 will be the genesis for creating robust solutions that will enrich, empower and simplify teaching and learning. The heavy student backpack will be a relic, replaced by a Palm handheld and memory cards loaded with textbooks, study guides, newspaper clippings, a dictionary, encyclopedia and music collections. Existing high-powered graphing calculators, scientific data acquisition

tools and language arts solutions will be joined by digital cameras, music players, voice recorders and electronic books. SD and MultiMediaCard eBooks hold tremendous promise for information-intensive college disciplines, such as business, law and medicine, where productivity and workflow requires greater access to databases and Internet content.

Applicability for Consumers

Applications for consumer use are virtually limited by nothing but our imagination. Pin a child-finder receptor to a child's clothing while on a camping trip. Monitor nutrition and physical activities — and also keep a record of this information. Plug-and-play interoperability with other similarly equipped appliances further expand the possibilities. An individual could take pictures of the family vacation — even video, with sound — with a handheld using a SDIO digital camera and an add-on microphone module, come home and plug the card into the television or the PC — and send the pictures to friends and families anywhere.

Designing for Expandability

Just as the phrase "Simply Palm" refers to the intuitive Palm user experience that continues to delight customers, it also applies to our approach to product development. For example, a standardized expansion API allows developers to write code only once — no matter what expansion solution is used. And now the Palm Universal Connector system makes it easier and more cost-effective than ever to design hardware peripherals for the Palm™ handheld.

Palm's decision to deliver core functionality means that from the very beginning, expandability has been an integral element of all product design. Palm expansion solutions must possess the following values and characteristics:

Simple and Elegant

Users shouldn't have to struggle with installing, configuring, or using expansion solutions. Expansion modules must be easy to use — plug-in or snap on easily. They must be durable — small enough to carry but large enough to handle easily without fear of loss or damage. And they must be stylish — unobtrusive and seamlessly match the design of the handheld.

Open Architecture

Palm encourages developers to create solutions for Palm handhelds. By providing simple and easy access to our hardware and software development kits, Palm aims to:

- Facilitate the creation of accessories for Palm handhelds and time to market
- Provide tools, such as hardware and schematics, that enable the most cost-efficient and practical solutions for customers
- Give developers the freedom to create the greatest variety of unique solutions

Affordability

As users rely increasingly on handhelds, expansion modules must deliver robust, powerful, cost-effective functionality.

The Case for Developers

Palm relies on the ingenuity and creativity of the Palm developer community to provide specialized functionality. This approach has resulted in the extremely successful symbiosis known as the Palm Economy. Comprising an army of more than 150,000 registered developers and millions of users of the Palm OS®, the Palm Economy has produced a virtuous circle in which licensees and developers create Palm software applications and hardware add-on modules, which in turn generate increased demand…which results in still more developers creating new solutions. Because we view these licensees and developers as integral to the value equation, we work hard to make sure they have the tools and information they need; we foster a business environment that is conducive to their success.

Palm's goal is to increase developers' opportunities and maximize the return on their effort by helping them leverage Palm resources and exposure to our vast installed base of users. In 2000, Palm announced a range of developer programs designed to help hardware and software developers, and content and service providers, produce the software and add-on solutions that expand functionality.

The Palm OS® Developer Program

The Palm OS® Developer Program is a comprehensive program designed to help software and hardware developers create and deliver innovative, market-focused and effective solutions for the Palm OS platform. The program goals are to engage and empower our partners and their development teams to create highly marketable solutions. The Palm OS Developer Program is aimed at enhancing the business environment for the innovation of solutions that will grow Palm and its partners' businesses.

The PluggedIn Program

The PluggedIn Program is the complete developer resource for Palm expansion solutions. As Palm's products and technologies continue to surge in popularity, the demand for expansion solutions for Palm handhelds grows exponentially. The PluggedIn Program is designed to encourage and support efforts to tap into this growing demand. The PluggedIn Program gives developers access to a wealth of Palm resources to inspire new product concepts and streamline the development process.

Whether a developer is working on Palm™ device specific hardware, software or expansion card content, it is the primary goal of the program to make sure that the appropriate programs and services are in place to give product concepts and ideas the best chances they have to get to market.

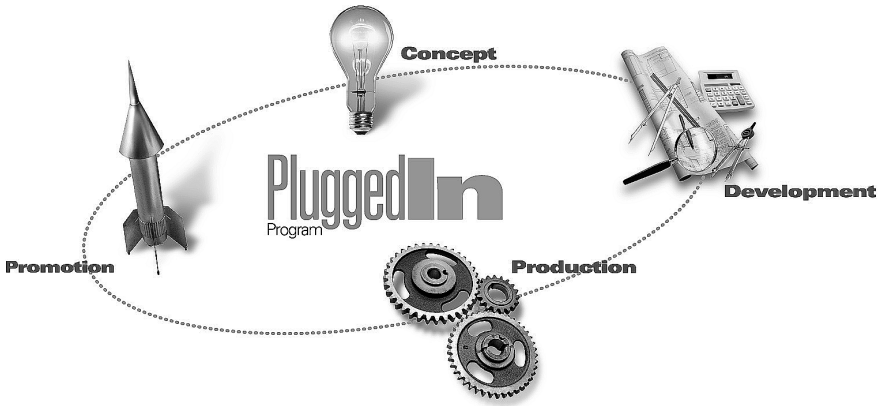


Figure 3. PluggedIn Program - Four Stages

No matter what stage of product development a developer is in, the PluggedIn Program has something to offer. The PluggedIn Program breaks down the product development life-cycle into four stages including: Concept, Development, Production and Promotion.

• **Concept -** In the Concept stage, developers who are thinking about developing hardware add-on modules and other peripheral products for Palm devices will find our PluggedIn Program an essential resource. Developers can order expansion development kits from the Palm Expansion Parts Store and take advantage of crucial reference materials such as CAD files, drawings, white papers, FAQ and reference designs.

• **Development -** In the Development stage, developers have direct access to information that will further streamline the product development. In addition to technical support and 24-hour access to web-based resources, we help developers stay on top of the latest Palm developer issues via developer e-newsletters and conferences. Developers may also qualify for discounts on existing Palm branded devices to keep development costs down.

• **Production -** In the Production stage, the PluggedIn Program provides contact information for valuable production partners. Whether a developer requires flashing services for expansion cards, memory manufacturers or hardware and/or software assistance, the PluggedIn Program simplifies search efforts by suggesting pre-approved vendors and service providers.

• **Promotion -** In the Promotion stage and depending on program commitment, Palm marketing opportunities may be available. If a product has successfully completed compatibility testing, it may be eligible for the Designed for Palm Handheld logo and additional marketing opportunities.

Summary

With the introduction of the Palm™ m500 series handhelds, Palm has begun to offer the benefits of its dual expansion architecture. This architecture, comprised of the Palm Universal Connector system and the Palm Expansion Card Slot that accepts MultiMediaCard, SD and SDIO media, will foster innovative ideas for applications and hardware solutions, some of which we have yet to consider. New software applications will drive the need for additional hardware peripherals, further expanding and empowering the Palm Economy. Interoperability, interchangeability and standardized data formats will allow for reduced cost of acquisition and ownership. These new technologies will provide additional opportunities for developers to create expansion solutions for consumers and businesses alike. Palm's new dual expansion architecture, will truly change the way we work, live and communicate.

Resources

Organizations and resources referred to in this paper can be found at the following:

Palm, Inc.

URL:	www.palm.com
Support:	www.palm.com/support

Palm OS® Developer Program

URL:	www.palmos.com

PluggedIn Program

URL:	www.palm.com/pluggedin
General Inquires:	PluggedIn@palm.com
Phone:	(408) 878-9955

MultiMediaCard Association

URL:	www.mmca.org
Email:	prophet2@mmca.org
Phone:	(408) 253-0441

SD Card Association

URL:	www.sdcard.org
Email:	rcreech@sdcard.org
Phone:	(831) 623-2107

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