

PALM



## **Palm Position Paper**

Palm Computing is in a unique position of expertise in the area of Personal Digital Assistant (PDA) computing: Palm Computing was founded on the market vision of small and powerful mobile consumer computers and has focused exclusively on the development of applications software for this market. Palm's founder, Jeff Hawkins, has extensive practical experience with the pen as the principle architect and designer of GRiD's pen computer product line. He is the author of PalmPrint™, Palm's patented pattern recognition algorithm. PalmPrint is the most widely used recognizer available in North America today.

Palm is an early leader in the field of applications software, handwriting recognition, and add-on software for PDA devices. Its first commercially available products are included with the Zoomer PDAs from Casio Computer Inc. and Tandy Corporation.

This Position Paper describes Palm's view on the appropriate user interface for PDAs.

### **Powerful PDAs Require Powerful New User Interface Models**

Early in the development of PDA software, Palm realized that new user interface paradigms were needed to fully exploit the promise of mobile computing. This was true because of the requirements that a useful PDA must fulfill:

- It must be small to be portable.
- It must have a large graphic display.
- It must provide fast, error free, and easy data entry, because users will not accept a PDA with restrictive, frustrating, inaccurate, or slow data entry.

As Palm Computing reviewed these factors, certain realities became apparent. The concept of traditional keyboards was out. Full-size keyboards are too large and unwieldy; miniature keypads are too difficult to operate and can consume space that would be better utilized for display purposes. Therefore, the pen becomes the ideal PDA user interface tool.

There are several functions at which the pen interface excels:

- It provides excellent machine control. You can use it to choose a menu item, select an option from a list, or move an icon across the screen.
- It provides true portability. It can be used in situations and settings where a keyboard, or a keyboard and a mouse, are unwieldy and impractical.
- It is efficient for entry of graphical data, such as scribbled notes or quick drawings.

While it might appear intuitively obvious that text entry would be on this list, such has not been the case due to the limitations of handwriting recognition technology and the often slow and inaccurate conversion of handwritten characters into machine readable text. In fact, the keyboard still remains the best method for entering text quickly and accurately into a computer.

## Is the Pen the Point?

The answer is – not really. Rather, the point is the user's positive experience while using the PDA. Therefore, the key consideration for a successful PDA user interface design has to be understanding the user's needs. What kind of data does the user want to enter, for what purpose, and in what kind of setting? For example:

- Data entries that are short and primarily for the user's personal use, such as an entry of a lunch appointment in the calendar, are most easily accomplished in the user's own handwriting, using electronic ink. There is no need for translation into electronic type in this case; however, there may be a need to apply computer functions to the entry such as adding a reminder alarm.
- Some entries need to be captured in electronic type because of their later use. For example, an entry may be intended for e-mail distribution, for sorting by alphabet, or simply for being read by another person on the PDA screen. Handwriting recognition may be the most appropriate entry method for these, whereas longer text entries would be most conveniently and quickly accomplished using a keyboard.
- Finally, the different settings in which the user enters data into the PDA change how he or she perceives the ease and usefulness of any given data entry method. When sitting at a desk with plenty of time, the user may find that handwriting recognition is the best data entry option. The same user, taking notes quickly while standing at a phone in the airport, will probably prefer electronic ink. Entering a longer list of meeting-agenda items in the calendar for later inclusion in a memo may best be accomplished by the use of an on-screen keyboard.

## Palm's solution to the challenges of mobile applications

The challenge was clearly defined. Existing pen user interface models were not adequate for the versatile and changing needs of PDA users, and Palm had to design a new pen user interface that is a powerful, convenient, and accurate tool for data entry and retrieval.

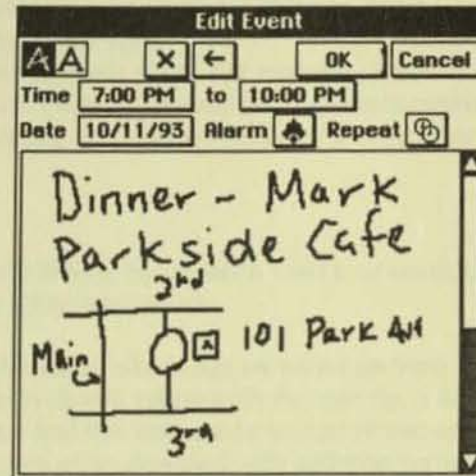
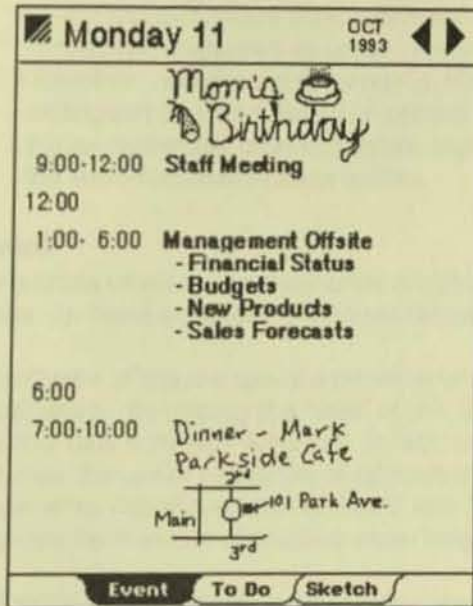
Palm has addressed these needs, providing the user with the choice of three interchangeable data-entry methods in any Palm application: (1) the use of ink, including the "structured" PowerInk™ technology\*, (2) Palm's patented PalmPrint handwriting recognition capability, and (3) a movable on-screen keyboard that is pen-driven.

## PowerInk

Ink is a very quick and easy way to enter data; it is just like scribbling a note or making a sketch on a piece of paper. Yet one of the limitations of "traditional" ink is that the program cannot apply intelligence to whatever is stored as ink. Palm's solution for this dilemma was to invent PowerInk, a revolutionary "structured" ink format.

- PowerInk allows ink and text to be used interchangeably everywhere. For example, ink and text can be interchanged in such fields as address book entries (on a field-by-field basis), calendar events, to-do items, notes, and note titles.
- PowerInk entries are treated as objects, not a layer on top of the application. This allows them to be moved, alarmed, indexed, and so forth, just like electronic text.
- PowerInk offers delayed recognition – character entries can be recognized at any time after the initial entry.
- PowerInk is entered at full screen-width and then reduced in size for display purposes, which maximizes the use of a small screen.
- Fields expand vertically to accommodate whatever ink or text is entered.
- A unique editing method, Backspace Ink™\*, allows quick, accurate and simple error correction.

\*Patents Pending



For example, a user can enter a dinner appointment into the calendar using a special ink-dialogue field. It's not necessary to write in an especially small size because the entire width of the screen and most of its height is available. The program then shrinks the ink entry down and places it in the appropriate field of the Palm Date Book. Since this field allows structure to be applied, an alarm can then be set which will sound an hour in advance of the appointment time and display the ink entry. Just as easily, the appointment can be moved to a new time and date without having to enter it again. If the entry contains an error, it can be corrected stroke-by-stroke by tapping the BackspaceInk button on the screen. This method is faster and more accurate than the use of an "eraser" tool, especially in the case of the frequently overlapping strokes of cursive handwriting.

### PalmPrint Handwriting Recognition

Because there are many occasions when the user desires electronic type, PDA software must also offer the user accurate and fast character recognition. PalmPrint, Palm Computing's patented handwriting recognition technology, is the most widely used recognizer in North America today. The program is simple, accurate, and fast.

PalmPrint provides recognition accuracy equal to or exceeding other available recognizers and it does so with a requirement for only about 40 kilobytes of working memory. Most recognizers take an unidentified character and compare it to numerous handwriting samples to determine the closest match. It must pass through the entire collection of samples to be sure that it has made the best match, even if the best match turns out to be the first one it used. Consequently, these programs require a high-powered microprocessor and a lot of memory to move through this mound of data in a timely way. Increased recognition accuracy is gained by adding more samples and performance suffers even more.

In contrast, PalmPrint uses templates that were defined previously through the use of hundreds of handwriting samples. Each template is extremely small in size and represents an individual character. You might say that one template represents "the essence of the character A." By running more samples through the template, its formula is modified, and its recognition accuracy increased, while the template itself does not grow in size.

For the PDA user, PalmPrint handwriting recognition technology offers many additional benefits:

- PalmPrint is user independent. It provides highly accurate recognition without the use of user-specific handwriting samples.
- It does not require time-consuming user training and allows recognition even in cases where the user's handwriting changes due to factors such as time constraints, stress, etc.

- PalmPrint recognizes both uppercase and lowercase printed letters and can display recognized characters as upper-, lower-, or mixed-case text.
- PalmPrint is designed to recognize the way people really print. For example, it can distinguish between individual printed characters even when multiple characters overlap. It also recognizes delayed strokes, such as crossing a "t" in the middle of a word after the word has already been written.

### **Keyboard**

There are times when a user must enter lengthy amounts of text, punctuation marks, or unusual characters. In these instances, a keyboard becomes an attractive feature.

Palm's software offers the use of a movable on-screen keyboard which can be called up from within any Palm application. By tapping the "keys" of this on-screen keyboard image with the pen tip, it is easy to enter textual data with high accuracy. In fact, many users find this keyboard method of text entry more efficient than the use of one of the small keyboards that are often provided with palmtop computers. User experience has shown that keyboard text can be tapped in as fast as, if not faster, than even unrecognized handwritten characters when longer strings of text are required.

Finally, Palm's applications also support the use of a real keyboard in PDAs that offer this hardware option.

### **Summary**

The pen is a key enabling technology in bringing about the promise of truly mobile computing. However, the pen must be properly applied for maximum user benefit. Palm feels that the appropriate pen user interface gives the user the choice between ink, handwriting recognition, and keyboard entries. Only such a flexible user interface, one that accommodates the user's needs, will lead to the widespread acceptance of PDA devices.



# The Palm Personal Information Manager

Palm Computing's Personal Information Manager (PIM) software rolls date book, to-do list, address book, and notebook functions into one streamlined system of personal scheduling, organization, and time management.

And the best part is—it's not only fast, but easy to learn. Not only powerful, but easy to use. Why? Because it's based on the familiar feel of pen on paper—the tools that you've been using all along.

## Flexible Data Entry

The Palm PIM has been designed to provide you with fast, simple, and flexible data entry. It lets you choose how to enter information, using one or more of three interchangeable methods:



### • PalmPrint™

#### Handwriting Recognition:

PalmPrint allows fast, accurate conversion of hand printed uppercase and lowercase text into printed type. No handwriting recognition training required! You can be productive immediately, and your PDA will recognize not only your hand printing but other people's as well.

PalmPrint is the most widely used handwriting recognition engine for pen computers. It is designed to recognize the way people really print. For example, it can recognize delayed strokes, such as crossing a 't', and distinguish between overlapping characters.



### • Floating Keyboard:

When you want to make longer text entries that are rapid and error free, simply use your pen tip on the on-screen keyboard image, just as if it were your fingertip on a typewriter keyboard.



### • PowerInk™:

Sometimes, your own handwriting is the quickest way to store an appointment or contact information. Write an entry in cursive handwriting, make a sketch, or draw a map using the full width of the screen. Your entry is stored as PowerInk, Palm's revolutionary electronic ink technology. PowerInk entries automatically shrink in size to fit on the page so they won't clutter your display. There are no limits to how much you can enter—add any number of lines that you need, the fields will expand to accommodate your entry.

Your handwritten entries are not static—they can be moved, indexed, automatically repeated, and alarmed just like type, giving you all the advantages of computer data. And making corrections is fast, easy, and precise with Palm's patented BackspaceInk™ editing system. Just tap a button to erase your last pen strokes, stroke by stroke.

**Monday 11** OCT 1993

Mom's Birthday

9:00-12:00 **Staff Meeting**

12:00

1:00- 6:00 **Management Offsite**

- Financial Status
- Budgets
- New Products
- Sales Forecasts

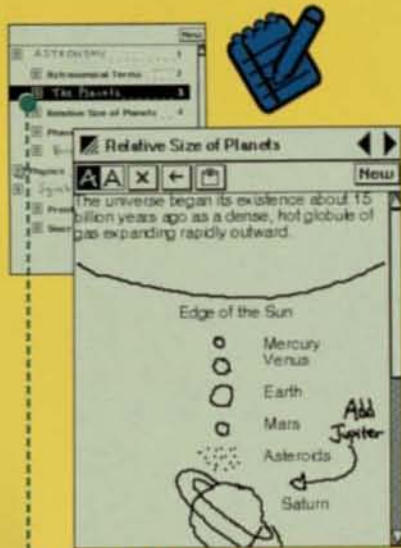
6:00

7:00-10:00 **Dinner - Mark Parkside Cafe**

Main 101 Park Ave. 3rd

Event To Do Sketch

## Three Versatile User Modules



**Note Book**  
Take notes and make sketches at home, at work, or on the road. And view and organize them anywhere...anytime.

### Address Book

- Enter or change contact information by tapping on any of 16 pre-defined fields.
- Create up to 4 custom fields of your own.
- Add notes, maps, lists, or sketches on the sketch page attached to any address entry.
- Create multiple address books for business and personal entries.
- Maximize use of the screen: view either all address book fields or only those that contain data.

### Note Book

- Mix type and electronic ink entries freely and easily.
- Add title pages in text or PowerInk. They appear in the table of contents automatically.
- Move and group pages around a topic by dragging the pen.
- Organize the table of contents any way you like by dragging titles with the pen.
- Maximize screen use by collapsing or expanding topics in the index.

### Date Book

- Navigate to appointments and to-do items quickly and easily by tapping on the screen.
- View your schedule in a day, week, month, and six-month calendar view.
- Enter recurring events only once, the system will display them daily, weekly, monthly, or annually.
- Use unlimited time slot space to enter all your scheduled activities—daytime or nighttime.
- Set reminder alarms for minutes, hours, or days prior to important events.
- Enter notes, maps, lists, or sketches on the sketch page attached to each day.
- Show multi-day events with electronic ink on the month display.
- Keep track of and prioritize your action items with the dynamic to-do list. Uncompleted items automatically carry over to tomorrow.



**Address Book**  
Maintain your contact listings accurately, neatly and easily.



**Date Book**  
Keep your schedule and to-do list as up-to-date as your latest entry.



The Palm PIM - now available in Zoomer PDA products.

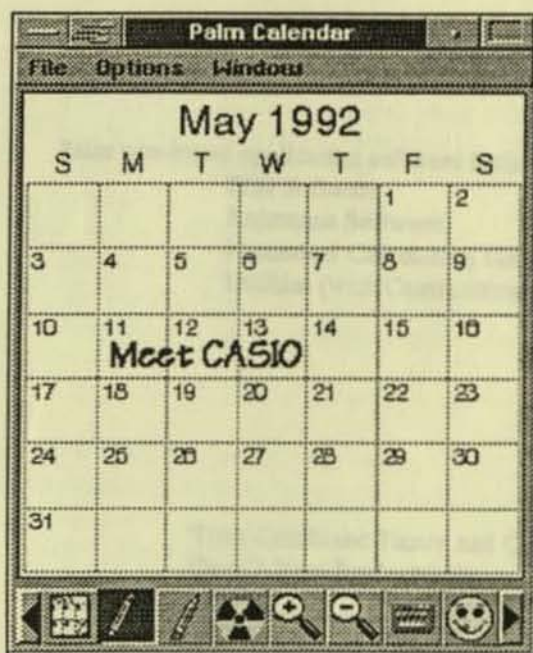
For more information contact:

Palm Computing, 4410 El Camino Real, Suite 108, Los Altos, California 94022.

# Palm Computing Inc.

## Software Proposal to Tandy and Casio

April 24, 1992



### Pricing Options Contract Software Specifications

Proprietary and Confidential

Pricing Options for Palm Computing Applications and Utilities  
Presented to Tandy Corp. and Casio Computer Co., LTD  
April 24, 1992

Product Description

Palm pen-based application software including\*:  
PIM Software  
Reference Software  
Numerical Calculation Software  
Utilities (with Communications) Software

Pricing Options

	Total Combined Tandy and Casio Unit Shipment Target Over 2-Year Product Life				
	100k	250k	500k	750k	1MM
Unit Price	\$12.5	\$9.5	\$7.5	\$6.6	\$5.9
Total Contract Value	\$1.25MM	\$2.375MM	\$3.75MM	\$4.95MM	\$5.9MM
Advance %	45%	32%	28%	26%	26%
Advance Amount	\$563k	\$760k	\$1.05MM	\$1.287MM	\$1.534MM

Sales Scenarios (presented as an aid for analysis)

	Unit Price				
	\$12.5	\$9.5	\$7.5	\$6.6	\$5.9
Contract \$ at 100k Units	\$1,250k	\$950k	\$750k	\$660k	\$590k
Contract \$ at 250k Units	\$3,125k	\$2,375k	\$1,875k	\$1,650k	\$1,475k
Contract \$ at 500k Units	\$6,250k	\$4,750k	\$3,750k	\$3,300k	\$2,950k
Contract \$ at 750k Units	\$9,375k	\$7,125k	\$5,625k	\$4,950k	\$4,425k
Contract \$ at 1MM Units	\$12,500k	\$9,500k	\$7,500k	\$6,600k	\$5,900k
Contract \$ at 1.25MM Units	\$15,625k	\$11,875k	\$9,375k	\$8,250k	\$7,375k

Continued



PALM COMPUTING, INC.  
MEMORANDUM

Additional Terms

The advance amount will be payable based on the following schedule:  
25% at contract signing  
25% at release of Beta product  
50% at release of product to ROM

The contract will terminate two years after the first product shipment.  
The unit price will remain constant for the life of the contract.  
The unit royalty will be 50% of the unit price until the advance amount is recovered.

The following services are included in the quoted pricing options:  
Hardware and software product specification consulting  
Integration of Palm Computing applications with the GEOS operating system  
Integration of all software with the hardware platform

The following services and costs are not included:  
Designing and producing custom applications for Tandy and/or Casio  
The royalty for a dictionary/thesaurus which will be passed through  
Designing and producing non-English language applications

\* The product features are described in the preliminary software specification which is included in this document. The pricing is based on that specification and assumes no substantive additions will be made.

GRANT OF LICENSES

(1) License Subject to all the terms and conditions herein, PALM COMPUTING hereby grants to OEM, and OEM hereby accepts, the following:

(a) A non-exclusive, non-transferable, worldwide license to use and integrate the Software with OEM's System by installing it on the System ROM.

(b) A non-exclusive, non-transferable license to make such copies of the Software with modifications as may be pre-approved in writing by PALM COMPUTING, only as provided when OEM manufactures or distributes the

**PALM COMPUTING, INC.  
OEM AGREEMENT**

This agreement (the "Agreement") is made effective and entered into as of \_\_\_\_\_, 1992 (the "Effective Date"), by and between Palm Computing, Inc., a California corporation ("PALM COMPUTING"), and \_\_\_\_\_, a corporation ("OEM").

**RECITALS**

A. OEM is a manufacturer of IBM PC compatible pen-based systems.

B. PALM COMPUTING is a developer, manufacturer, distributor, and publisher of computer software products, including a proprietary software product which provides a graphical environment with a set of application programs for operation on pen-based IBM PC compatible devices (as more fully defined in Exhibit A, and hereafter referred to as the "Software").

C. PALM COMPUTING and OEM desire that PALM COMPUTING grant to OEM the right to integrate the Software on OEM's pen-based systems (as more fully defined in Exhibit B, and hereafter referred to as "OEM's Systems" or the "System") in accordance with the terms of this Agreement.

**AGREEMENT**

Now, therefore, in consideration of the promises contained in this Agreement, the parties agree as follows:

1. GRANT OF LICENSES.

(a) Licenses. Subject to all the terms and conditions herein, PALM COMPUTING hereby grants to OEM, and OEM hereby accepts, the following:

(i) a non-exclusive, non-transferable, worldwide license to sublicense and integrate the Software with OEM's Systems by installing it on the System ROM.

(ii) a non-exclusive, non-transferable license to make exact copies of the Software, with modifications only if pre-approved in writing by PALM COMPUTING, only at premises where OEM manufactures or sub-contracts the

manufacture of its Systems, and solely for the purpose of loading such copies onto the OEM Systems' ROM.

(iii) a non-exclusive worldwide license to use PALM COMPUTING's trademarks, trade names and logos associated with the Software solely for the purpose of marketing and distributing the System with the Software loaded on ROM.

(b) No Implied Licenses. There are no implied licenses under this Agreement, and any rights not expressly granted to OEM hereunder are reserved by PALM COMPUTING.

2. AFFILIATES. As used in this Agreement, "OEM" includes Affiliates of OEM which agree in writing to comply with and be bound by all the terms and conditions of this Agreement and provided OEM guarantees to PALM COMPUTING in writing such Affiliates' fulfillment of such obligations. An "Affiliate" of OEM is any entity which is controlled by OEM, any entity which controls OEM, or any entity which is controlled by an entity which controls OEM. Control occurs by an entity controlling or owning more than 50% of the voting stock of the controlled entity.

3. DELIVERY OF THE SOFTWARE AND ACCEPTANCE.

(a) Software Delivery Schedule. OEM and PALM COMPUTING agree to the following target release schedule leading up to and including final release of the Software to ROM. (The events are more fully defined in Exhibit C., and hereafter referred to as the "Software Delivery Schedule")

<u>Event</u>	<u>Proposed Date</u>
Preliminary Specification	April 24, 1992
Final Specification/Software Beta 1	January 15, 1993
ROM Release	April 10, 1993

(b) Acceptance of the Software. At the time of OEM's final release of the Software to System ROM, OEM will be deemed to have accepted the Software and to have determined to OEM's satisfaction that the Software is substantially in accordance with the final Software specifications and substantially compatible with the System. OEM is solely responsible for testing the Software for compatibility with OEM's Systems, although PALM COMPUTING agrees to assist OEM to test compatibility. In addition, at the time of the final release of the Software to System ROM, OEM expressly releases PALM COMPUTING from any and all further liability or responsibility concerning features, functions, bugs, or compatibility of the Software with the System. Any changes to the Software integrated on the System requested by

OEM after the final release of the Software to System ROM are not covered under this Agreement.

4. OEM'S MANUFACTURING RESPONSIBILITIES.

(a) User Manuals. PALM COMPUTING will provide a user manual for the Software in machine readable text. OEM will make accurate copies of the Software user manual, either integrated into the System manual or stand-alone, unless and except as otherwise agreed to in writing by PALM COMPUTING, using the machine readable text provided by PALM COMPUTING.

(b) Loading Computer Programs. OEM shall be solely responsible for properly loading the Software on such OEM's Systems. "Properly loading" the Software means that, unless PALM COMPUTING otherwise agrees in writing, all of the Software computer programs (including data files) are loaded so that all the functions and features of the Software may be utilized by an end user. Without PALM COMPUTING's prior written consent, OEM may not exclude some of the Software computer programs.

5. END USER LICENSE AND PACKAGING OF THE SYSTEM.

(a) Materials Packed with the System. Each unit of OEM's System will be packaged to include the following: (i) Software user manual and other end user documentation as reasonably required by PALM COMPUTING, either integrated in the System user manual or packed separately; (ii) at least one registration card whose generated data will be accessible by Palm Computing; (iii) one Software end user license and limitation of liability which may be included as part of the System user manual as reasonably acceptable to PALM COMPUTING; and, (iv) PALM COMPUTING promotional materials provided by PALM COMPUTING and which PALM COMPUTING requires, subject to OEM's approval as set forth below, to be included with each unit of the System. OEM will have the right to preapprove PALM COMPUTING's promotional materials to be included with the System, such approval not to be unreasonably withheld or delayed (OEM to reply to PALM COMPUTING within five (5) business days).

(b) Outer Packaging and System Casing. A notice and/or logo, in a form mutually agreed upon by the parties, will be prominently affixed to the outer package of OEM's System and on the System casing indicating that PALM COMPUTING's Software is included. OEM will furnish to PALM COMPUTING for its review one sample of any and all versions of the outer package of OEM's System, and of the System itself, before the release of such versions of the packaging and System. PALM COMPUTING shall promptly review (within five (5) business days)

any and all such samples provided to PALM COMPUTING under this Subsection, and will promptly return such samples to OEM. If PALM COMPUTING identifies in its reasonable discretion a deviation from the agreed form of the notice and/or logo on the packaging or System, OEM shall promptly correct such deviation.

(c) Additional Copies of Promotional Materials. From time to time, OEM may order, by issuing a purchase order to PALM COMPUTING, reasonable quantities of more PALM COMPUTING promotional materials or registration cards at no additional charge. PALM COMPUTING will use commercially reasonable efforts to deliver such ordered quantities of requested items to OEM by its requested delivery date; provided, however, that OEM acknowledges that PALM COMPUTING generally requires at least a thirty (30) day lead time to ship such orders to OEM and OEM agrees to use reasonable efforts to order such additional quantities at least thirty (30) days in advance of their needs. Notwithstanding the foregoing, without liability to OEM and without prejudice to PALM COMPUTING's right to terminate for breach, PALM COMPUTING may delay or cancel the delivery of any of the foregoing materials to OEM if OEM is in breach of this Agreement, including without limitation if OEM is late in the payment of any monies owed PALM COMPUTING hereunder.

## 6. PROPRIETARY RIGHTS.

(a) Software Ownership. Title to the Software is reserved to PALM COMPUTING and its licensors. OEM acknowledges and agrees that PALM COMPUTING and PALM COMPUTING's licensor(s) are and shall remain the owners of all intellectual property rights in and to the Software. The terms "purchase", "sell" and "sold" when used with the Software in this Agreement refer only to the purchase or sale of a license to use the Software. OEM agrees that it will not use, copy, distribute, modify or transfer the Software except as expressly permitted in writing by PALM COMPUTING or otherwise in accordance with the terms of this Agreement.

(b) Proprietary Notices. As a condition to the licenses granted to OEM under Section 1, OEM shall reproduce and include any and all PALM COMPUTING (and PALM COMPUTING's licensors') copyright notices, patent notices, trademarks, service marks, restricted rights legends, other proprietary markings, and/or confidential legends on any copies of the System user manual, Software user manual, packaging, and/or related materials as PALM COMPUTING shall reasonably request.

## 7. PAYMENT.

(a) Royalty Payments. As payment for the rights granted hereunder, subject to Subsection (b) below, OEM agrees to pay to PALM COMPUTING royalty

payments as set forth in Exhibit D attached hereto consisting of the advance amount and the per-unit amount for each and every unit of the Software distributed or used by OEM. Such royalty payments are due and payable (i) as to the advance amount(s), on the date(s) specified in Exhibit D and (ii) as to the per unit amount, within thirty days after the Payment Period as set forth in Exhibit D in which the earlier occurs (1) when such units of integrated Software are shipped, or (2) when OEM receives payment for such units. All payments are to be made in U.S. dollars.

(b) Not For Resale Units. Notwithstanding the foregoing, OEM will not incur any royalty payments for "not for resale" units of OEM's Systems integrated with the Software which are provided free of charge to an end user or OEM distributor or dealer, or integrated units (OEM's Systems with the Software ) used by OEM solely for demonstration purposes and/or for customer support of the Software; provided, however, that a royalty payment will become due if and when OEM receives a payment or other compensation for any such integrated units or OEM uses such integrated unit(s) for internal use other than as set forth in this Subsection.

(c) Records. OEM shall maintain complete and correct records concerning OEM's and any of its sub-contractors' production of Systems integrated with the Software , and the distribution of Systems integrated with the Software by OEM. OEM shall ensure that any sub-contractors it may use in accordance with this Agreement maintains similar records as to their production and distribution of the Systems integrated with the Software .

(d) Reports. No later than thirty (30) days after the end of each Payment Period as set forth in Exhibit D, OEM shall send PALM COMPUTING a report detailing for such preceding Payment Period and cumulatively since the inception of this Agreement:

- (i) The number of Systems integrated with the Software produced by OEM and any of its sub-contractors, with a breakdown showing how many such Systems were produced in each of OEM's facilities and by each of its subcontractors;
- (ii) the number of Systems integrated with the Software in inventory, with a breakdown by location;
- (iii) the number of Systems integrated with the Software distributed, including a breakdown as applicable by System version and country; and
- (iv) a detailed account of all amounts due to PALM COMPUTING under this Agreement.

At the same time as submitting the foregoing report, OEM shall pay the amount due for such Payment Period.

(e) Audits. At reasonable times during the term of this Agreement and for nine months after the later of (i) expiration or any termination of this Agreement, or (ii) the date on which OEM last ships Systems integrated with the Software in accordance with Section 15(d), an independent third party representative of PALM COMPUTING, reasonably acceptable to OEM, upon reasonable notice, shall have the right to conduct an audit of the relevant portions of OEM's books of account to verify compliance with this Agreement. OEM shall immediately pay any overdue payments revealed by such audit(s) plus a late penalty fee equal to 1.5% per month (or the maximum permitted by applicable law, if less) from the due date until paid. Except as set forth below, such audit(s) may be conducted no more than once in any twelve month period. PALM COMPUTING shall bear the costs of the audit; provided, however, if the audit reveals overdue payments in excess of five percent (5%) of the payments owed for any Payment Period, OEM shall pay the costs of such audit(s) and for each such audit(s), PALM COMPUTING shall have the right to conduct another audit during the same twelve month period. All information obtained by PALM COMPUTING's independent third party representative during any such audit shall be confidential and PALM COMPUTING and its independent third party representatives will keep it confidential, except to the extent it is reasonably necessary to disclose such information to enforce this Agreement.

8. ADVERTISING, TRADEMARK USAGE/PROTECTION AND PUBLICITY.

(a) Acknowledgement. OEM agrees that it will identify the Software by its product(s) name(s) as set forth in Exhibit A and PALM COMPUTING as the publisher of the Software in OEM's documentation included with OEM's Systems and any advertisement of OEM's Systems that refers to the inclusion or availability of the Software with OEM's Systems. OEM further agrees to comply with PALM COMPUTING's current trademark usage guidelines as PALM COMPUTING may provide from time to time.

(b) Review of Materials. In order to ensure proper use of PALM COMPUTING's trademarks, trade names and/or logos in OEM's advertisements and promotional material, for the first six months of this Agreement OEM will furnish to PALM COMPUTING for its review one copy of all materials which promote, advertise or mention the Software before such materials are released. Thereafter, either party may from time to time request that PALM COMPUTING review promotional materials that refer to the inclusion or availability of the Software, and OEM shall promptly provide such materials to PALM COMPUTING for its review. PALM COMPUTING shall promptly review (within five (5) business days) any and all materials provided to

PALM COMPUTING under this Subsection, and will promptly return such materials to OEM. If PALM COMPUTING identifies in its reasonable discretion any improper usage of its trademarks, trade names and/or logos or deficiencies in such materials, OEM shall promptly correct such improper usage and/or deficiencies.

(c) Use of OEM's Name. PALM COMPUTING shall be entitled to use OEM's name and the name of OEM's Systems in PALM COMPUTING promotional literature and marketing materials, subject to OEM's prior review, which review shall be completed within five (5) business days.

## 9. MISCELLANEOUS RECIPROCAL OBLIGATIONS.

(a) Customer Lists. Each party will provide to the other party at no charge its list of customers (names and addresses) who obtain OEM's Systems integrated with the Software (whether obtained from registration cards, warranty service, promotional materials, or other sources). Upon the request of the other party, such lists will be provided in machine readable format (as available) within thirty (30) days after each calendar quarter during the term of this Agreement, beginning with the first full calendar quarter in which OEM first distributes the Systems integrated with the Software. Each party may use such customer lists provided to it by the other party to promote its other products and services, but may not provide or sell to third parties such lists provided by the other party.

(b) Public Relations Programs. The parties shall cooperate in such mutually beneficial public relations programs as they deem appropriate and subsequently agree upon.

(c) Press Releases. Neither party shall issue any press releases regarding this Agreement or the parties' relationship hereunder without the other party's prior review and approval, and such review and comments shall be provided to the other party within five (5) business days.

10. SOFTWARE UPGRADES. The licenses granted to OEM herein shall extend to, and the term "Software " shall be deemed to include, such upgrades and revisions to the Software provided hereunder as may be delivered by PALM COMPUTING to OEM as described in this Section. PALM COMPUTING will provide OEM with any revision to the Software which is denoted and designated by PALM COMPUTING, in its sole discretion, as a change in the digit(s) to the right of the tenth digit [X.X(X)] in the product version number thereof and any amendment to the Software which is denoted and designated by PALM COMPUTING, in its sole discretion, as a change in the tenth digit [X.(X)X] in the Software version number therefor. OEM may incorporate any such amendments and revisions provided to OEM



hereunder in Systems integrated with the Software to be distributed under this Agreement at its discretion. Any amendment to the Software which is denoted and designated by PALM COMPUTING, in its sole discretion, as a change in the digit(s) to the left of the decimal point [(X).XX] in the product version number is not covered by this Agreement.

#### 11. TRAINING AND TECHNICAL SUPPORT.

(a) Training. PALM COMPUTING will at no charge provide \_\_\_ hours total (only \_\_\_ hours if PALM COMPUTING is providing first level customer support as set forth below) of technical support and training, to a reasonable number of OEM technical personnel on the Software at mutually agreed upon times and places. Such technical support and training shall be comprised of up to \_\_\_ hours of training at OEM's site and the balance of such \_\_\_ hours provided via telephone. PALM COMPUTING will provide a U.S. toll call phone number for OEM to obtain phone support and all such phone support and on site training shall be provided to OEM in English. OEM shall make available its technical personnel for such training. OEM shall be responsible for any travel expenses incurred by its own personnel and shall reimburse PALM COMPUTING for any reasonable travel expenses incurred as a result of providing such training. In the event OEM desires technical support and training beyond the \_\_\_ hours, it will be available on a time and materials basis at PALM COMPUTING's then current technical support and training fees.

(b) First Level Customer Support. This Subsection (b) applies if, as indicated on Exhibit B, OEM is to provide first level customer support to its Software sublicensee customers. OEM must provide a toll call phone number in each country in which OEM distributes Software (OEM may implement a 900 "pay for" call service number) for customers to use to obtain support. During the hours in which OEM provides telephone support to users of OEM's Systems (no less than OEM's normal business hours), OEM will also provide technical support, in the relevant local language, to the Software customers who obtain the Software integrated with OEM's Systems. OEM will include in its documentation provided with OEM's Systems and Software its customer support phone number(s) and hours when such support is available. In the event the trained OEM technical personnel are unable to answer the end users' question(s) regarding the Software after using "reasonable efforts", OEM's technical personnel may contact PALM COMPUTING with respect to such technical support questions. "Reasonable efforts" to answer a technical question as used in this paragraph means that (i) the OEM trained technical personnel will answer the question if they know the answer without reference to any written material, and (ii) if they don't know the answer without reference to any written materials, the technical personnel will review written reference materials supplied by PALM COMPUTING looking for the answer. PALM COMPUTING may refer OEM's customers who first call PALM COMPUTING directly for technical support to OEM. After termination of this

Agreement, OEM will continue to provide customer support as set forth above to its customers.

(c) OEM's Systems. On or before OEM's first shipment of the Software integrated with OEM's Systems, OEM will deliver to PALM COMPUTING at least two final version OEM's Systems with user documentation. PALM COMPUTING shall have and retain use of such OEM's Systems to meet its support and maintenance obligations under this Agreement.

(d) No Disparagement. Although this Agreement refers to end users of the Software distributed by OEM under this Agreement as OEM's customers, both parties acknowledge that such purchasers are purchasers of both parties' products and services and are customers of both parties. Without prejudice to any of the foregoing, both parties agree to cooperate in good faith to provide OEM's customers with quality customer service and neither party will disparage the other party's products or services.

## 12. PALM COMPUTING'S INDEMNITIES.

(a) Indemnity. PALM COMPUTING will defend OEM against, and pay any resulting awards and settlements arising from any claim, demand, suit or action to the extent it alleges that the Software as supplied by PALM COMPUTING infringes upon any U.S. patent issued as of the Effective Date of this Agreement or any U.S. trademark or copyright or trade secret of any third party, provided that (1) OEM promptly informs PALM COMPUTING in writing of any such claim, demand, action or suit, (2) PALM COMPUTING is given control over the defense thereof and OEM cooperates in the defense at PALM COMPUTING's expense, and (3) OEM will not agree to the settlement of any such claim, demand, action or suit prior to a final judgment thereon without the consent of PALM COMPUTING, whose consent will not be unreasonably withheld. OEM shall have the right to select its own counsel to participate in any such defense at OEM's expense. PALM COMPUTING's indemnity obligations do not apply to modifications to the Software made by PALM COMPUTING to OEM's specifications (e.g. the Exclusive Features), modifications made to the Software by anyone other than PALM COMPUTING, nor to any use of the Software with any other software or hardware not supplied by PALM COMPUTING if such alleged infringement would be avoided by use of the Software with other software or hardware.

(b) PALM COMPUTING's Options. If a claim, demand or suit alleging infringement is brought or PALM COMPUTING believes one may be brought, PALM COMPUTING shall have the option at its expense to (1) modify the Software to avoid the allegation of infringement, (2) obtain for OEM a license to continue bundling the Software, or (3) if neither (a) nor (b) are reasonably practicable in PALM COMPUTING's discretion, terminate this Agreement upon written notice.

(c) Limitation. This Section 12 sets forth PALM COMPUTING's entire liability to OEM for any actual or alleged infringement or misappropriation of any third party's intellectual property rights resulting from the Software .

13. OEM'S INDEMNITIES.

(a) Indemnity. OEM will defend PALM COMPUTING against, and pay any resulting awards and settlements arising from any claim, demand, suit or action to the extent it alleges that OEM's Systems infringe upon any U.S. patent issued as of the Effective Date of this Agreement, or any U.S. trademark or copyright or trade secret of any third party and/or any claim, demand, suit or action against PALM COMPUTING resulting from OEM's acts (subject to Section 12 above), provided that (1) PALM COMPUTING promptly informs OEM in writing of any such claim, demand, action or suit, (2) OEM is given control over the defense thereof and PALM COMPUTING cooperates in the defense at OEM' expense, and (3) PALM COMPUTING will not agree to the settlement of any such claim, demand, action or suit prior to a final judgment thereon without the consent of OEM, whose consent will not be unreasonably withheld. PALM COMPUTING shall have the right to select its own counsel to participate in any such defense at PALM COMPUTING's expense.

(b) Limitation. This Section 13 sets forth OEM's entire liability to PALM COMPUTING for any actual or alleged infringement or misappropriation of any third party's intellectual property rights resulting from OEM's Systems.

14. DISCLAIMER OF WARRANTIES. TO THE EXTENT PERMITTED BY APPLICABLE LAW, ALL EXPRESS AND IMPLIED WARRANTIES WITH RESPECT TO THE SOFTWARE , INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY EXCLUDED.

15. TERM OF AGREEMENT AND TERMINATION.

(a) Term. The term of this Agreement shall begin on the Effective Date and shall continue for the term as specified in Exhibit D unless terminated earlier in accordance with this Agreement.

(b) Termination For Breach. Both parties shall have the right to terminate this Agreement upon thirty (30) days prior written notice if the other party is in material breach of any term of this Agreement, including without limitation the payment of monies, and the breaching party fails to remedy such breach within the

thirty day notice period. Notwithstanding the foregoing, PALM COMPUTING may terminate this Agreement immediately upon written notice in the event OEM distributes the Software unbundled to any third party or OEM breaches Section 16(b).

(c) Bankruptcy. Both parties shall have the right to terminate this Agreement immediately upon written notice in the event that the other party becomes insolvent, files for any form of bankruptcy, makes any assignment for the benefit of creditors, or ceases to conduct business.

(d) Limited Rights After Termination. Upon any termination or expiration of this Agreement (i) if this Agreement is not terminated due to breach by OEM, OEM may continue to distribute its on-hand inventory of the Software integrated on the System in accordance with the terms and conditions of this Agreement for a period of six (6) months after the date of expiration or termination. Any termination or expiration shall not affect any end user's rights to use the Software in accordance with the Software end user license.

(e) General Effect of Termination. Except as specifically set forth above in Subsection (d), upon any termination or expiration of this Agreement all rights granted to OEM hereunder, including without limitation the licenses granted under Section 1, shall terminate and OEM shall (i) immediately cease all marketing and distribution of the Software, (ii) within fifteen (15) days of such termination or expiration return all copies of the Software, including without limitation master diskettes, user manuals and unused registration cards and PALM COMPUTING promotional material (OEM may destroy manuals manufactured by OEM), (iii) within thirty (30) days of such termination or expiration pay to PALM COMPUTING any and all sums due under this Agreement; and (iv) within thirty (30) days of such termination or expiration certify to PALM COMPUTING that all of the foregoing has been completed. Upon any termination of this Agreement, each party shall return to the other all confidential materials provided by the other party.

## 16. NONDISCLOSURE AND RESTRICTED USE.

(a) Confidential Information. In the course of performing this Agreement, each party may disclose to the other party trade secrets and confidential and proprietary information of the disclosing party ("Confidential Information"). Such Confidential Information includes without limitation the terms and conditions of this Agreement (Confidential Information of both parties), the trade secrets and technology embodied in the Software (PALM COMPUTING's Confidential Information), OEM's sales data (OEM's Confidential Information) and to the extent it is reasonably identified as confidential information, any other technical and/or internal specifications of the disclosing party's products, marketing plans, future products and other business information. All Confidential Information shall remain the sole property of the

disclosing party and the receiving party shall have no interest in or right to such Confidential Information except as expressly set forth in this Agreement. Both parties agree that all Confidential Information of the other party shall be held in strict confidence, will not be disseminated or disclosed to any third party and will not be used by the receiving party for any purpose other than performing its obligations under this Agreement without the express written consent of the disclosing party. Both parties agree to use at least the same degree of diligence to protect the other party's Confidential Information as it uses to protect any of its own trade secrets and other confidential information. The provisions of this Section shall not apply to any information or materials:

(i) which are in the public domain at the time of disclosure to the receiving party or which thereafter enter the public domain through no action or inaction by the receiving party or its employees; or

(ii) which the receiving party can establish and document was in the possession of, or known by, the receiving party prior to its receipt from the disclosing party; or

(iii) which are rightfully disclosed to the receiving party by another person not in violation of the proprietary or other rights of the disclosing party, or any other person or entity; or

(iv) which are independently developed by the receiving party, provided that the person or persons developing the same have not had access to the proprietary information or materials furnished to the receiving party by the disclosing party hereunder; or

(v) which are required to be disclosed pursuant to law; provided, however, that PALM COMPUTING shall be given notice in advance of such disclosure and shall have an opportunity to contest such disclosure.

(b) Restricted Use. Without prejudice to the generality of the foregoing, OEM agrees not to use any of the Software for any use or purposes except those expressly specified herein, and without limitation OEM agrees not to reverse engineer, de-compile or disassemble any of the computer programs provided to OEM hereunder or distribute the Software unbundled, or to authorize anyone else to do so.

17. LIMITATION OF LIABILITY. EXCEPT FOR OEM'S BREACH OF SECTION 16(b) AND EACH PARTY'S INDEMNITY OBLIGATIONS WITH RESPECT TO THIRD PARTY DAMAGES UNDER SECTION 12, REGARDLESS OF WHETHER ANY REMEDY SET FORTH HEREIN FAILS OF ITS ESSENTIAL

PURPOSE, NEITHER PARTY TO THIS AGREEMENT SHALL BE LIABLE TO THE OTHER PARTY FOR INCIDENTAL, SPECIAL OR CONSEQUENTIAL DAMAGES OR THE LOSS OF ANTICIPATED PROFITS ARISING FROM ANY PERFORMANCE OR BREACH OF THIS AGREEMENT BY SUCH PARTY EVEN IF NOTICE IS GIVEN OF THE POSSIBILITY OF SUCH DAMAGES. EXCEPT FOR THE EXCEPTION SET FORTH IN THE PRECEDING SENTENCE, IN NO EVENT SHALL PALM COMPUTING BE LIABLE FOR ANY DAMAGES IN EXCESS OF AMOUNTS PAID BY OEM TO PALM COMPUTING UNDER THIS AGREEMENT.

18. TAXES. Except for PALM COMPUTING's income taxes, OEM agrees to pay any and all sales, use, value added, withholding, excise and similar taxes on payments or otherwise arising from the Software provided to OEM under this Agreement.

19. GENERAL.

(a) Entire Agreement. This Agreement and the Exhibit(s) hereto state the entire agreement between the parties and supersedes all prior communications, written or oral, between the parties. No terms in any purchase order or other forms shall apply, even if such purchase order or other forms are accepted by PALM COMPUTING. No amendment or modification of this Agreement may be made except by an instrument in writing signed by both parties.

(b) Assignment. This Agreement may not be assigned in whole or in part by either party without the prior written consent of the other party, which consent shall not be unreasonably withheld, except that PALM COMPUTING may assign this Agreement without OEM's prior written consent in the event of a merger or reorganization of PALM COMPUTING or sale of substantially all of PALM COMPUTING's assets.

(c) Governing Law. This Agreement will be governed and interpreted in accordance with the laws of the State of California, except for that body of law pertaining to conflicts of law, and the U.S. copyright laws.

(d) Independent Contractors. Both parties will be deemed to have the status of an independent contractor towards the other party, and nothing in this Agreement will be deemed to place the parties in the relationship of employer-employee, principal-agent, partners or joint venturers.

(e) Attorneys' Fees. In the event that any legal action, including arbitration, is required in order to enforce or interpret any of the provisions of this

Agreement, the prevailing party in such action shall recover all reasonable costs and expenses, including attorneys' fees, incurred in connection therewith.

(f) Waiver. The failure of either party to enforce any provision of this Agreement shall not be deemed a waiver of that or any other provision of this Agreement.

(g) Force Majeure. Neither party will be deemed in default of this Agreement to the extent that performance of their obligations (except for the payment of monies) are delayed or prevented by reason of any act of God, fire, natural disaster, accident, act of government, shortages of material or supplies or any other cause beyond the control of such party ("Force Majeure"), provided that such party gives the other party written notice thereof promptly and, in any event, within fifteen (15) days of discovery thereof and uses its good faith efforts to cure the breach. In the event of such a Force Majeure, the time for performance or cure will be extended for a period equal to the duration of the Force Majeure but not in excess of six (6) months.

(h) Headings. The headings of the Sections and Subsections of this Agreement are for convenience only and will not be of any effect in construing the meanings of the Sections.

(i) Severability. If any of the provisions of this Agreement are found or deemed by a court of competent jurisdiction to be invalid or unenforceable, they shall be severable from the remainder of the Agreement and shall not cause the invalidity or unenforceability of the remainder of the Agreement.

(j) Notices. Notices to either party shall be in writing and shall be deemed delivered when served in person or three business days after being deposited in the United States Mail, first-class certified mail postage prepaid, return receipt requested or one business day after being dispatched in the United States by a nationally recognized one-day express courier service or when received as evidenced by receipt acknowledgement if dispatched from outside the United States, and addressed to the addresses set forth in Exhibit B or other address as such party may notify the other of in accordance with this Subsection.

(k) Survival. The rights and obligations under Sections 4, 6, 7, 10, 12, 13, 14, 15, 16, 17, 18, and 19 shall survive the expiration and any termination of this Agreement.

(l) Compliance With Laws. Both parties agree to comply with all applicable laws and regulations in performing their duties hereunder. OEM understands that the Software is restricted by the United States Government from

export to certain countries and OEM agrees that it will not distribute or reexport directly or indirectly the Software in any way which will violate any of the export control laws or regulations of the United States.

(m) Injunction. OEM agrees that PALM COMPUTING shall have the right to seek an injunction and/or other specific performance in the event of any breach of this Agreement by OEM in addition to all other rights and remedies it may have under law and equity.

IN WITNESS WHEREOF, the parties have executed this Agreement as of the Effective Date.

OEM

PALM COMPUTING

By:

By:

Printed Name:

Name:

Title:

Title:



**EXHIBIT A  
SAMPLE**

SOFTWARE

Product Name: PALM COMPUTING "Productivity Package"

Languages: English

Programs (all in object code form only):

PALM "PIM" Personal information management

PALM "Reference" Useful information

PALM "Numerical Calc." Numerical functions

PALM "Utilities" Communications functions

All User's Manuals and Documentation as provided by PALM COMPUTING

2480 Sand Hill Road  
Menlo Park, CA 94025

PALM COMPUTING'S TELEPHONE NUMBER

415-854-3100

PALM COMPUTING'S FACSIMILE NUMBER

415-854-0145

PALM COMPUTING'S NOTICE RESCIEMENT

Jeff C. Hawkins  
President

First Level Customer Support To Be Provided By: DEM

**EXHIBIT B  
SAMPLE**

OEM'S SYSTEMS

Tandy System Type A., Part# xxx

Tandy System Type B., Part# xxx

(or)

Casio System Type A., Part# xxx

Casio System Type B., Part# xxx

Additional systems may be subsequently added to this list, subject to PALM COMPUTING approval, not to be unreasonably withheld.

PALM COMP'S ADDRESS

Suite 200  
2480 Sand Hill Road  
Menlo Park, CA 94025

OEM'S ADDRESS

PALM COMP'S TELEPHONE NUMBER

415-854-8600

OEM'S TELEPHONE NUMBER

PALM COMP'S FACSIMILE NUMBER

415-854-0345

OEM'S FACSIMILE NUMBER

PALM COMPUTING'S NOTICE RECIPIENT

Jeff C. Hawkins  
President

OEM'S NOTICE RECIPIENT

First Level Customer Support To Be Provided By: OEM

**EXHIBIT C  
SAMPLE**

**DELIVERY SCHEDULE**

**Event**

**Proposed Date**

Preliminary Specification Delivered

April 24, 1992

This specification provides a summary of product features and was delivered on April 24, 1992.

Final Specification/Beta Release

January 15, 1993

The final detailed specification is released, along with the final version of the software which will be tested against the final specification. (A more detailed description of this event will be added here as needed.)

Release to ROM

April 10, 1993

The final tested version of the software is released to ROM. (A more detailed description of this event will be added here as needed.)

**EXHIBIT D  
SAMPLE**

**TERM, ROYALTIES AND FEES**

**Term:** The "Term" of this Agreement will begin upon the Effective Date and will continue until two (2) years after the date of the first royalty bearing shipment (as described in Section 7) of any Tandy or Casio product containing the Software.

**Royalty:**

**Advance Payment:** OEM will pay PALM COMPUTING \$\_\_\_\_\_ as a non-refundable advance, payable as scheduled and agreed to by PALM COMPUTING and OEM.

**Per-Unit Amount:** In addition to the above payment(s), OEM will pay \$\_\_\_\_ per unit for each and every royalty bearing copy of the Software consistent with the terms of this Agreement until the termination or expiration of this Agreement subject to the Advance Payment Recovery described below.

**Advance Payment Recovery:** Commencing with the first unit shipment and continuing for each and every royalty bearing copy of the Software consistent with the terms of this Agreement until the Advance Payment is recovered by OEM, OEM will pay \$\_\_\_\_ per unit (50% of the Per-Unit Amount), and \$\_\_\_\_ per unit (50% of the Per-Unit Amount) will be charged against the Advance Payment amount.

**Payment Periods:** A Payment Period is a three month period beginning on the first day of the first month of the period and ending on the last day of the third month of the period, with four Payment Periods occurring each year.

- 1st Payment Period: from \_\_\_\_\_ to \_\_\_\_\_
- 2nd Payment Period: from \_\_\_\_\_ to \_\_\_\_\_
- 3rd Payment Period: from \_\_\_\_\_ to \_\_\_\_\_
- 4th Payment Period: from \_\_\_\_\_ to \_\_\_\_\_

CONFIDENTIAL

TO : CASIO H. FUJISAWA/M. SUGIHARA  
PALM J. HAWKINS/D.DUBINSKI/K.PURMAL  
GEOWORKS B. DOUGHERTY/D.REEVES  
TANDY H. ELIAS/K. TITSWORTH

FROM : AAFW B. SEWELL

CC: G. OGATA

DATE : 7/22/92

REF : OBS 1004

SUBJECT: ZOOMER MEETING IN CA/SFO 7/15-19  
=====

Attendants : Casio Fujisawa/Sugihara/Komine/Yoshida  
Geoworks Reeves  
Palm Hawkins/Dubinski/Purmal  
Tandy Elias/Titsworth  
AAFW Ogata/Sewell

I. Palm Presentation (copy attached-main points below)  
Note- Many discussions occurred during Palm's presentation  
which included more detailed info than indicated in  
attachment 1.

A. Infrastructure & Staffing at Palm

B. Meeting Tandy/Casio goals

Great software, on time, easy to use, sexy/hot

C. Palm's knowledge of Pen

-Handwriting Recognition - Palm mentioned what is needed  
to have a good hand writing recognition software  
package:

Ability to distinguish numbers/letters, upper/lower  
case

Writing large

Writing neatly (dictionary may be of some help)

-Recognition Improvement

A general discussion was held by all members about what  
is needed to improve the hand writing recognition  
technology. After much discussion and based on Jeff's  
knowledge/experience, the conclusion was made that  
handwriting recognition technology needs improvement in  
Artificial Intelligence (AI), not hardware, to improve  
the current technology. Jeff feels it will be some time  
(few years) before the AI technology is available.

-Cursive Recognition

Jeff advised this is dictionary based and no functionally  
acceptable solution has yet been developed by anyone.

-Newton Approach

Palm advised they felt the Newton approach (heavy  
reliance on recognition) is very risky due to the above  
discussion on recognition technology. Casio said they

trusted Jeff's opinion.

D. Gestures

Difficult to remember

Prone to errors

Palm suggested 1 or 2 gestures only.

Palm also explained other companies such as GO have tried to make extensive use of gestures and were not successful. After much discussion, Casio agreed to limiting the number of gestures but only 2 is not sufficient.

\*Gestures need to be studied more later. T/C/P would like to create a set of gestures which could possible become a standard.

Note: Competitive units will probably add 'Hype' about having gestures, so Zoomer will have to have utilize some gestures for competitive marketing reasons.

E. Ink

Good feature is to allow users to write ink and then reduce it (via ZOOM) because users write big.

Other Machines:

Slate Ink Only

Apple No Ink

Palm Ink + Recognition

F. Casio's 6 suggestions

G. Software Design Objectives

Intuitive and easy to use

Provide broad utility

Be fun and educational

Be Open and flexible

H. User Interface design goals

Provide intuitive and consistent visual metaphors

Maintain uncluttered screen

Use handwriting recognition appropriately

Structured/Unstructured data

Minimal use of menus

Minimal use of gestures

I. Product Screen Overview (See attachment 2 referenced below)

1. Icons may change to be less confusing

He clearly said the icon interfaces must be very clear and easy for the user to understand.

\*Palm is studying how to make them more comfortable and easy for the user to understand. Palm is also going to get user input to improve the icons.

2. Currently text only area. See discussion IV-D for more info on structured/unstructured data

3. Floating Menu Bar

\*Palm to study the best location for the menu bar to pop up.

J. Hard Icon Bar

Casio advised 8 icons maximum should be used

Currently Palm is considering Icons for:

Help	Launcher	Text Palette
Ink Palette	Menu	Calendar
Notepad	Rolodex	

\*The hard icon's will be finalized later

\*Palm/Geoworks to make proposal on icons/icon art

\*Palm will conduct user testing to assist in finalizing the icon bar.

K. Directional Keys and Buttons

The purpose is to allow users to scroll/etc.. without using the pen.

1. Button A (<Enter> type button)

2. Button B (<Esc> type button)

\*The metaphor to refer to these buttons may be changed. T/C/P to study.

3. Palm Mentioned 2 key functions (Ex. Hold button "A" plus a directional key to get XX function. He advised this was difficult and confusing for the user.

L. Additions to Specification

1. Final user interface

\*Needs further discussion and study.

2. Use of sound

\*Needs to be studied and added to the spec

3. Error conditions/messages

\*Needs to be added to the spec

4. Changes as a result of user testing

Casio advised they are concerned about making changes late in the development process. Palm is starting to talk with user groups and will put units in users hands as soon as hardware becomes available. Palm also stated the User Interface is relatively easy to change in relation to functionality which is much harder to change.

5. Enhancements (see 2)

6. Printing

Will be supported by systems and apps, but it was generally felt most users would not use the printing function.

\*The support for printing needs to be discussed further later.

M. Palm Computing's Product

Software

User Guide (goal is to not make the user refer to it to operate his Zoomer)

Tutorial

Quick Reference Card

On-Line Help

Technical Support (not at the user level)

\*Palm's documentation plan will be submitted by 8/30.

II. Geoworks

A. Version 2.0 level will be used in Zoomer

B. Design Issues

-Ease of use

-Maximum screen space usage

-Speed

C. Responsibility

Hardware - Casio

BIOS - Casio (some Geoworks)

DOS - Geoworks

KER - Casio

APPS

System - Geoworks

PIM - Palm

Games - Palm/Geoworks

Note: Pen Recognition is Geoworks, but was actually written by Jeff.

D. Running Multiple Applications

Geoworks advised multiple apps run at the same time. When the system becomes bogged down, it automatically shuts down the oldest (first opened) app. When the app is opened again, the location the user was last using will be displayed due to 'State Saving'.

E. General Specification

\*Geoworks will provide a more detailed spec asap.

F. Application Loading

When loading an app. for the very first time it is a little slower. One solution is to load the files before shipping to the warehouse.

III. Casio

\*Advise dot pitch .26 or .27 of LCD.

Mentioned it is confusing to the user to have inconsistency between applications (using menu bar in some).

\*Palm is rethinking the user interface.

Casio asked if the user can delete a block of text.



\*Geoworks/Palm is studying a way to use a select feature. This would be needed in the zoom feature as well to zoom in on an area, enter ink, then zoom back out.

Casio Asked a list of questions:

1. Gestures:  
Refer to the above discussion.
2. Adding Pages  
Pages can be added on top or back
3. Moving Pages  
Pages can be moved on the note pad.  
\*Palm is studying how to move pages
4. Move/Cut/Paste data  
\*Palm to study cutting and pasting structured data. The technology is available, but the User Interface is hard.
5. Search  
Is there a global search? Ex. search for "JEFF" in one app, does it find "JEFF" in other apps as well? G advised this requires the apps to 'talk' to each other. P/G are studying this but probably will not be able to do it for the first Zoomer.
6. Can an indexed field be searched?  
Can be supported in Rolodex
7. Can a field with data be highlighted and then search?  
\*Palm to study
8. Content Feature (such as US Constitution). Can it be blocked for other countries?  
Yes, but this needs to be discussed further later.
9. What games are being considered?  
Strategy/Word game (HE mentioned Tetris like game)
10. Ability to display DAY/WEEK/MONTH/ETC?  
See discussion in calendar section V.
11. Calendar/Schedule- Recurring events (Ex 2nd Monday of every month etc..)  
\*Palm thinks it can be done. They will study recurring events and advise.
12. To Do List- Sorting  
If no priority is set, it will be prioritized by date.  
\*Casio asked Palm to study displaying items in "x" increments according to date.  
Note: Past due items are shown first

13. When a to do list is completed, what happens?
  - A. Touch box with pen to delete it.
  - B. Touch box with pen to keep as a record (memory requirement is very small)
14. Notepad- Does it use a hierarchy?
 

No longer, it became too complicated
15. Enhancement Request
 

See attachment 2
16. Dictionary/Calculator- Casio wants to treat them like tools instead of apes.
  - \*P/G to advise if Calc/Dict. can be used as tools
  - \*G to advise if H/M dictionary can be used. Cost must be minimal if any.
17. Is text entry word wrapped?
 

Yes
18. Alarm- does it pop up everywhere?
 

Yes
19. Casio asked for spec of how zoom will work
  - \*Palm will submit spec of zoom feature.

#### IV. General

##### A. Applications on PCMCIA Cards

These will appear at the top of the list of Apps which can be launched in order to avoid user confusion. If they were alphabetized, the user may become confused. Everyone noted.

##### B. Files

- Multiple files within an APP (Ex. 2 rolodex files)
 

Casio asked how these would be opened and closed.

  - \*Palm to generate a proposal to show the metaphor to be used. (Everyone wanted to avoid words like save, open, etc.. to avoid being computer-like).
  - \*Geoworks to study and propose how to create a new file (like a new rolodex file).

Note: Only 1 file can be opened at a time in any application (Ex. 2 rolodex files could not be opened at once).
- Files can have up to 32 character names

##### C. Erasing

HE asked if it was possible to have some way to have the pen act like a regular pencil with an eraser, i.e., turn the pen upside to erase. Palm/Geoworks advised this is

not possible.

D. Structured Vs Unstructured Data

There was much discussion on this topic for quite some time as well as many smaller group meetings. The conclusion is that the Zoomer needs to be as much like pen and paper as possible. Palm advised they understood what Casio/Tandy wanted. The following action items developed:

- \*Palm to study better forms
- \*Palm to study being more like pen and paper

E. Label Maker

- \*Palm to study a metaphor called label maker.

F. Data Transfer

HE advised Traveling Software (TS) is putting a spec together in an attempt to develop a standard.

- \* Geoworks should talk to TS.

G. 3rd Party Developers

Tandy (as well as other groups) are getting calls and about 15 companies are interested, however, Tandy has not started a formal program yet.

H. Novice/Professional Mode

Originally a novice/professional mode was discussed. The spec has not been finalized. Palm advised their goal is to minimize the use of the menu bar.

I. Tandy Product Manager

- \*Casio asked when Tandy will assign a product manager.
- HE advised as soon as possible.

J. Fonts

- \*Palm to study making the fonts larger.

K. Optional Content

- \*T/C to review the attached list and reply to P.\*\*\*
- \*Palm to do cost research

V. Calendar

A. Viewing Options

Current: Month/Week/Day

HE asked to be able to show at least DAY/WEEK/MONTH/6 MONTH and would prefer a YEAR view as well. A 6 month view was demonstrated on another unit.

- \*Palm to study adding additional views to the calendar
- \*Palm to study displaying multi-day structured data

B. Calendar entry indication

T/C requested the calendar to show if anything is entered for a day on the DAY/WEEK/MONTH views.

- \*Palm to study adding a way to display data in

DAY/WEEK/MONTH views.

C. DeskMate Home Organizer  
\*Tandy (Kate) to send Palm a copy of the Deskmate Home Organizer.

D. Recurring Events  
See item 11 in Under Casio's questions section III.

VI Enhancement Requests  
See attachment 2

VII User Interface Issues (Recap)

Which Hard Icons  
A Button / B Button  
Arrow keys in title bar  
Make user input boxes more 'Paper-like'  
Better distinction between pages and structured data area  
Highlight segments of structured data or text to do search  
Label Maker idea  
Gesture definition  
Post it Notes

VII Marketing Issues

A. Comparison about what is known of Newton today:  

<u>Newton</u>	<u>Zoomer</u>
+Marketing Hype	+Battery life
+Sizzle of Apple	+Price to be cheaper
+Schedule ahead	+Open Platform
+Communication (Apple Talk/etc)	+Distribution
+Assistant	
-Recognition	

B. PDA Vs PIP (Casio's Opinion)

	<u>PDA</u>	<u>PIP</u>
Input	Hand Recgn. (Char+Geometry) AI Ink	Ink Hand Recgn
Search	Intelligent Data Base	Simple Data Base
Commun.	Network/File Xfer	Network/File Xfer
Interface	Mac-Like Paper Metaphor	Paper Metaphor Sound Effect
Function	Rolodex Calendar Notepad To Do	Rolodex Calendar Notepad To Do

Etc..

Etc...

NOTE: HE advised a more detailed competitive review should be held later when more info is known.

C. Positioning of Zoomer  
Need to get focus group input

D. Product Category  
Should it be in PDA category  
No category  
Create new category

It was also generally agreed not to mention the CPU to avoid falling into the 'spec check' category like many computer publications use to compare products.

E. SPA Conference  
Brian Dougherty will be speaking

#### VIII International

A. KB Legends  
\*Tandy/Casio to provide KB layouts

B. Countries Supported:  
Tandy/Casio advised the countries to support are  
English French German  
Italian Spanish Finish

\*Palm will use test groups and will use people such as students who still write in their native style (i.e., no USA influence). HE mentioned Tandy can send some units overseas to Tandy's Int'l offices if necessary.

C. Casio advised 2 versions (US & Int'l) are preferable. After discussion it was agreed to have 2 versions and it was clearly stated the U.S. version should not delay due to the int'l version development. Casio advised they would like the Int'l version to ship the same time (with-in 30 days) of the U.S. version.

Following are the action items:

- \*P/G to advise schedule for Int'l version asap
- \*C/T to advise priority of countries listed above for development

#### IX Communication

A.\*Palm to submit a monthly report the last day of the month to address the following:

Palm Computing Update  
Product progress  
Deviations from Spec  
Known Problems/find statistics  
Status of enhancements

Hardware Issues  
Users test results  
Comments  
Geoworks/Palm Meeting notes (they meet every 2 weeks)  
Changes to G's tools/UI

B.\*Geoworks will submit a similar report to the above (on the last day of the month).

OBS



## **Palm Computing Inc. to Develop Consumer Software for Palmtop Computers. Announces Support for Pen/GEOS Operating System.**

Menlo Park, CA. - February 19, 1992 - Palm Computing Inc. announced today that it is developing applications for the emerging pen-based palmtop computer market. Palm was recently founded by Jeff Hawkins, formerly V.P. of Research at GRiD Systems and a leader in the pen computing field. The company also announced that it has chosen Pen/GEOS from GeoWorks as the first platform for its applications.

Hawkins described his company's mission. "Palm Computing Inc. is the first software company to focus exclusively on the emerging market for low-cost consumer pen-based computers. We will provide a complete palmtop software solution, offering everything from handwriting recognition software to suites of applications for embedding in ROM. All of our software will be optimized to run on very inexpensive computers."

The company declined to discuss details of the applications it is creating. Hawkins would only say that, "Palm Computing expects the palmtop computer market to grow explosively in the very near future. A key ingredient to the growth of this market is a very low price point. The applications that are compelling and useful on a \$400 palmtop are not necessarily the same as those on a \$4000 computer. We are developing new applications which we believe will motivate large numbers of people to buy palmtops."

Palm Computing also announced that it has selected the Pen/GEOS operating system from GeoWorks as the first platform for its applications. Hawkins explained this decision. "Pen/GEOS is a very sophisticated object-oriented operating system. It is one of the most advanced operating systems available today on a PC, and yet it achieves outstanding performance on a minimally configured system. By combining our applications and our PalmPrint handwriting recognition technology with Pen/GEOS, we will provide a complete software solution for makers of 8086 architecture palmtops."

The company said it is working with several hardware vendors to have its applications bundled with their future palmtop product offerings.

Brian Dougherty, President of GeoWorks, commented on his company's relationship with Palm. "We are excited to have Palm Computing writing applications for the Pen/GEOS platform. Jeff Hawkins' track record shows that he is one of the few people who really understands the technologies and markets for pen computers. We are confident that their applications will accelerate the acceptance of palmtops and help establish Pen/GEOS as a standard for this class of machine. We have also decided to license PalmPrint, Palm's handwriting recognition technology, because of its small size and superior performance."

Palm Computing is a privately held software company headed by Jeff Hawkins. Prior to forming Palm, Hawkins was the primary architect of GRiD's pen-based product line. Palm Computing is located at 2480 Sand Hill Rd. Suite 200, Menlo Park, CA. 94025 (415) 854-8600.



# Zoomer™







## News Release

### For Immediate Release

#### **GeoWorks Provides GEOS System Software on Casio/Tandy's Zoomer Product Announced for Fall Availability**

**Chicago, June 3, 1993** — GeoWorks, the Berkeley, CA, developer of sophisticated system software, today joined Casio, Inc., Tandy® Corporation, Palm Computing, Intuit and America Online to announce the availability of the Zoomer Personal Digital Assistant (PDA)™ at the Summer Consumer Electronics Show being held here through June 6.

At the announcement, the companies provided specifics on their joint project: a handheld, pen-based device scheduled to be available in October. GeoWorks is providing the underlying system software, GEOS®, which provides rich functionality while delivering "unconscious" battery life of up to 100 hours so consumers won't need to remember to recharge their devices every day to have access to their important information. Zoomer is the first device enabled by the GEOS technology in the emerging class of low-cost hardware that combines sophisticated consumer electronics, computer, and communications capabilities.

GEOS is a leading edge, object oriented, graphical operating system designed to meet the stringent resource requirements of these new compact, lightweight, yet powerful devices. "A graphical environment running on inexpensive, single chip processors is unheard of to date in this emerging market," said Brian Dougherty, CEO of GeoWorks. "We have been working for the past five years to develop an operating system that will provide high quality graphics without demanding expensive system resources. This is a very exciting day to see the first product to prove our vision a reality shown to the public."

John V. Roach, chairman and chief executive officer of Tandy Corporation, said "GeoWorks was able to deliver the system software required to meet the design restrictions of Zoomer. It has 100 plus hours of battery life, the simplicity of pen and paper, the logical power of a computer and the ability to connect to a world of information in a pocket-sized device weighing less than one pound."

"We believe Zoomer will be a tremendous success by combining a compelling form factor along with sophisticated applications. But at its core is GEOS, the only system software available on the market today that can deliver

robust functionality with very limited hardware resources. This will enable Zoomer to be a truly open system that will benefit customers through a wide range of after market applications, extending the functionality of Zoomer," said Bruce Mendel, director of marketing at Casio's PCD (Personal Communications Division).

GeoWorks' vision for the past ten years has been to enable mass market computing. Founded with the belief that this market holds tremendous potential, GeoWorks has been developing system software to meet the needs of a wide range of consumer computing devices from PDAs to TVs. Zoomer is the first device that delivers the right functionality at the right price point to make this market explode. "GeoWorks is thrilled to be a part of such an exciting product and looks forward to continuing to innovate with our partners Casio and Tandy," said Brian Dougherty.

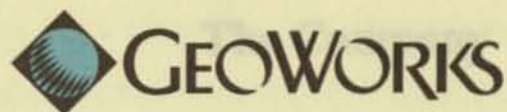
GeoWorks, located in Berkeley, California, is the developer and publisher of the acclaimed GEOS graphical operating system and of GeoWorks<sup>®</sup> Pro™ and Quick Start™ applications software. The company provides sophisticated and highly efficient system software and markets targeted applications for an emerging class of devices designed to communicate, entertain and manage information for mass market consumers. GeoWorks products are available worldwide through OEM and dealer channels.

###

**For more information contact:**

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(510)204-8550

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All other trademarks are the property of their respective holders.



Brian Dougherty, chairman and CEO of GeoWorks, founded the company in 1983 as Berkeley Softworks with the goal to deliver software to a broad range of customers. In 1991, Berkeley Softworks was renamed GeoWorks to better reflect the company's broader business goals and product directions.

The company launched its first product, GEOS<sup>™</sup>, an 8-bit graphical environment for the Commodore 64/128 and the Apple II, in 1986. GEOS was sold through retail channels and was installed on the Commodore 64/128. More than three million copies were sold.

By the late 1980s, company executives believed that the computer industry's early projections that PCs would be everywhere, including homes, were largely unrealized. The industry was simply making bigger and faster PCs and software became progressively less efficient.

**GeoWorks**  
**Corporate Background Information**

GeoWorks saw a tremendous opportunity to bring the power of computing to mass market consumers through an emerging semiconductor technology: single-chip computers. Instead of using software to work-around technology to make more powerful microprocessors, single-chip computers use the increased transistor capacity to provide higher integration. An entire computer — microprocessor, video, memory management, timers, and I/O — are all provided on one piece of silicon. This design greatly reduces the size, power and cost of the hardware required to deliver compelling computing solutions.

GeoWorks executives envisioned that these single-chip PCs would provide computing intelligence to a wide variety of devices ranging from televisions, to telephones, to hand-held personal information appliances. Collectively, GeoWorks refers to these products as Consumer Computing Devices (CCDs).

These devices will require a compact, high-performance operating system. GeoWorks will require a compact, high-performance operating system with a flexible, intuitive, graphical

**Contact:**  
**Deborah Dawson**  
**Director, Marketing Communications**  
**GeoWorks**  
**(510)204-8550**

## The Company

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By the late 1980s, company executives believed that the computer industry's early projections that PCs would be everywhere, including homes, were largely unrealized. The industry was simply making bigger and faster PCs and software became progressively less efficient. It became clear that these trends would prohibit PC technology from reaching the affordability required to spawn a true mass market.

GeoWorks saw a tremendous opportunity to bring the power of computing to mass market consumers through an emerging semiconductor technology: single-chip computers. Instead of using advances in semiconductor technology to make more powerful microprocessors, single-chip computers use the increased transistor capacity to provide higher integration. An entire computer — microprocessor, video, memory management, timers, and I/O — are all provided on one piece of silicon. This design greatly reduces the cost, power and size of the hardware required to deliver compelling computing solutions.

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These devices, targeted at a broad range of consumers, will require a compact, high-performance operating system, with a flexible, intuitive, graphical

user interface (GUI). GUI flexibility is required to enable hardware manufacturers to deliver appropriate interfaces for different devices. For example, the interface for a TV application needs to be different than the one used for a "smart" telephone. Additionally, users with varying skill levels will need an interface that can be adjusted to their level of expertise. After researching existing software solutions, GeoWorks concluded that none met the needs of this emerging market.

From 1987 to 1990, GeoWorks developed a new 16/32-bit GEOS operating system specifically designed for CCDs. GEOS is object-oriented from the ground up and offers true preemptive multithreaded, multitasking, Postscript™ quality imaging and a flexible user interface technology that can be changed for different devices or different users.

In November 1990, the company introduced the GEOS technology in GeoWorks Ensemble®, a software package designed for the existing market of IBM-compatible PCs. Ensemble included a number of applications developed by the company including: GeoWrite™, a robust WYSIWYG ("what-you-see-is-what-you-get") word processor; GeoDraw®, a feature-rich drawing and graphics program; GeoManager®, a graphical file manager; an address book; notepad; and appointment calendar. Ensemble was critically acclaimed and won several design awards. By the fall of 1991, a mere 13 months after launch, more than 400,000 units of Ensemble had shipped.

In November 1991, GeoWorks and Borland International announced an agreement in which the Quattro® Pro SE spreadsheet would be bundled with Ensemble to create the GeoWorks® Pro™ product. This is currently the company's flagship product.

In June 1992, GeoWorks' achieved the first milestone in its long-term commitment to the CCD market when GEOS was selected by Casio and Tandy as the operating system for their joint venture to create a family of "personal information processors" (PIPs). The first product is scheduled to ship in 1993.

## Company Mission

GeoWorks software is designed to enable a massive expansion in the overall market for computing technology by substantially reducing the cost of delivering compelling graphical computing solutions.

Currently, the company addresses the needs of the conventional desktop PC arena with a variety of applications sold through retail outlets, direct marketing efforts, OEMs, and software republishers. At the same time, GeoWorks is working to forge strategic alliances with key manufacturers to facilitate the introduction of a wide range of consumer computing devices: palmtop computers and sub-notebooks; "smart" phones; television-based communications, information, and entertainment products; and other consumer-oriented devices.

The company believes that the application needs of the emerging CCD market will be different than those of the traditional PC arena. In addition to the productivity applications that drove the PC market, the CCD market will be driven by electronically published information, interactive entertainment products and communications software and services. These applications must have a clear, sharp appearance and provide the user with a compelling benefit over whatever product or products they used prior to purchasing a CCD.

Market estimates for CCDs vary greatly. However, the company and a number of market analysts agree that the CCD market has the potential to surpass the growth of the PC industry. Unit shipment and revenue projections for the mobile computing segment of the CCD marketplace have been placed as high as 90 million units and \$7 billion by 1995.\*

GeoWorks executives believe that each of these product categories will require compact operating systems and customizable user interfaces. GeoWorks is uniquely positioned to meet the needs of this emerging market.

\* Source: Aug. 17, 1992, *ComputerLetter*, published by Technologic Partners

## Technology

When GeoWorks introduced the PC version of the GEOS operating system in 1990, the product was instantly praised for its ability to provide a high-performance, GUI environment capable of running on all PCs, even older 8088-based XTs. The low memory and processing requirements of GEOS are achieved through a state-of-the-art software component design where applications are constructed using sophisticated objects provided by the operating system. For example, by using the rich text object built into GEOS, GeoWorks is able to deliver a full-featured WYSIWYG word processor in less than 100K of code.

In addition to being compact and providing high performance, what makes GEOS unique is its revolutionary user interface technology. This technology enables interfaces to be changed to fit different hardware devices or users without recompiling applications.

### Object-Oriented Architecture

Instead of using an object-oriented language to create GEOS, GeoWorks built the object model directly into the operating system. This allows higher performance and better support for object-oriented programming in the multithreaded, multitasking GEOS system. A number of powerful software components are built on the system object model and are included in the standard operating system. These components aid rapid application development and lead to small overall system requirements since normally redundant code is shared across several applications. Built-in components include a rich text object, spreadsheet object, flat file database object, graphics object library and more.

The benefits of the GEOS design are highlighted below:

***Faster Development & Smaller Applications*** — many tedious user interface functions, file management, text manipulations, etc., (normally re-created by every application in traditional graphical environments) are

automatically supported by the built-in objects in GEOS. Developers can focus on creating true product differentiation rather than recoding basic application functionality. Since the functionality is provided by system objects, an application is easier to develop and is much smaller in size. Typical GEOS applications are less than 100K in size.

**Multithreaded** — Multithreading allows a single application to break its tasks into separate pieces that are processed concurrently. A higher priority is given to more important tasks. Each task within an application is called a thread. Threads are primarily used to make applications more responsive to the user. For example, user interface objects are run by a higher priority thread. In a word processor, if the user turns the page and a complex image starts to draw, the user can continue to the next page without waiting for the image to be completed.

**Multitasking** — GEOS utilizes the ability to run more than one application at a time. An example of this would be the ability of a user to continue to work on one document while faxes are being received and other documents are printing.

**Efficient Memory Use** — GEOS provides a high-performance dynamic memory manager with support for extended and expanded memory and virtual memory files. The advanced memory management in GEOS allows several applications to be used simultaneously on machines with as little as 512K of RAM.

### **User Interface Independence — The Generic UI**

In GEOS, an application's user interface is constructed using objects that generically describe the interactions the application needs from the user. For example, in a word processor, the application needs a user interface element to tell the application when the user wants to change the current text style to bold. The application does not need to know how or where that user interface element appears. In GEOS, a GenTrigger™ object would be used to describe this element



in the application. The application does not know (or care) whether the "bold" GenTrigger is implemented as a menu item, a tool bar icon, or a gesture with a pen. When the application is opened, the system calls the specific user interface library to map the generic objects to their specific behavior. To change the user interface, only the specific user interface library needs to be changed. Different systems can have their own "look and feel" without requiring applications to be recompiled for each. For example, a calendar program might appear on a desktop system with a standard user interface like Motif™. The same application can be plugged into a hand-held pen device with a specialized user interface using entirely different representations for user interface elements (UI elements might even be replaced with gestures). The application will run in this device without modification. This is a powerful way for hardware manufacturers to differentiate their products without requiring custom application development.

The GEOS user interface independence also permits a single application to be scalable in its complexity, allowing users to pick the type of interface required for their experience, from novice to professional.

## **Markets for Products, Distribution and Awards**

### **Markets for Products**

GeoWorks has targeted the following key markets and channels for its products:

**OEMs** -- For CCDs and traditional desktop manufacturers who want a high-performance, compact OS that provides a scalable GUI, GEOS is an ideal solution that provides cost-effective product differentiation. Current OEMs include Philips, Samsung, Laser Computer, VTech, and Leading Edge.

**Home User** -- GeoWorks Pro provides families with the best software solution. With 15 applications, it provides something for every family member and it's easy to use (there are Beginner, Intermediate, and Advanced levels). GeoWorks also provides a

solution for first-time PC buyers with QuickStart™, a complete, easy-to-use software package that includes a word processor, a drawing program and other applications. The company also markets accessory products including clip-art, fonts, and games packages.

**Government and Education** -- Many schools and governmental agencies use GeoWorks because it provides an intuitive GUI for older DOS-based PCs that are unable to run other graphical alternatives such as Windows because of limited memory and disk space.

### **Distribution**

The company currently sells its products through a two-tier distribution process, selling through traditional distributors of microcomputer software as well as a variety of retailers.

Internationally, GeoWorks is licensed to republishers in order to leverage their expertise in local markets, local customer support and pre-existing trade relationships. Versions of GeoWorks products are available in English, German, French, Spanish, Italian, Dutch, and Finnish.

GeoWorks products are currently distributed in Australia, Canada, Finland, France, Germany, Italy, Netherlands, New Zealand, and the United Kingdom.

### **Awards**

GeoWorks Ensemble captured several major industry awards following its introduction in November 1990. Among the awards: BYTE Week's "Best of COMDEX"; PC/Computing's "Most Valuable Product"; InfoWorld's "Product of the Year"; and the Software Publishers Associations' "Best New Use of a Computer," "Best Consumer Program," "Best Personal Productivity/Creativity Program," and "Critics Choice for Best Consumer Program."

### **Financing**

GeoWorks is privately held. In addition to company generated revenues,

investments have been made by some of the computer industry's premiere venture capitalists: Merrill, Pickard, Anderson & Eyre; Bay Partners; and Technology Funding.

## **Management**

The GeoWorks management team is a tightly integrated unit with decades of combined experience in the computer and consumer marketplaces. This combination of experiences enabled GeoWorks to map out a balanced strategy for leveraging the opportunities in the emerging market for CCDs.

### **Brian Dougherty**

Dougherty founded GeoWorks in 1983 and has served continuously as its chairman and CEO. From 1981 to 1983, Dougherty was a founder, director, and vice president of engineering at Imagic, a pioneering video game company that went from start-up to more than \$80 million in sales in less than two years. From 1979 to 1981, Dougherty worked at Mattel, Inc., as a systems engineer, contributing to the design of the Intellivision computer game console. He holds a BS degree in electrical engineering from the University of California, Berkeley.

### **Dennis Rowland**

Rowland is president, chief financial officer and chief operating officer for GeoWorks. Prior to coming to GeoWorks in 1987, Rowland served as vice president of finance and administration for Ulton Labs Corporations, a manufacturer of computer peripheral systems. Prior to Ulton, Rowland was vice president and chief financial officer of Droid Works, a spin-off of Lucasfilms that manufactured computer systems for the motion picture industry. Rowland has also served as vice president of finance and administration at Imagic. He holds an MBA from Harvard University and a BSME from the University of California, Davis. He also is a certified public accountant.

### **James Goldberger**

Goldberger is vice president and general manager of GeoWorks' Consumer

Products Group. He joined the company in 1987 as vice president of sales. He is presently focusing on domestic and international sales channels. Prior to joining GeoWorks, Goldberger was the director of marketing for Citicorp Services in Chicago. Prior to Citicorp, Goldberger was an account supervisor for BBDO Advertising, managing the agency's hi-tech business in Chicago. Goldberger was also a founder of Imagic Corporation and served as vice president of marketing. Goldberger has also held a senior sales position at Xerox Corporation. He holds a master's degree in marketing from the University of Arizona and a bachelor's degree in business administration from Drake University.

#### **Lee Llevano**

Llevano is GeoWorks' vice president of corporate marketing and has been with the company since its inception in 1983. As vice president of marketing for GeoWorks, Llevano is responsible for all aspects of strategic positioning, marketing, planning, and development. Prior to joining GeoWorks, Llevano was an operations research analyst for a Berkeley management consulting group. Prior to that he held a technical marketing position with Cordis-Dow, where he facilitated the successful introduction of a new medical device technology. Llevano holds a bachelor's degree from the University of California, Berkeley.

#### **Rick Dalmazzi**

Dalmazzi is the vice president and general manager of GeoWorks' OEM Products Group. Dalmazzi is responsible for establishing and maintaining GeoWorks' strategic alliances, including all aspects of sales, marketing and relationship management with the company's OEM customers which include major PC and consumer electronics companies. Dalmazzi came to GeoWorks after 14 years with IBM Canada, Ltd., where he worked in a variety of sales and marketing management positions within IBM Canada's software and hardware divisions. Dalmazzi holds a Bachelor of Mathematics, University of Waterloo, Ontario, Canada

### **Chris Noble**

Noble is vice president and general manager of GeoWorks' Developers Products Group and is responsible for the company's ISV program and for the development of the software development kit (SDK). Noble joined GeoWorks in 1990 after working in a variety of product planning, design and marketing positions at Lotus Development Corporation. While at Lotus, Noble planned, designed and marketed more than 15 products including Lotus Metro, Lotus Express, Lotus Manuscript, Lotus 1-2-3 versions 2.2 and 2.3, and Allways (a 1-2-3 add-on product). His work on 1-2-3 v. 2.2 led to a PC Magazine "Technical Excellence" award. Noble holds an A.B. from Harvard College.

### **GeoWorks Board of Directors**

Neal Dempsey, a board member since 1990, is a partner in the venture capital firm of Bay Partners.

John Dougherty, a board member since 1984, is an engineering consultant and is currently semiretired.

Bruce Dunlevie, elected to the board in 1990, is a partner with the venture capital firm of Merrill, Pickard, Anderson and Eyre.

Greg George, a board member since 1990, is a group vice president of Technology Funding, Inc., and a general partner of Technology Funding Limited.

Clive Smith, a board member since 1987, manages his own consulting business. He was an executive at Commodore International Ltd., and the YANKEE Group.

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## Palm Position Paper

Palm Computing is in a unique position of expertise in the area of Personal Digital Assistant (PDA) computing: Palm Computing was founded on the market vision of small and powerful mobile consumer computers and has focused exclusively on the development of applications software for this market. Palm's founder, Jeff Hawkins, has extensive practical experience with the pen as the principle architect and designer of GRiD's pen computer product line. He is the author of PalmPrint™, Palm's patented pattern recognition algorithm. PalmPrint is the most widely used recognizer available in North America today.

Palm is an early leader in the field of applications software, handwriting recognition, and add-on software for PDA devices. Its first commercially available products are included with the Zoomer PDAs from Casio Computer Inc. and Tandy Corporation.

This Position Paper describes Palm's view on the appropriate user interface for PDAs.

### Powerful PDAs Require Powerful New User Interface Models

Early in the development of PDA software, Palm realized that new user interface paradigms were needed to fully exploit the promise of mobile computing. This was true because of the requirements that a useful PDA must fulfill:

- It must be small to be portable.
- It must have a large graphic display.
- It must provide fast, error free, and easy data entry, because users will not accept a PDA with restrictive, frustrating, inaccurate, or slow data entry.

As Palm Computing reviewed these factors, certain realities became apparent. The concept of traditional keyboards was out. Full-size keyboards are too large and unwieldy; miniature keypads are too difficult to operate and can consume space that would be better utilized for display purposes. Therefore, the pen becomes the ideal PDA user interface tool.

There are several functions at which the pen interface excels:

- It provides excellent machine control. You can use it to choose a menu item, select an option from a list, or move an icon across the screen.
- It provides true portability. It can be used in situations and settings where a keyboard, or a keyboard and a mouse, are unwieldy and impractical.
- It is efficient for entry of graphical data, such as scribbled notes or quick drawings.

While it might appear intuitively obvious that text entry would be on this list, such has not been the case due to the limitations of handwriting recognition technology and the often slow and inaccurate conversion of handwritten characters into machine readable text. In fact, the keyboard still remains the best method for entering text quickly and accurately into a computer.

## Is the Pen the Point?

The answer is – not really. Rather, the point is the user's positive experience while using the PDA. Therefore, the key consideration for a successful PDA user interface design has to be understanding the user's needs. What kind of data does the user want to enter, for what purpose, and in what kind of setting? For example:

- Data entries that are short and primarily for the user's personal use, such as an entry of a lunch appointment in the calendar, are most easily accomplished in the user's own handwriting, using electronic ink. There is no need for translation into electronic type in this case; however, there may be a need to apply computer functions to the entry such as adding a reminder alarm.
- Some entries need to be captured in electronic type because of their later use. For example, an entry may be intended for e-mail distribution, for sorting by alphabet, or simply for being read by another person on the PDA screen. Handwriting recognition may be the most appropriate entry method for these, whereas longer text entries would be most conveniently and quickly accomplished using a keyboard.
- Finally, the different settings in which the user enters data into the PDA change how he or she perceives the ease and usefulness of any given data entry method. When sitting at a desk with plenty of time, the user may find that handwriting recognition is the best data entry option. The same user, taking notes quickly while standing at a phone in the airport, will probably prefer electronic ink. Entering a longer list of meeting-agenda items in the calendar for later inclusion in a memo may best be accomplished by the use of an on-screen keyboard.

## Palm's solution to the challenges of mobile applications

The challenge was clearly defined. Existing pen user interface models were not adequate for the versatile and changing needs of PDA users, and Palm had to design a new pen user interface that is a powerful, convenient, and accurate tool for data entry and retrieval.

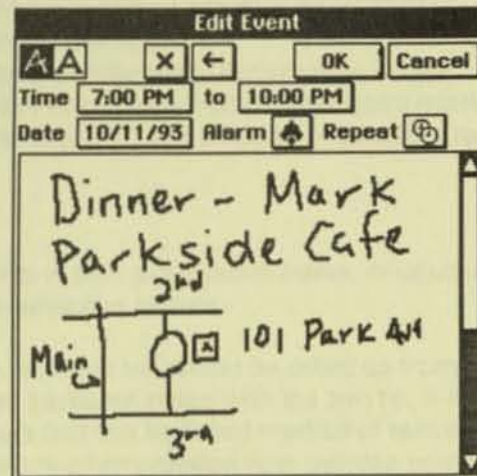
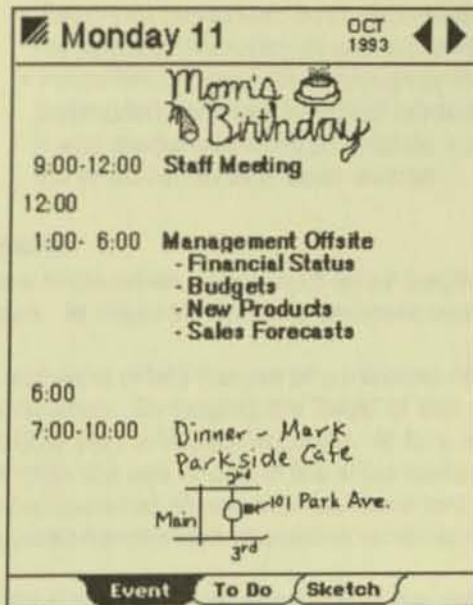
Palm has addressed these needs, providing the user with the choice of three interchangeable data-entry methods in any Palm application: (1) the use of ink, including the "structured" PowerInk™ technology\*, (2) Palm's patented PalmPrint handwriting recognition capability, and (3) a movable on-screen keyboard that is pen-driven.

### PowerInk

Ink is a very quick and easy way to enter data; it is just like scribbling a note or making a sketch on a piece of paper. Yet one of the limitations of "traditional" ink is that the program cannot apply intelligence to whatever is stored as ink. Palm's solution for this dilemma was to invent PowerInk, a revolutionary "structured" ink format.

- PowerInk allows ink and text to be used interchangeably everywhere. For example, ink and text can be interchanged in such fields as address book entries (on a field-by-field basis), calendar events, to-do items, notes, and note titles.
- PowerInk entries are treated as objects, not a layer on top of the application. This allows them to be moved, alarmed, indexed, and so forth, just like electronic text.
- PowerInk offers delayed recognition – character entries can be recognized at any time after the initial entry.
- PowerInk is entered at full screen-width and then reduced in size for display purposes, which maximizes the use of a small screen.
- Fields expand vertically to accommodate whatever ink or text is entered.
- A unique editing method, Backspace Ink™\*, allows quick, accurate and simple error correction.

\*Patents Pending



For example, a user can enter a dinner appointment into the calendar using a special ink-dialogue field. It's not necessary to write in an especially small size because the entire width of the screen and most of its height is available. The program then shrinks the ink entry down and places it in the appropriate field of the Palm Date Book. Since this field allows structure to be applied, an alarm can then be set which will sound an hour in advance of the appointment time and display the ink entry. Just as easily, the appointment can be moved to a new time and date without having to enter it again. If the entry contains an error, it can be corrected stroke-by-stroke by tapping the BackspaceInk button on the screen. This method is faster and more accurate than the use of an "eraser" tool, especially in the case of the frequently overlapping strokes of cursive handwriting.

### PalmPrint Handwriting Recognition

Because there are many occasions when the user desires electronic type, PDA software must also offer the user accurate and fast character recognition. PalmPrint, Palm Computing's patented handwriting recognition technology, is the most widely used recognizer in North America today. The program is simple, accurate, and fast.

PalmPrint provides recognition accuracy equal to or exceeding other available recognizers and it does so with a requirement for only about 40 kilobytes of working memory. Most recognizers take an unidentified character and compare it to numerous handwriting samples to determine the closest match. It must pass through the entire collection of samples to be sure that it has made the best match, even if the best match turns out to be the first one it used. Consequently, these programs require a high-powered microprocessor and a lot of memory to move through this mound of data in a timely way. Increased recognition accuracy is gained by adding more samples and performance suffers even more.

In contrast, PalmPrint uses templates that were defined previously through the use of hundreds of handwriting samples. Each template is extremely small in size and represents an individual character. You might say that one template represents "the essence of the character A." By running more samples through the template, its formula is modified, and its recognition accuracy increased, while the template itself does not grow in size.

For the PDA user, PalmPrint handwriting recognition technology offers many additional benefits:

- PalmPrint is user independent. It provides highly accurate recognition without the use of user-specific handwriting samples.
- It does not require time-consuming user training and allows recognition even in cases where the user's handwriting changes due to factors such as time constraints, stress, etc.



- PalmPrint recognizes both uppercase and lowercase printed letters and can display recognized characters as upper-, lower-, or mixed-case text.
- PalmPrint is designed to recognize the way people really print. For example, it can distinguish between individual printed characters even when multiple characters overlap. It also recognizes delayed strokes, such as crossing a "t" in the middle of a word after the word has already been written.

### **Keyboard**

There are times when a user must enter lengthy amounts of text, punctuation marks, or unusual characters. In these instances, a keyboard becomes an attractive feature.

Palm's software offers the use of a movable on-screen keyboard which can be called up from within any Palm application. By tapping the "keys" of this on-screen keyboard image with the pen tip, it is easy to enter textual data with high accuracy. In fact, many users find this keyboard method of text entry more efficient than the use of one of the small keyboards that are often provided with palmtop computers. User experience has shown that keyboard text can be tapped in as fast as, if not faster, than even unrecognized handwritten characters when longer strings of text are required.

Finally, Palm's applications also support the use of a real keyboard in PDAs that offer this hardware option.

### **Summary**

The pen is a key enabling technology in bringing about the promise of truly mobile computing. However, the pen must be properly applied for maximum user benefit. Palm feels that the appropriate pen user interface gives the user the choice between ink, handwriting recognition, and keyboard entries. Only such a flexible user interface, one that accommodates the user's needs, will lead to the widespread acceptance of PDA devices.



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## INTUIT TAKES FIRST STEPS TO PROVIDE INSTANT FINANCIAL ORGANIZATION FOR CONSUMERS ON THE GO

— Intuit introduces Pocket Quicken, a breakthrough in mobile  
financial organization for the emerging PDA market —

Menlo Park, Calif. — June 3, 1993 — Intuit today announced Pocket Quicken™, a personal finance application to be included with all Tandy® and Casio Zoomer™ Personal Digital Assistants (PDA). Pocket Quicken for Zoomer offers consumers a breakthrough in financial organization by allowing them to capture and review financial information while on the go. The Zoomer, from Tandy Corporation and Casio, Inc., was also announced today.

"Most financial transactions occur away from your desktop computer," said Scott Cook, president of Intuit. "For years, consumers could only track cash and credit card spending by saving receipts, or by memory. Pocket Quicken will enable users to capture information on the go, and have instant access to their account data, like balances or their remaining credit line."

"The PDA market is a strategic part of Intuit's overall mission to be the leader in automating finances for homes and small businesses," continued Cook. "To fully automate finances, we have to continue to make it easier for users to keep track of their finances. Like our IntelliCharge™ service, PDA's can capture financial information at the point of the transaction - wherever that may be. This is one more step towards an 'electronic wallet'."

Pocket Quicken for Zoomer provides the same basic checking, credit card and cash account tracking as Quicken®, combined with portability and an innovative design. Pocket Quicken will enable consumers to keep organized with immediate and accurate information, reduce data entry time and continue to insure ease-of-use.

Based on the strength of its market share, Intuit is an ideal provider of innovative financial software and service products for the PDA market. With Quicken, its flagship product, Intuit currently holds more than 70 percent market share for personal finance software on the three major personal computer platforms: DOS, Windows and Macintosh. With QuickBooks™, Intuit holds more than 60 percent market share of the small business bookkeeping market on the DOS platform.

### Product Benefits

**Compact Financial Management** - Pocket Quicken can be used as a stand-alone personal finance manager with basic report capabilities or as a data capture device that can communicate with desktop versions of Quicken. Users can merge their data with desktop Quicken via a separate connectivity pack.

**Ease of Use** - Pocket Quicken is organized around three familiar images: 1) a wallet icon helps track spending; 2) a bank icon handles deposits, withdrawals and transfers; and 3) a file cabinet icon keeps all records saved and categorized.

**Easier Data Entry** - Pocket Quicken's portability provides a major step in enabling faster and more convenient data entry. With Pocket Quicken, users save time and reduce errors by tracking transactions as they occur -- wherever they are.

**Immediate and Complete Financial Organization** - Portability provides a major step in helping users track cash and keep a running, up-to-date total for credit cards - two areas traditionally difficult for cash management.

### Pricing and Availability

Pocket Quicken for Zoomer will be included in ROM in all Zoomer products from Casio and Tandy. Zoomer will be available through major retail channels, including Radio Shack®, major mass merchandisers and electronic stores. Pricing and specific retail channel information will be announced separately by Tandy and Casio. The product will be available for purchase in the Fall of 1993.

Intuit is the leading provider of software products that enable households and small businesses to automate commonly performed financial tasks. Quicken, Intuit's original product, allows users to automate their personal finances. In March 1992, Intuit introduced QuickBooks, its first small business accounting product. To

## Intuit Announces Pocket Quicken for Zoomer, Page 3

complement Quicken, QuickBooks and its other software products, Intuit offers a broad range of supplies, including checks, invoices and forms. In addition, Intuit has a number of service offerings, such as the Quicken VISA card with IntelliCharge, that work with its software products to further automate financial tasks. Intuit's products are sold to end users primarily through retail software outlets, computer and general mass merchandisers.

###

Pocket Quicken, IntelliCharge and QuickBooks are trademarks of Intuit. Quicken is a registered trademark of Intuit. Tandy is a registered trademark of Tandy Corporation. Zoomer is a trademark of Tandy Corporation. Other brands or products are trademarks or registered trademarks of their respective holders and should be treated as such.



*Founded in 1985, America Online, Inc. (NASDAQ: AMER) is the nation's fastest growing provider of online services to consumers in the United States.*

**Headquarters:** Vienna, Virginia

**Corporate Mission:** Develop "electronic communities" to meet the needs of specific market segments. The company has strategic alliances with more than 30 leading hardware, software, and media and affinity organizations including IBM, Apple, Tandy, Microsoft and Tribune Company to develop and market online services that appeal to their customers.

**Services:** Focusing on interactive communications, the services of America Online provide subscribers with a wide variety of features including electronic mail, news weather, sports, stock quotes, software files, computing support, online classes, and much more.

**Technology:** America Online services can be accessed from a broad range of personal computers using America Online's proprietary, icon-based software. The company supports all leading platforms including Windows, DOS, Macintosh and Apple II. In January of this year, the company announced a strategic alliance with Casio and Tandy to provide a Special Edition of America Online for Zoomer PDA™. The palmtop edition of America Online will be preinstalled in the ROM of this new device, so purchasers of Zoomer™ will have instant access to the online service.

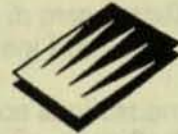
**Distribution:** Consumers can obtain the America Online software and a free trial membership at major software retailers and bookstores, or by calling 800-827-6364. Additionally, America Online has been preinstalled on most leading consumer computers including IBM PS/1, Tandy® computers and the Apple Performa.

**Pricing:** America Online's pricing is simple and affordable for consumers: a monthly fee of just \$9.95 provides access to all of America Online's services for up to 5 hours each month. This rate applies 24 hours a day, and includes the cost of connecting to America Online via a local phone call from more than 600 cities in the continental United States.

For more information contact: Jean Villanueva (703) 448-8700.

Zoomer and Zoomer PDA are trademarks of Tandy Corporation; Tandy is a registered trademark of Tandy Corporation.





**SUNDISK**

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SunDisk Corporation

For Immediate Release

## PRESS RELEASE

**SUNDISK FLASH STORAGE CARDS DESIGNED INTO ZOOMER PDA;  
HIGH CAPACITY CARDS ARE "PLUG AND PLAY"**

Chicago, Ill, June 3, 1993 -- SunDisk Corporation announced today that support for SunDisk's flash mass storage cards will be designed into all Zoomer™ Personal Digital Assistants (PDAs). The cards will be "plug and play" in Zoomer, which was introduced today by Casio, Inc. and Tandy Corporation, and no software drivers will be required to use the storage cards.

SunDisk is the only flash storage card option for Zoomer units. SunDisk was able to develop a low enough power storage device that meets Zoomer's very low power specifications. Maximum card capacity of the removable PCMCIA (Personal Computer Memory Card International Association) Type II cards will be 20MB, and capacities can be effectively doubled to 40MB with Stacker software compression. SunDisk flash cards also are available in 2, 5 and 10MB capacities. All cards operate from a single five volt supply.

Eli Harari, president and CEO of SunDisk, said, "One of the main advantages of our flash storage cards is that they meet the PCMCIA-ATA industry standard and are interoperable between computers regardless of which operating system or host processor is used. And with our new low-powered storage technology, SunDisk cards are fully functional in new low-powered PDAs, such as Zoomer that operates at only 50 milliamps (maximum current dissipation), and in all other hand-held PC's with PCMCIA-ATA support

"Casio and Tandy have developed a product that will have broad acceptance in the marketplace because it offers the easy-to-use features that users want. Two of those features are long battery life and storage expansion. The SunDisk card offers an easy way to expand storage capacity."

The Casio XL-7000 and Tandy® Z-550 Zoomer PDAs were both introduced today. Users of either Zoomer PDA will be able to easily remove their SunDisk storage cards and transfer data by simply inserting the cards in numerous other mobile systems with PCMCIA slots or into card readers attached to desktop PCs.

SunDisk flash storage cards, which are available now, will be sold in many retail outlets carrying Zoomer PDAs. Pricing of the cards in various capacities has not been determined.

SunDisk officials expect that there will be a robust market for add-on applications for Zoomer and that some of the applications will be bundled and sold on SunDisk flash cards.

First introduced in 1991, SunDisk industry-standard PCMCIA-ATA cards are solid-state devices that are significantly more rugged and reliable than hard disk drives because they have no moving parts. They are 100 percent DOS compatible and offer access times 15 to 20 times faster than rotating media. Unlike SRAM storage, which requires a built-in battery, SunDisk cards are non-volatile and no built-in battery is required.

SunDisk, founded in 1988, designs, manufactures and markets solid-state mass storage products using a unique system integration approach with proprietary high-density flash memory technology. SunDisk, based in Santa Clara, Calif., is privately held.

Zoomer is a trademark of Casio Computer Co., Ltd. and Tandy Corporation.  
Tandy is a registered trademark of Tandy Corporation.

###



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**Motorola Offers Wireless Messaging**

**Through New Zoomer Personal Digital Assistant**

BOYNTON BEACH, Fla. (June 3, 1993) -- Motorola, Inc. today announced its plans to develop EMBARC wireless data service compatibility with the Zoomer™ personal digital assistant being jointly announced this week by Tandy Corporation and Casio, Inc. EMBARC Communications Services Inc., a division of Motorola's Paging and Wireless Data Group, will enable purchasers of the Zoomer to receive wireless electronic mail as well as its growing family of automated information services.

The Zoomer, being developed jointly by Tandy Corporation and Casio, is a powerful, handheld, pen-input device equipped with built-in programs for organization, calculation, recreation, personal finance and communication, including electronic mail and fax.

"We are very pleased with the opportunity to support this exciting new product which, through the marketing efforts of Tandy and Casio, will reach the broadest range of market segments," said Steve Brendle, vice president and general manager of EMBARC.

- more -



## EMBARC For Zoomer/add one

"We feel that the benefits of wireless messaging and automatic information receipt will accelerate the adoption of Zoomer, giving users expanded features and broader utility from the already extensive base of built-in functionality," said Dave Christopher, executive vice president of Radio Shack, a division of Tandy.

EMBARC's range of information services including the news, national weather, financial information and sports from *USA TODAY*, as well as HeadsUp industry-specific news summaries from Individual Inc., will allow customers to customize the mix of services according to their individual tastes and interests, and change them easily as their needs change.

"Zoomer offers individuals convenience and mobility in managing their personal and professional lives. EMBARC supports those objectives and provides the needed dimension of delivering important information anytime, and virtually anywhere," said Donnie Coffelt, vice president of marketing for Casio, Inc.

EMBARC Communication Services Inc., wholly owned by Motorola, Inc., is a wireless electronic mail system with service to more than 220 cities across the United States and Canada.

-more -

## **EMBARC For Zoomer/add two**

Motorola, Inc. is one of the world's leading providers of wireless communication technologies, products and services. The company's proven leadership in RF (radio frequency) technology and its expertise in microelectronics, data communications, computing and information management offer partners and customers a comprehensive range of solutions to enable a new generation of wireline and wireless voice, data, facsimile, image and video communications.

Motorola was a winner of the inaugural Malcolm Baldrige National Quality Award in 1988, in recognition of its superior company-wide quality management process. Sales in 1992 were \$13.3 billion.

# # #

Note: **Motorola** and **EMBARC** are registered trademarks (registered U.S. patent and trademark office) of Motorola, Inc.

**Zoomer** is a trademark of Casio Computer Co., Ltd. and Tandy Corporation.

The Zoomer, being developed jointly by Tandy Corporation and Casio, is a powerful, handheld, pen-input device equipped with built-in programs for organization, calculation, recording, personal address and communication, including electronic mail and fax.

"We are very pleased to announce that this exciting new product which, through the marketing efforts of Tandy and Casio, will reach the broadest range of market segments," said [Name], vice president and general manager of EMBARC.

# ZOOMER™ PDA SPECIFICATIONS

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## PROCESSOR ARCHITECTURE

Custom chip designed by Casio Computer Co., Ltd., using an Intel®-compatible CPU with integral clock generator, memory, bus, interrupt, timer, key, serial and infrared control units; power management unit, LCD controller

## OPERATING SYSTEM

GEOS™, object-oriented, multithreaded, multitasking operating system with a graphical user interface provided by GeoWorks

The GEOS software provides:

- File manager
- Printer drivers
- Communication drivers
- System-level password security
- Launcher menu for application startup
- Pop-up, on-screen keyboards: QWERTY A-Z, International character, symbol, math, handwriting recognition box

## MEMORY

System RAM—1MB

Operating system configured to use 640K for system heap and 384K for RAM disk space

## SYSTEM ROM

4MB containing the operating system, applications and content

## APPLICATIONS

- Date Book w/To-Do List manager and alarms
- Address Book
- Note Book
- Pocket Quicken™ data capture module with checking, credit card and cash account tracking capabilities
- America Online E-mail and gateway to Internet with offline composition; ASCII text fax and U.S. Mail gateway; Wire services and encyclopedia access; EAASY Sabre Travel Service, Stock quotes, Message boards, Program downloading
- 50,000-definition dictionary; 100,000-word spell checker; 660,000-synonym thesaurus
- Calculator
- Home and World time clocks
- Forms calculator
- Translation dictionary for 26 languages (up to 1,000 words per language)
- Games: Solitaire, Pyramid Solitaire, UKI
- On-line Help ■ Startup sequence
- U.S. holidays, U.S. city/state information, International city/country info, Area Codes
- Travel data, Birthstones and flowers, Signs of the Zodiac, U.S. founding documents

# ZOOMER™ PDA SPECIFICATIONS (cont.)

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## HARDWARE

### I/O Ports

- Built-in infrared transceiver for wireless data transfer operating at up to 9600 bps
- One RS-232 compatible serial port with subminiature 10-pin "D" connector (cable optional)
- One 2.5 mm subminiature headphone jack
- One PCMCIA Type 2 slot limited to 50mA maximum current

### LCD Display

- 80mm wide x 100mm high monochrome LCD (.3mm dot pitch)
- 320 x 256 screen resolution

### Sound Capability

- Built-in speaker
- Three square wave tone generators
- White or metal noise generator
- Programmable level control for each channel
- Digital to analog converter (DAC)

### Controls, Switches, Indicators/Locks

- Power on/off
- Volume
- Contrast
- Cross-shaped cursor control and two control buttons
- PCMCIA card lock

### Mass Storage (Optional)

- PCMCIA SRAM Card
- PCMCIA SunDisk Flash ROM

### Power Supply

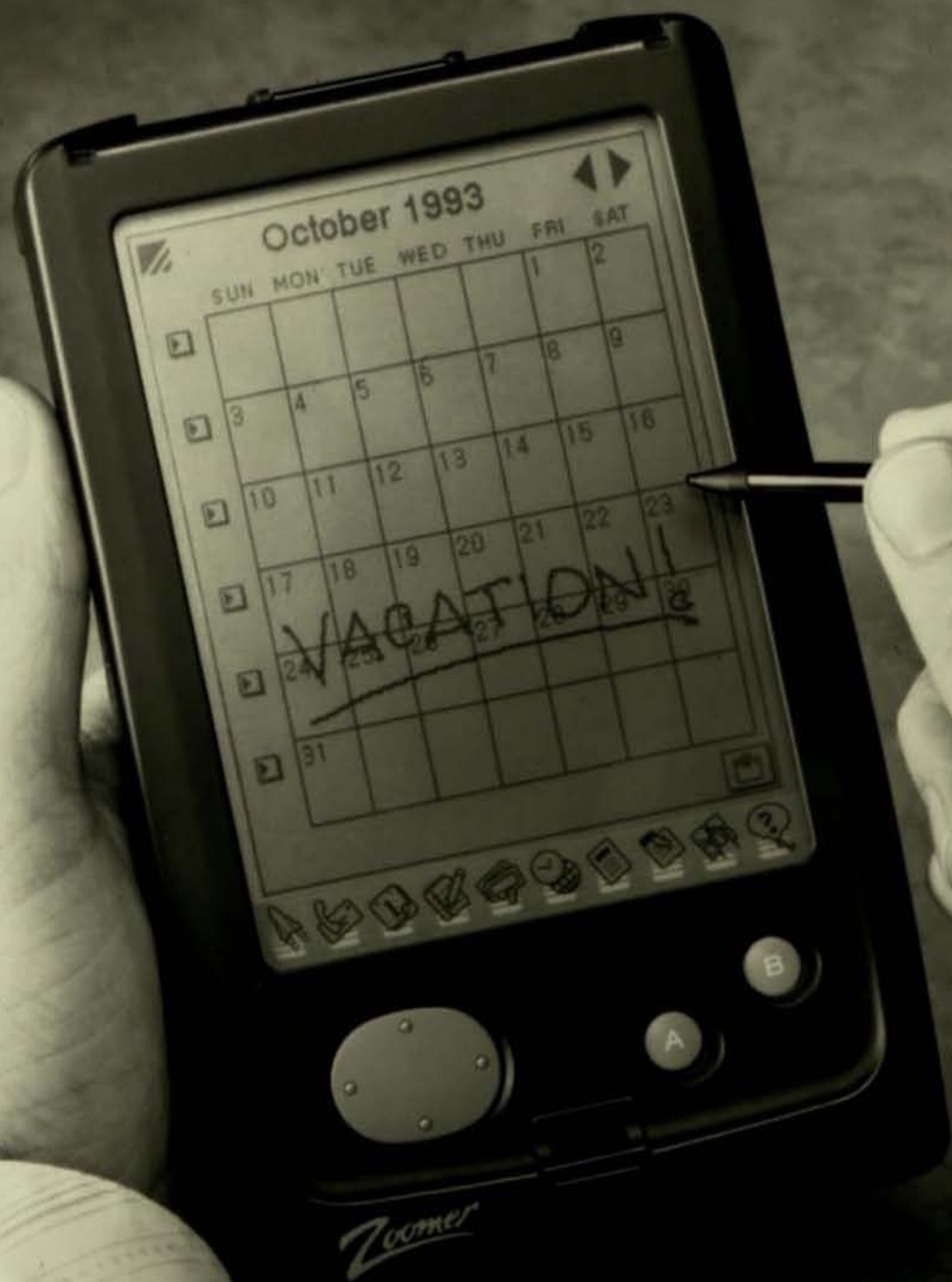
- Three "AA" alkaline batteries (not included)
- RAM memory backup supplied by two CR2032 lithium batteries (included)
- AC adapter (optional)

### Dimensions

- Size: 1" x 4.2" x 6.8" (H x W x D)
- Weight: 16 ounces

### Accessories/Options

- Serial cable for modem or data transfer
- I/R Interface
- Accessory Kit
- AC adapter
- Serial to Parallel Converter for Parallel Printer
- PC Link Software
- Extra Pens



# PRESS RELEASE

**CASIO®**



For Immediate Release

June 3, 1993  
TC-93-047

## **Casio, Inc. and Tandy Corporation Announce Zoomer™ Personal Digital Assistant (PDA)**

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**June 3, Chicago** -- At a press conference at the Summer Consumer Electronics Show in McCormick Place, Casio, Inc. and Tandy Corporation announced their much anticipated Zoomer™ Personal Digital Assistant (PDA). Other companies taking part in the announcement were America Online, Intuit, GeoWorks, and Palm Computing. Motorola and SunDisk also announced support for the platform. "With the introduction of our Zoomer PDA, consumers can gain all the benefits of personal electronics without the typical steep learning curve required of PCs," said John J. McDonald, President of Casio, Inc. "This is a breakthrough device, combining the power of a PC, an affordable consumer price, and the simplicity of pen and paper."

The Zoomer PDA combines the simplicity of pen and paper, the logical power of a computer and the ability to connect to a world of information in a pocket-sized device weighing less than one pound. It saves handwritten notes, recognizes printing and offers a keyboard on demand to intuitively organize your personal information and simplify complex calculations. It also translates languages, retrieves reference material and has the ability to connect to a PC. Unlike portable computers, it has long battery life, uses off-the-shelf batteries and is much lighter to carry.

Casio and Tandy issued separate press releases today announcing availability for their versions of the device. Several versions of the Zoomer PDA, all compatible, will be available in October. All of the models are expected to be priced at well under \$1,000. "The Zoomer PDA is more than just a fancy new gadget. It is perhaps the most significant consumer electronics product introduced within the last two years, especially in terms of being a truly useful product for all consumers, at the right price," said John V. Roach, Chairman and Chief Executive Officer of Tandy Corporation.

#### THE SOFTWARE:

The unique GEOS® operating system, developed by GeoWorks, powers all Zoomer PDAs. GEOS is a powerful, DOS file compatible environment that can run on extremely low power, thereby extending battery life. Its open architecture, plus compatibility across multiple, widely distributed brands, will encourage aggressive software development by third-party companies. The Zoomer logo assures PDA buyers of compatibility across the entire category of products, regardless of the brand name they purchase.

The many built-in applications include a date book, address book, note book, and to-do list manager, all developed by Palm Computing. Palm's unique approach to these essential applications means that they are elegant in appearance, simple to use, and extremely powerful. Simple taps of the pen perform functions like entering a name and address, searching for an important piece of data, or entering an appointment and setting the reminder alarm. By using pen and paper as a model, Palm Computing has created software that mimics the way people work in the present, while bringing personal organization into the future.

Other built-in applications come from America Online and Intuit (makers of the popular Quicken® computer software). America Online® telecommunications software allows Zoomer PDA owners to access electronic mail, up-to-date news, travel information, product support, stock quotes, and even portfolio management. Pocket Quicken™ personal finance software by Intuit offers money management features like expense by category, bank account transaction capture, and tracking of cash, checks, and credit card spending.

Additional built-in applications include a dictionary with spelling verification, a thesaurus, home and world time clocks, a 26-language translator, and a calculator. Also included is a form calculator that easily solves complex equations by simply entering the variables. The Zoomer PDA also includes three games, and reference sections for U.S. city and state information, nutrition information, U.S. and international dialing codes, and other useful data for people on-the-go.

All applications in the Zoomer PDA are both easy to use and powerful. Palm Computing's PowerInk™ and BackspaceInk™ allow users to enter and edit data according to their preference. Structured data fields can even accept electronic "ink," and then recall it for later use. Flexible data entry is accomplished through an on-screen QWERTY-style keyboard, electronic ink, or handwriting recognition. By accepting different types of input, the device can store and recall important information anytime, anywhere.



The PalmPrint™ handwriting recognition software, by interpreting hand-printed characters and converting them into computer text, can alphabetize, store and search entries automatically. In addition, electronic ink and text can be freely mixed in notes, lists, sketches, and maps. These and other features make the Zoomer PDA a powerful tool for organization, calculation, and communication that appeals to a vast consumer audience intimidated by the complexity of today's products. GeoWorks is also supporting independent software vendors with a software development kit and training, making the Zoomer platform an open and accessible one. Casio and Tandy expect a robust market for add-on applications, some of which will be available in October.

#### THE HARDWARE:

The Zoomer PDA is built around a custom Intel®-compatible CPU and LCD screen from Casio Computer Co., Ltd. Using state-of-the-art power management, the device offers battery life of *up to 100 hours* on three "AA" alkaline batteries. This is equivalent to weeks -- even months -- of normal intermittent use. To Zoomer owners, changing or charging batteries is not an obstacle that will keep them from taking their device of choice everywhere they go. The unit will also save its place when power is turned off, ending worries over loss of data. An AC adapter is also available.

Standard on the Zoomer PDA is a mini-serial port for connection to PCs, printers, and modems, a built-in infrared port for wireless communications, and a speaker with headphone jack. The device is also equipped with an industry standard PCMCIA (Personal Computer Memory Card International Association) 2.0 card slot for third-party applications, storage, memory expansion, and hardware like pagers and fax/modems. These varied communication options will ensure that Zoomer PDA owners stay in touch while traveling, and also communicate with PCs and printers when necessary. Casio's experience in miniaturizing electronics has created a full-featured product that can still be held in one's hand.



Casio, Inc., Dover, NJ, with sales of over \$500,000,000, is the U.S. subsidiary of Casio Computer Co., Ltd., Tokyo, Japan. Casio, Inc. is a leading supplier of consumer electronic products to all major retail outlets in the U.S. Casio Computer Co., Ltd. is a member of the global business community, and concentrates on planning and developing consumer oriented products that serve to stimulate demand. Casio Computer Co., Ltd. is a leading manufacturer of watches, calculators, business organizers, musical keyboards, hand-held televisions, music systems, electronic cash registers and other products.

Tandy Corporation is America's pre-eminent retailer of consumer electronics and personal computers. Tandy's retail operations span more than 7,200 company-owned stores and dealer/franchise outlets nationwide. The company's mission is to provide extraordinary value for the customer through knowledgeable personnel, unparalleled product selection and availability, and commitment to satisfaction. Tandy Corporation is headquartered in Fort Worth, Texas, and is listed on the New York Stock Exchange (Ticker Symbol "TAN").

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**Quicken is a registered trademark of Intuit.**  
**Pocket Quicken is a trademark of Intuit.**  
**PowerInk, BackspaceInk, and PalmPrint are trademarks of Palm Computing.**  
**Intel is a registered trademark of Intel Corporation.**  
**America Online is a registered trademark of America Online, Inc.**

Because there are so many different devices called Personal Digital Assistant on the market, it is difficult to compare and contrast them. This checklist was developed to identify the key characteristics to consider, which fall in the following categories:

## MOBILITY

### 1. PEN SUPPORT

\_\_\_ Does it use a pen for data entry and navigation, or does it have a small keyboard?

### 2. BATTERIES

\_\_\_ How long do the main batteries last?  
\_\_\_ Can it run on standard, easily available alkaline batteries?  
\_\_\_ How many batteries are required?

### 3. SIZE AND WEIGHT

\_\_\_ How large is the unit?  
\_\_\_ Can it fit inside a man's coat pocket or a woman's purse?  
\_\_\_ How much does it weigh?

## BUILT-IN SOFTWARE

### 1. FUNCTIONALITY

\_\_\_ Does the Personal Digital Assistant include a "full-featured" PIM (datebook, notebook, address book and to-do list)?  
\_\_\_ Does it include advanced calculation capabilities (loan calculations, interest rates, measurement conversions, etc.)?  
\_\_\_ Is there other information included in the device, such as dictionaries, area codes?  
\_\_\_ What other applications are provided?

### 2. DATA ENTRY

\_\_\_ Does the user have choices in how he enters data?  
\_\_\_ For text entries, does the Personal Digital Assistant do handwriting recognition?  
\_\_\_ Does it offer a software-based keyboard?  
\_\_\_ Does it support ink data entry?  
\_\_\_ Can ink be used like text, i.e. can it be entered into a field such as the "address" field?  
\_\_\_ Does it support deferred recognition of ink entries?  
\_\_\_ Can ink and text be used and displayed on the same page?  
\_\_\_ How well integrated are the two modes of data entry?  
\_\_\_ How easy, fast and clean is it to edit ink entries?

### 3. DISPLAY AND USER INTERFACE

\_\_\_ What is the screen size and resolution?  
\_\_\_ Does the software use a small screen optimally?  
\_\_\_ Is a graphics user interface (GUI) supported?  
\_\_\_ Is the software intuitive and natural?  
\_\_\_ Can most functions be accessed directly on-screen instead of through a layer of menus or gestures?  
\_\_\_ Can the user start immediately, or will she need to read the manual first?  
\_\_\_ Can the user accidentally modify his data by touching the screen at the wrong time?  
\_\_\_ Can the advanced user access more functionality if she desires?  
\_\_\_ Are pen movements clear to the user, i.e. not confused between gestures, ink and selections?

## COMMUNICATIONS

### 1. HARDWARE

\_\_\_ What hardware support does the unit provide for communications (such as infrared, serial port, PCMCIA slot, modem, etc.)?

### 2. SOFTWARE

\_\_\_ What software support does the unit provide for communications?  
\_\_\_ Can it easily access electronic mail?  
\_\_\_ Can it easily access on-line services?  
\_\_\_ Can the user send faxes?

### 3. OPTIONS

\_\_\_ What hardware and software options will be available separately for communications?  
\_\_\_ Will the unit support paging (or one-way data messaging)?  
\_\_\_ Will the unit support two-way wireless capabilities?

## PLATFORM

### 1. OPENNESS

\_\_\_ How "open" is the platform?  
\_\_\_ Can developers purchase an SDK in order to develop hardware and software applications?  
\_\_\_ Are there restrictions placed on the development community?

### 2. FUNCTIONALITY

\_\_\_ How robust is the operating system?  
\_\_\_ Does it support a multi-threaded development environment?  
\_\_\_ Does it support a graphical user interface?  
\_\_\_ Does it support multiple fonts?  
\_\_\_ Does it support DOS file exchange?

## PRICE & AVAILABILITY

### 1. PRICE POINT

\_\_\_ Is the unit priced for purchase mostly by large businesses, or can an individual afford it?  
\_\_\_ Is the price point reasonable relative to similar devices?

### 2. AVAILABILITY

\_\_\_ Is the product in stock?  
\_\_\_ Is it available through a variety of distribution channels?

## NOTES

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# Introducing PalmConnect™ the new connectivity tool for your favorite productivity tool.

## PalmConnect lets you plug in, back up and relax

If you've been keeping your old organizer "just in case," throw it away! PalmConnect lets you take your Zoomer PDA\* anywhere — while your data stays safely backed-up in your home or office PC!

Just plug your Zoomer into your PC with the special PalmConnect cable and you can make backups of everything in your Zoomer — in seconds!

## Two ways to turbocharge your data entry

Let's be honest. Whether it's a bunch of addresses, a month's worth of appointments, or important meeting notes scribbled on a legal pad — entering lots of data is a long process.

But with PalmConnect, you can type it on your PC's full-size keyboard and — ZOOM! — download it on your Zoomer. Or, with Zoomer's delayed handwriting recognition feature, you can let your speedy PC translate what you've written in PowerInk™ into text. And since we wrote most of the software that runs your Zoomer, we made sure that text and ink can be transferred to and from your PC via PalmConnect with 100% compatibility.

## Import addresses from your PC or electronic organizer

If you've already spent hours entering addresses into an electronic organizer or PC database, no problem! With PalmConnect you can import that data into your Zoomer's Address Book in minutes, with no retyping. (Tech note: the data has to be formatted as comma-separated values — but that covers virtually all of the electronic and PC-based organizers in existence. Call us if you have questions.)

**See other side for more on PalmConnect, including system requirements, other techno-stuff, and our special offer!**

\*Sold in stores as the Casio Z-7000™ and Tandy Z-PDA™ Zoomer



PalmConnect copies Zoomer data to your PC for quick, safe back-up!



PalmConnect includes everything you need to link your PC and Zoomer.

# PalmConnect — the one essential product for Zoomer users with a PC

- Backup Zoomer data on your PC
- Use your PC's processing power to accelerate handwriting recognition
- Import addresses from popular electronic organizers (in ASCII-text format with comma-separated values)



- Transfer PowerLink and text between your Zoomer and PC with 100% compatibility
- View several Zoomer applications at once — switch between them instantly!
- Use your PC's keyboard to enter data into your Zoomer

## Add a Zoomer "twin" for your home or office

PalmConnect's Address Book, Note Book and Date Book work the same on your PC as they do on your Zoomer, so you can use them immediately, without having to learn a brand-new program. What's more, your assistant can easily access the Zoomer information on your PC while you're away from your desk. With your PC, you can view your Date Book, Address Book and Note Book files all at the same time. All of your files are just a mouse-click away. And if you have a VGA color monitor, you'll be able to see your work in color.

## Save on connectivity software for Quicken and desktop organizer software

When you purchase PalmConnect, you'll receive money-saving coupons for IntelliLink and Pocket Quicken data transfer software — two programs that use PalmConnect's special cable and your PC to make your life a little easier.

## Everything you need is here

PalmConnect comes complete with everything you need to connect your Zoomer to your PC:

- PalmConnect software
- Special Zoomer-to-PC cable
- 9-to-25-pin serial converter
- Full documentation

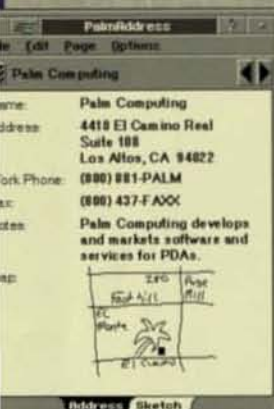
## And save \$10.00 off PalmConnect's suggested retail price

PalmConnect is the best, most convenient way to make full use of — and protect — the information in your Zoomer. To order, call now!

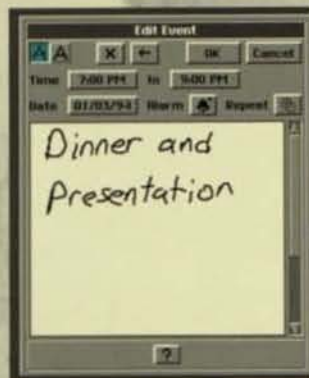
# 1-800-881-7256

**Systems Requirements:** IBM AT or 100% compatible; 640K memory; hard disk with 4 MB available; VGA or Double-Scan CGA video card and monitor; one available serial port; MS-DOS 3.3 or higher; and a Logitech, Microsoft or Mouse Systems compatible mouse. Supports more than 40 laser, ink-jet and dot-matrix printers. Including HP Laserjet, Postscript and Epson-compatible printers

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Import address data from your PC or electronic organizer, then add your own graphics.



PalmConnect makes delayed handwriting recognition faster. Use your PC to translate your PowerLink entries.



FOR IMMEDIATE RELEASE

## **Palm Computing Introduces PowerInk™ Technology for PDAs**

**New user interface incorporating PowerInk technology  
will ship with Zoomer PDAs from Casio and Tandy**

**Chicago - June 3, 1993** - Palm Computing today introduced a new user interface technology for pen-based PDAs. Palm computing applications incorporating PowerInk technology will first appear in the Zoomer PDAs being introduced this week at the Consumer Electronics Show (CES) by Casio Inc. and Tandy Corporation.

The new technology, dubbed PowerInk, allows users to enter electronic ink or text interchangeably everywhere within an application. PowerInk technology allows the user to choose at any time whether they want the convenience, flexibility, and speed of unrecognized ink or the compactness of recognized handwriting. The technological breakthrough is that ink and text are handled identically, giving ink entries all the advantages of computer text.

According to Donna Dubinsky, CEO of Palm Computing, "PowerInk technology permits ink entries to be indexed, moved and acted upon just like text. For example, a calendar entry written in ink can be moved to another day, alarmed, or made into a repeating event. The steps a user takes to perform these actions are identical regardless of whether the user scribbled the entry in ink or entered it in text."

PowerInk technology also incorporates several innovations that make it possible to write effectively on small display screens. "PDA displays present a real challenge," Dubinsky continued. "Digitizer and display limitations force the user to write fairly large, however a PDA display is fairly small. PowerInk tackles this problem by letting the user write over most of the display area. The ink is then reduced for display. At the same time, the page expands to accommodate however much ink was written."

Bruce Mendel, Director of Marketing in the Personal Communications Division of Casio, Inc., sees Palm Computing applications and in particular the PowerInk user interface as a key differentiator. "Other vendors of PDAs and pen-based computers have consistently relied too much on handwriting recognition. Users get frustrated and disappointed when they have to use recognition for all entries. Palm's applications and the PowerInk interface not only avoid this problem but users find it fun to use. We think it really sets Zoomer apart."

- more -

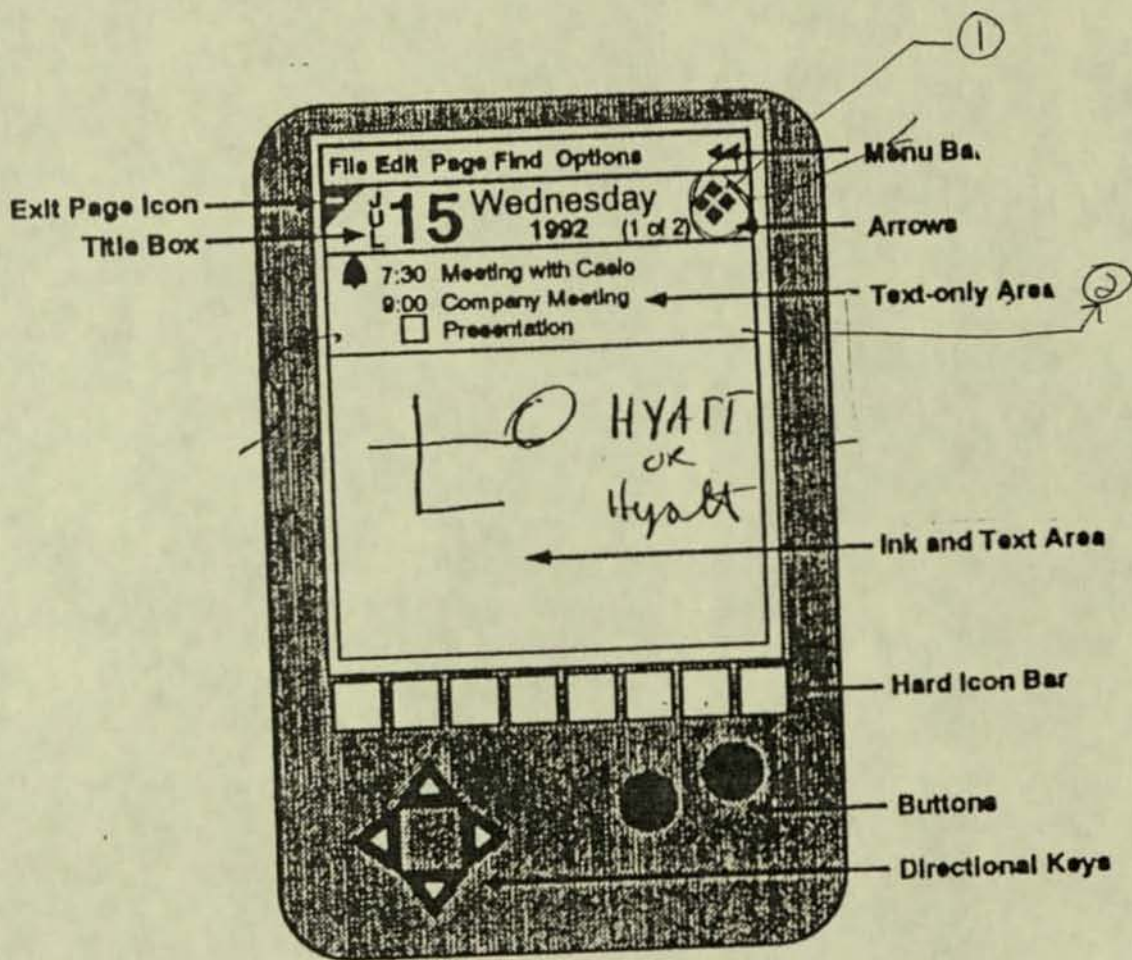
"The promise of using a pen interface to create truly portable computing devices has proven to be far more difficult than technologists had originally thought," said Palm Computing founder Jeff Hawkins. "By developing PowerInk, we have overcome the obstacles associated with the pen interface. We believe PowerInk could become a standard paradigm for pen-based PDAs."

Headquartered in Los Altos, California, Palm Computing is the leading independent software vendor in the growing field of PDAs and palmtops. Its products include personal information management applications, reference and calculations programs, and the PalmPrint™ handwriting recognizer which are included in ROM in the Zoomer PDAs. Palm is also developing a range of applications software and services for PDAs and palmtops.

###

Contact:  
Kate Purmal  
Palm Computing  
415/949-9563

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## GENERAL

- ~~Dynamic Link~~ or post-it note
- Collapse - idea
- Menu shortcuts - idea
- Smart box - idea
- Delayed recognition

- ① • Text search across applications and data files
- Shrink-ink feature
- Undo

- Page backgrounds - idea
- Gestures for editing structured text items

- ①a. • Limit search to index, everywhere in app, or every across apps
- ①b. • highlight data to search

## Traveling Software PDE format

- export functions / communication
- security / password - system or file?
- text to speech - Tandy? / GeoWorks
- scrolling zoom area
- calculator, dictionary / thesaurus<sup>as</sup> floating apps
- spell available from applications (GeoWorks)  
use GeoWorks dict / thesaurus? GeoWorks to study.
- Font capabilities within applications (size)
- Post-it note for anywhere - mark page with information  
- mark page  
- hold info

# ROLODEX

FFS

- **Format index view** user definable (Name & fax# phone# or index view)
- **Import data - custom import** matched to template
- **Show and hide individual fields labels** in the Rolodex entry

• **Different views of Rolodex vs. separate files**  
 use rolodex TABS A → Z, in one column.

File list  
 TAG Bus vs Personal

• **Field search for index filter**  
 pass example.

Xmas cards -  
 company

# DICTIONARY THESAURUS NOTEPAD

- Promote and demote pages (F10)
- Expand / collapse using buttons and/or directional keys (browsing)
- Multi-level outliner functionality

A very good one is a  
 Make it an option for advanced users  
 to add more levels.

# FORMS CALCULATOR

Custom equation solver forms

Below result with 10-100 digit precision

# DICTIONARY AND THESAURUS

- Floating
- Spell check
- C to show

# CALCULATOR

- Business functions
- Scientific functions
- Math paper (simple)
- Floating
- C to show ~~show~~ Provide paper layout

# FORMS CALCULATOR

- Custom equation solver forms
- Palm would consider including some
- repeating event every 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> Tues, for example
- User set default show to do or time per, to event or show all, show some, show none, past due marked, not use menu.
- Separate list showing all to-do items with completed, due, priority, etc.

# CALENDAR

- Setting up a default page - background
- Month view / week view icons on screen
- Change year box on month view
- Cancel or change repeating event for single day only from day view
- Schedule events with duration and end times
- ~~Schedule events with finish times only~~
- Show time usage - on week view with bar
- multiple month view (6-month, quarter, ...)  
month view, week view, day view
- Indication of events entered on a day on month view
- make menu items available from screen
- To do, single event, repeating event one unified entry mechanism
- Option to show blank times
- Enter multi-day event as structured data vs. allowing ink on month view. Show multi-day event on month/week views.
- repeating event every 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> Thurs. for example
- User set default show to do xx time prev. to event or show all, show some, show none, past due marked, not use menu..
- Separate list showing all to-do items with completed due, priority, etc...



## Infrastructure Objectives

- facilities
- insurance
- legal: trademark registration (Around the world)
- human resource policies
- funding - Good chance.

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## Staffing Objectives

- Today: 11 people
  - 6 software engineers (Solely involved in Zoomsk)
  - 2 marketing (Kai-Jon)
  - Jeff, Donna, Robin (office manager)
- Planned Additions: 2 people - *is mostly involved in Proj*
  - Director/ VP Software Development
  - Manager/Director Quality Assurance & Engineering Services (Hire contract Tester, Communication *is in place & working*)



## Company Objectives

### 1. Meet the Tandy/Casio Commitment *(Main Company)*

- Great software on time *Focus*
- *Focus to use*  
solid, elegant, HOT!
- *Bug free*  
Documentation

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## Company Objectives

### 2. Develop Zoomer add-on products

- goal: 3-4 products at launch
- purpose
  - demonstrate Zoomer flexibility
  - establish the platform *(Additional Products w/ other studies)*
  - build brand, revenue
- timing
  - marketing up front
  - development later

*Remain Focused*



## Topics

1. Our goal
2. What we have learned about pen
3. Casio's six suggestions
4. Software design goals

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## 1. Palm Computing's Goal:

Good recognition requires:

- Context (1-2-3-4)
- Number vs. letters (2, 1-1, 0, 5)
- Upper vs. lower case (C, K, O, P, Q, U, V)

**Build the best product on schedule**

- Writing neatly
  - Each letter must be discernible
  - Dictionaries are not usually helpful

### \*Conclusion:

For good recognition user should write limited text in a large field with known context





## 2. What We Have Learned

• Handwriting recognition

• Gestures

• Ink

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## Handwriting Recognition

### Good recognition requires:

• Context (Distinguish)

• Numbers vs. letters (2 Z, 1 I, 0 O, 5 S)

• Upper vs. lower case (C c, K k, O o, P p, S s, U u, V v)

• Writing large

• Digitizer is not as good as paper

• Writing neatly

• Each letter must be discernible

• Dictionaries are not usually helpful

### \*Conclusion:

For good recognition user should write limited text in a large field with known context



## Gestures *Six Suggestions*

- Difficult to learn and remember
- Prone to errors (misrecognized, misplaced)

### Conclusion:

Provide one or two simple and natural gestures

Ex. UN Natural  
(↘ ↗ ↙ ↘)

Natural  
~~delete~~ mistake  
Remove single character  
mistake

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## Ink *Casio's Six Suggestions*

- Users like ink because it is easy and forgiving
- Digitizer and display have much lower resolution than paper

(Problem)

### Conclusion:

Allow users to write ink data large,  
then reduce it



### 3. Casio's Six Suggestions

#### 1. Pointing, tapping and dragging

- PIM applications allow users to create to-do items, schedule items and create Rolodex entries almost entirely by tapping and selecting
- User testing will finalize user interface design

#### 2. Palette Functions

- Ink and text palettes provided
- Other palettes under consideration

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### 3. Casio's Six Suggestions

#### 3. Data Regulation

- PIM applications provide structured data on a page
- Delayed recognition possible -- requires user testing

#### 4. Automatic data management

- We are interested in specific suggestions

*Such as merging calendar events. (doing)*

*Want other suggestions from Casio*

*Don't want to be too smart for the user*



### 3. Casio's Six Suggestions

#### 5. Multi-linkage Between Data

- Text search provided within applications
- Cross application data linking is proposed enhancement request

*(Linking all Data bases together is very difficult in the time frame outlined (enhancement request))*

#### 6. Construction of database

**(time, non-time, personal, non-personal)**

- We need a better understanding of this request

*Minimal use of menus*

*Minimal use of gestures*

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### 4. Software Design Objectives

1. Be intuitive and easy to use
2. Provide broad utility *for the whole product*
3. Be fun and educational
4. Be open and extensible *save as # 5*



## User Interface Design Goals

- Provide intuitive and consistent visual metaphors
- Maintain an uncluttered screen
- Use handwriting recognition appropriately
- Quick input of unstructured data
- Quick input of structured data
- Minimal use of menus
- Minimal use of gestures

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## Hard Icon Bar

- |                |            |
|----------------|------------|
| · Help         | · Close    |
| · Launcher     | · Scroll   |
| · Text palette | · Calendar |
| · Ink palette  | · Rolodex  |
| · Menu         | · Notepad  |

Close wants maximum 8 hard icons  
For 8 to fit, they must be close and close.

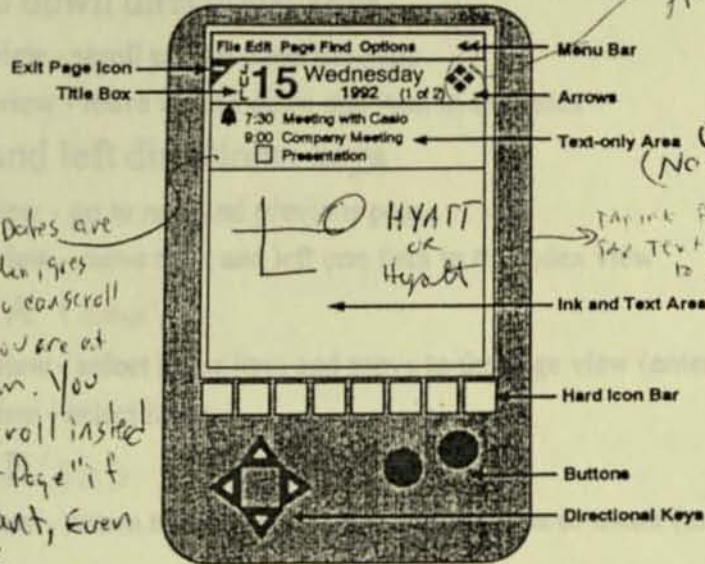


☐ The Cleanly Said icon/interfaces must be clear to user  
 the user interface must clear Palm is working  
 w/ Design people and user Group.

## Overview

Maybe change the icon.

Up and down direction  
 Right and left direction  
 If more dates are entered then, goes down. You can scroll page if you are at the bottom. You can scroll instead of Next Page if you want, even with ink.



Floating Menu Bar (Need user input determine location)

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## Hard Icon Bar

- Help
- Launcher
- Text palette
- Ink palette
- Menu
- Close ?
- Scroll ?
- Calendar
- Rolodex
- Notepad

Casio wants maximum 8 hard icons  
 for 8 to fit, they must be clear and obvious.



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To Allow user to scroll etc  
w/out using pen.

## Directional Keys and Buttons

- Up and down directional keys
  - page view - scroll up and down the page
  - index view - move up and down one item in the index
- Right and left directional keys
  - page view - go to next and previous page
  - index view - move right and left one item in the index view
- Button A (Enter)
  - index view - select index item and move to the page view (enter key)
  - page view - select items
- Button B (Esc)
  - page view - return to index view or exit dialog box or menu (escape key)



over 2  
Row 2  
Hit A to open  
Page.

□ The method  
may be changed.  
User test  
CIT to decide

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## Directional Keys and Buttons

- Button A shift with directional keys
  - up and down - zoom in and out
  - right and left - speedy next and previous page
- Button B shift with directional keys
  - up and down arrows - call up launcher menu and/or  
move up and down one item

Held down & shift right.

HE covers how'd  
validity of  
2 key functions

On-line help  
Technical Support



## Additions to Specification

- Final user interface (Text Pal, Ink Pal)
- Use of sound (now spread)
- Error conditions and messages (not spread but will be added)
- Changes as a result of user testing
- Enhancements
- Printing  $\rightarrow$  most people will not buy system? Apps will support it. To be studied more later but for now printing should be supported

Casio mentioned they are concerned about late changes. Palm is starting shortly and will put users in last once HW is available. Palm said UI is easy to change, but functionality is hard to change.

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Documentation plan thru Aug/30

## Palm Computing's Product

### Optional Content Ideas

- Software
  - User Guide (Goal is not make the user use it)
  - Tutorial
  - Quick Reference Card
  - On-line help
  - Technical Support
- First Aid  
History  
World Geography  
US Geography  
Space  
Astronomy  
Great Disasters  
Travel  
Sports
- Science  
Consumer Resource Guide  
Awards  
Entertainment  
Education





## Microlytics Content

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- Elements of Style
- Berlitz Interpreter (3 language)
- Random House Timeline
- Multi Translator (5 language)
- Popular phone numbers
- Food data

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## Optional Content Ideas

- First Aid
- History
- World Geography
- US Geography
- Space
- Astronomy
- Great Disasters
- Travel
- Sports
- Crossword Puzzle Guide
- Science
- Environment
- Consumer Resource Guide
- People
- Awards
- Entertainment
- Education



## International Issues

	<b>American English</b>	<b>British English</b>	<b>Universal English</b>
<b>Dictionary &amp; Thesaurus</b>	American English	British English	British English
<b>Handwriting Recognition</b>	English	English	eight languages
<b>Content</b>	Generic & American	Generic & ??	Generic & ??
<b>Trade-offs</b>		time to market	product speed time to market

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- Don't take credit any more
- ...
- Palm produce report monthly addressing about slide
- Green ... will provide a ... report
- Date - last day of the month



## Monthly Communication

- Palm Computing update
- Product progress
- Deviations from specification
- Known problems
  - Changes to Geoworks tools/UI
  - New employees
- Bug fix / find statistics
- Status of enhancements
- Hardware issues
- User test results
- Comments
  - Geoworks / Palm meeting notes

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- Don & Kate meet every 2 weeks.
- Notes will be submitted to radio / Tandy
- Palm produce rept monthly addressing above slide.
- Geoworks will provide a similar report.
- Date - last day of the month

#### • Today: 11 people

- 4 software managers (including myself)
- 2 marketing managers
- Jeff Davis, Sales office manager

#### • Planned Addition: 2 people

- Director VP Software Development
- Manager Director Quality Assurance & Engineering Services (to be named by the end of the month)

QUOTATION FOR PROJECT ZOOMER

1. UNIT PRICE

800 120.00 ex-works Tokyo  
[It is necessary for spare parts is included]  
[The conversion rate is 120YEN for one dollar]

2. QUANTITY

Min. 2,000 units per month (min. 20,000 units per year).  
Basically, all the parts for 20,000 units should be purchased at one time.

3. TOOLING/DEVELOPMENT CHARGE

50,000,000 YEN

4. DEVELOPMENT SCHEDULE

Basically, it will be determined after finalizing the specification.  
But as a target, we are thinking of the initial mass production to be in 1992.

5. LEADER

LIMITED

A&A A & A Japan, Ltd.

21-1 Nishi-Shinjuku 1-chome  
Shinjuku-ku, Tokyo 160, Japan  
Tel.: (03) 3343-4171  
Fax: (03) 3342-6950

1/7

FAX COVER SHEET

FAX NO. :

DATE :

2/14/92

TO :

TANDY/A&A FW

ATT. :

HE / GO / OBS -> File

SUBJECT :

ZOOMER, KYOCERA NEW PROPOSAL

SENDER :

HU

NUMBER OF PAGES (INCLUDING THIS PAGE) :

7

全32/91.04

QUOTATION FOR PROJECT ZOOMER

1. UNIT PRICE

USD 260.00 ex-godown Tokyo  
(1% warranty for spare parts is included)  
(The conversion rate is 120YEN for one dollar)

2. QUANTITY

Min. 2,000 units per month (min. 25,000 units per year).  
Basically, all the parts for 25,000 units should be purchased at one time.

3. TOOLING/DEVELOPMENT CHARGE

59,800,000 YEN

4. DEVELOPMENT SCHEDULE

Basically, it will be determined after finalizing the specification.  
But as the target, we are thinking of the intial mass production to be in Q4/1992.

5. LEADTIME

Basically, it takes 3-4 months after receiving your purchase order.  
But if we can obtain all the parts for 25,000 units as mentioned above, the leadtime will be within one month.

6. CONDITIONS

- a) This quotation is based on your specification with our proposed deviations, which are shown in the specification as per attached.
- b) Regarding the LCD, basically, we can't use the LCD used for SONY palmtop since its resolution is 320 x 256 and it doesn't match with PC chip. But we can make it equivalent by changing the dot pitch to 0.27mm. Accordingly, we will use 320 x 240 LCD which will reduce the dimension for 12mm taking the transportability into our account.
- c) The following <sup>(free)</sup> samples are included in the quotation.
  - WS --- 2pcs
  - PPS --- 11pcs
  - PS --- 2pcs
- d) The safety and radiation regulation are included in the quotation.
- e) The following items are not included in the quotation.
  - \* Carrying case.
  - \* Any royalty (such as IBM, Microsoft, TI, etc.).



4/7

SPECIFICATION

**TANDY PROJECT ZOOMER**

Kyocera Corporation.

- operating System - MS DOS Ver.5.0
- Microprocessor - 8086 PC/CHIP (CHIPS AND TECHNOLOGIES)  
Equivalent to 8086  
Clock speed --- 7.16MHz (14.31818MHz / 2)
- System Memory - 512kB Pseudo S-RAM
- ROM Storage - 3MB DOS/BIOS/Applications MASK ROM  
(1MByte MASK ROM X 1chip : ROMOS, BIOS)  
(2MByte MASK ROM X 1chip : APPLICATION Software)  
\*BIOS code, ROMDOS code and Application software code provided by TANDY.
- Secondary Storage - One user-accessible PCMCIA Ver.2.0  
(storage plus I/O) card slots
- LCD - 4.25" diagonal  
- Active viewing area --- 64.78 x 88.38  
- 320 x 240 pixels(0.27mm dot pitch)  
- Reflective type LCD without backlight  
- Adjustable contrast  
- CGA compatible(with four gray scales)
- Display Overlay - Clear, glare and scratch resistant material
- Digitizer - Resolution, accuracy and point input rate TBD
- Keyboard - None
- Clock/Calendar - Support
- Modem - None

- 5/7
- Audio - PIEZO Speaker (Beep sound only)  
(Volume control and ON/OFF control is not support)
- I/O Ports - RS-232C  
(Support signal : TXD,RXD only)  
(Signal Level :  $\pm 5V$ )  
(connector : 3terminal headphone jack)  
(MAX. Baud Rate : 19200BPS)
- Switches - "Power Switch"  
- "Hardware reset" (hidden)  
- "Display contrast control volume"  
- "Battery select switch" (select Al-Mn or Ni-Cd battery)
- System Indicators - None
- Indicator on Battery - None  
(Displayed on LCD)
- Battery life (target spec) - Target 5 hours (Al-Mn or Ni-Cd battery) with power management  
(Normal use condition)
- Power Saving Modes - Suspend mode (manual or time-out)  
- "Battery Low" suspend mode (automatic)  
- CPU clock stop function during inactivity  
- RS232C oscillator shutdown (under program control)
- AC Adapter(option) - 110v, 60Hz, AC
- DC Power Input - DC Jack
- Operation Batteries - 2pcs. AA size alkaline manganese batteries  
- 2pcs. AA size Ni-Cd batteries(option)  
Ni-Cd batteries can't be charged inside the zoomer.
- Lithium Battery (For RTC.MEMORY Back Up) - One coin Lithium battery  
(210mAh , 3V)
- Dimensions (approximate) - HEIGHT : 0.3" ( 8mm)  
- WIDTH : 3.7" ( 94mm)  
- THICKNESS : 0.8" ( 20mm)



6/7

Caseworks - Plastic

Case Color - TBD

Weight - approximately 0.76 lbs (350g) with BATTERY

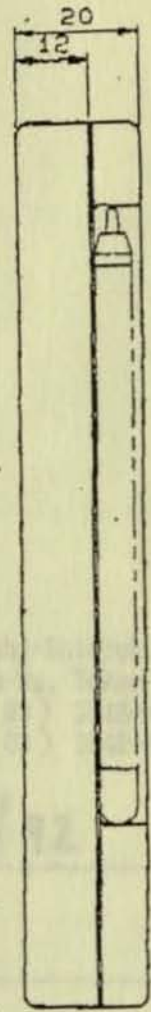
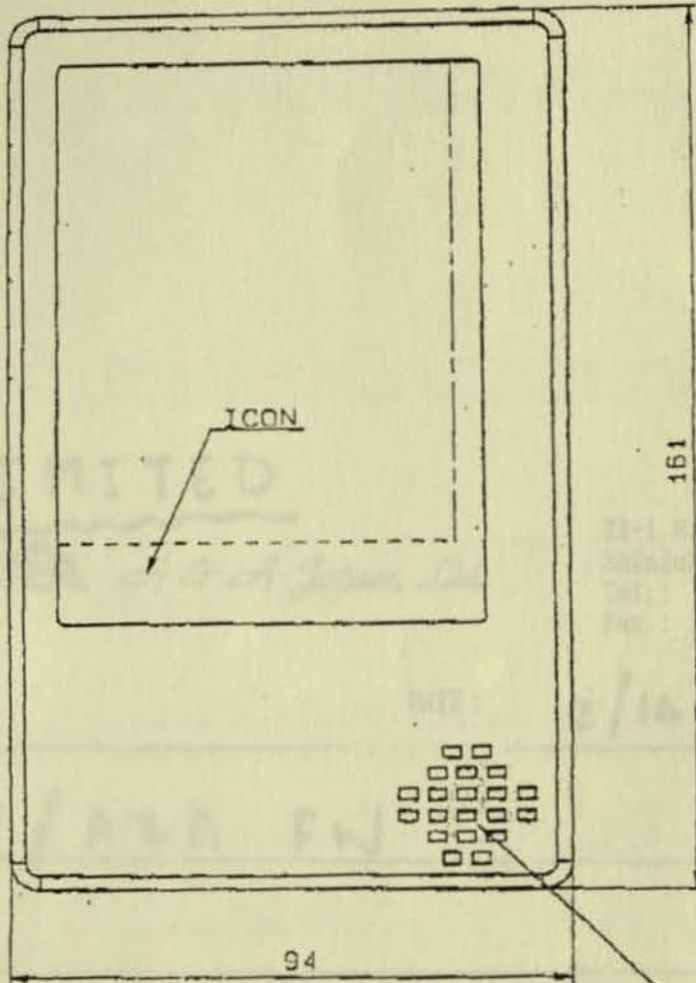
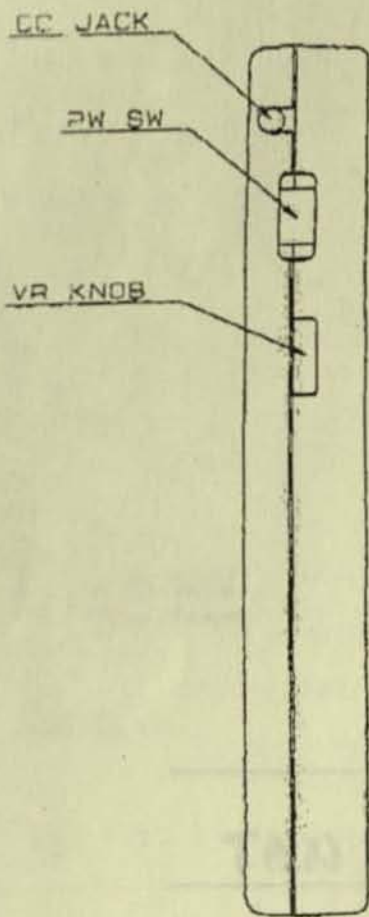
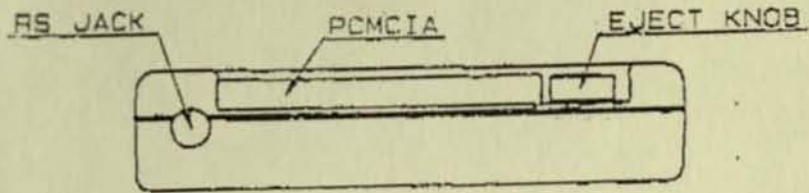
Approvals - EMISSIONS : FCC class B, Canadian equivalent  
- SAFETY : UL, CSA (AC Adapter)

Environmentals

- TEMPERATURE 5C to 40C Operating
- 20C to 60C Non-operating
- HUMIDITY 10% to 80% Operating
- 5% to 90% Non-operating
- SHOCK Unfixed Operating
- Unfixed Non-operating
- VIBRATION Unfixed Operating
- Unfixed Non-operating
- ALTITUDS 10,000 Feet Operating
- 40,000 Feet Non-operating
- ESD 10 Kv --- no malfunction during operation
- 12 Kv --- no permanent damage(during no operation)

Other Deliverables - Owner's Manual (A5 Size 200pages BOOK Style)  
(Draft is supplied from TANDY, and printed by KYOCERA)

7/7



OUT LINE

NO / 00 / 085 -> FK  
300 HER, KYOCERA NEW 11-705AL  
MU

# Communications

(817) 390 3999

## Point-to-Point

- PALM to PC (DOS + Geoworks + Windows)
- PALM to Windows
- PALM to PALM

## Network Mode (Star-like) Peer to peer

- IR

## Comm

- terminal emulator
- America Online

## Wireless Remote

- Paging (serial or IR)
- Ram Mobile data (serial or IR)

## Intuit

Apple  
Gen. Magic  
EO  
GO



# A&A International

A Tandy Corporation Company

1200 ONE TANDY CENTER, FORT WORTH, TEXAS 76102

817 - 390-3150

TELEX: 75-8253 75-8263

CABLE: AMATAYAMA, FORT WORTH

Date: 6-12-92 No. of Pages: Cover +10 =11

To : Palm Computing Attn: Jeff Hawkins

Fax No.: 415 8540345

Subject: Zoomer, Palm Computing / Cover

6/1-5 Meeting Summary

From: Raymond Surratt Dept. No.: 0155

Fax No.: (817) 390-2774

If any pages are received unreadable please call (817) 390-3189 immediately and ask for Fax Operator.

"Importing live data" is an important concept, but this should mean that it's simple to import and manage the data the way you want". To achieve this, need following:

- a) Character recognition (at a lower time)
- b) Data correction (such as a lower time or automatic edit)

Palm Basic software is good especially a). Palm will study. As a), the software will be an expansion to what extent this is useful to you.

- 4. Automatic Data Backup/Restore
 

Although the examples in the 5/25 fax may not be a good one, Zoomer should demonstrate the capability to produce and manage data especially in applications like the Outliner.

Palm Understood the reasoning and will study.

- 5. Multi-Linkage Between Data
 

Case is requesting function like relational database as described in the 5/25 fax.

Palm: Concerned about making software too hard to use.

Case: Key point is to have this feature and make it easy to use.

- 6. Organization of Database

CONFIDENTIAL

## PALM COMPUTING/CASIO 6/4-5 MEETING SUMMARY

## I. RE 5/25 FAX OF CASIO REQUESTED GENERAL SPECIFICATION

 1. Pointing

Although Zoomer is outstanding in terms of "ease of use", inputting of "meaningful data" which is a key for managing information is lacking.

Palm: agrees.

Example:

In calendar, you cannot input detail schedule of individual time zones while specifying a range of period.

 2. Palette

In order to input graphic data, INK is very important but in certain cases like maps, etc. use of palette with icons results in more cleaner and faster input of data.

Palm: Understands the thinking but feels "non-meaningful data = INK" is more important. Anyway, Palm to study further.

 3. Data Regulation

"Inputting live data via INK and processing the data later" is very important concept. But this should mean that it's "simple to input and manage the data the way you want". To achieve this, need following:

- a) Character recognition (at a later time)
- b) Data correction (edit at a later time or automatic edit)

Palm: Basic thinking is good especially a). Palm will study. Re b), the problem will be to determine to what extent this is should be done).

 4. Automatic Data Management Function

Although the example on the 5/25 fax may not be a good one, Zoomer should strengthen the capability to process and manage data especially in applications like the Outliner.

Palm: Understand the reasoning and will study.

 5. Multi-Linkage Between Data

Casio is requesting function like relational database as described in the 5/25 fax.

Palm: Concerned about making software too hard to use.

Casio: Key point is to have this feature and make it easy to use.

 6. Construction of Database

For managing personal data, Casio feels it is important to separate "time" and "personal" as keywords.

Palm: Understand reasoning but feels it is more important to emulate writing on a piece of paper.

## II. ZOOMER SPECIFICATION CONFIRMATION AND CASIO REQUESTS

### 1. Review of Outliner

Index and data does not seem distinguishable.

Casio would like to have info input as data to be convertible to index at a later time and add detail notes under that index.

Palm: to study.

### 2. Requested written explanation of INK data structure.

Palm: Will submit after confirming with GeoWorks.

### 3. Communication specification

Palm: Studying to include America On-Line in the ROM. For file transfer, studying to include Lap Link.

### 4. Forms Calculator with user input (including reverse calculation)

Palm: Technically possible but studying to what degree they can complete.

## III. NOTED REVISION OF ZOOMER SPECIFICATIONS

### 1. Removal of Novice/Professional Mode

Instead of choosing a mode from the beginning, there is selection for various extended functions within each application menu.

Casio: Concept is different from original (see 4 below).

### 2. Removal of GeoWorks Ensemble

This function was removed which is related to item 1 above.

Casio: Willing to consider level of support but some degree is necessary (see 4 below).

### 3. Removal of Multi Window

Since display size is small, difficult to support multi-window.

Casio: Feels it is a problem from a user friendliness standpoint.

Palm: to study.

### 4. Removal of INK in Outliner

Impossible to input INK data within the thin outline box.

Casio: proposed to use shrink/zoom function to input.

Palm: to study.

5. Difficult to Support Hand Writing Calculations

Casio: want to have at least simple addition/subtraction/multiplication/division support.  
Palm: to study.

IV. BASIC DIFFERENCES IN THINKING

Palm:

- 1) For pen base PIM, emphasis should be on INK base rather than hand writing recognition.
- 2) "Ease of use" is the most important point and we should ~~return~~ from including functions/features that goes against it.

Casio:

- 1) Agree completely with 1) above.
- 2) Ease of use is most important but market will want advanced capabilities which can be used easily. The challenge is to come up with system that meets the market without sacrificing ease of use.

V. IMPORTANT POINTS

Section I.

- 1. & 3. - PIM with "meaningful data".
- 6. - System control related to "time".

Section II.

- 3. - Increase of usefulness of this product.

Section III.

- 1. - Good mix of ease of use and advanced functions.
- 3. - User friendliness.
- 4. - Increase application in INK.

*J. Yoshida*  
 Junichi Yoshida  
 Manager of Development  
 CASIO COMPUTER CO., LTD.

JUN 12 '92 16:47 A&A/TANDY-FORT WORTH TEXAS

P 2/11

P 1/11

P. 5/11  
/13

Palm Computing Inc.

CASIO COMPUTER Co., Ltd.

May 25, 1992

Re : Specification Of "Zoomer" Application Software

Dear Mr. Hawkins

First of all, we would like to thank you for coming to our design center for meeting.

Regarding your company's <"Zoomer" Application Software Specification>, Casio has discussed it in detail and we have some comment on it. Your company's "Zoomer" has excellent performance in speed and ability. But, to achieve a better performance, we have to work together on some issues.

Attached specification is only a brief concept, detail specification will be discussed further during our development process. Please read through the specification and give your comment. Looking forward to work with your company. Thanks in advance for giving your best support.

Best Regards,

*J. Yoshida*

Junichi Yoshida  
Manager of Development  
CASIO COMPUTER CO., LTD.



Main Points Of The Specification

Current concept on "Zoomer"

<Using pen, writing and drawing on the paper(diary)> -->

<Writing and drawing on screen keyboard using a touch pen>

Now, we are able to use electronic equipments to write/draw just like <writing/drawing on the paper>. The input method is more 'human like' with the increase in flexibility and ability. (Other company's PIM software still using specified input method)

"Zoomer" input method is better than paper and pen. This is because it not only can input as freely as paper and pen, with its software functions, it can also automatically manage the data. To achieve the perfect <paper> function for the machine, we have listed out a few points for your consideration, they are :

1. Pointing . Dragging . Tapping input method
2. Palette Function (Be able to display different palette for different function)
3. Data Regulation (Be able to change the temporary data to the regular data)
4. Automatic Data Management Function (Be able to manage a certain data automatically even without the instruction by the user)
5. Data Linkage Between Functions (Be able to access same data from different function mode)
8. Construction Of Database (Database management method on time related data such as schedule)

### Major Points

Here are some simple explanation on the major points which were listed above,

#### 1. Pointing . Dragging . Tapping input method

'Pointing' to decide the position. 'Dragging' to determine the scope or area and 'Tapping' to decide the data needed (to be able to input or select data without using cursor keys and words).

-> Input schedule data using CUT & PASTE and Timetable function.

#### 2. Palette Function

-> The system will display different palette at different function for easy usage. A complete palette library is needed.

#### 3. Data Regulation

In all function mode, the system will be able to recognize the hand written data (in block letter or cursive words), then change all data into nice block letter and input/store them into specific area.

##### . Data type changing function (from INK to ASCII)

Change all INK data to ASCII data (data recognition), data management

##### . Input and manage of data

WORK data management (CUT and PASTE) and then input to individual specific area

4. Automatic Data Management Function

Have more automatic data management functions (without instruction from user).

. Automatic delete of SCHEDULE/TO DO LIST data which was over or passed.

. Automatic change of a total schedule if there is a small change of a schedule within it. This mean, a change in a schedule will automatically cause the changes in other related schedules.

5. Multi-linkage Between Data (like relational database)

. Can access any data from any function mode.

. Can access all related information by using keyword. For example, selecting a person's name in SCHEDULE mode will display all information about that person such as phone #, address and etc.

6. Construction of Database

o Be able to divide different data in different group but unity in all data group management and operation.

. "Zoomer" can has time related and non-time related data.

Time related data,

- SCHEDULE (once and for all data)
- REMINDER (every day, week, month, year or any time duration)
- TO DO LIST (data with dead line)

Non-time related data,

memo, telephone and address, dictionary, library and etc.

"Zoomer" can also has personal related and non-personal related data.

For example, a meeting was scheduled to be held for a number of days (non-personal related data) and a person was expected to attend at one of the day (personal related data).

The following chart shows the different data type of "Zoomer",

		PERSONAL RELATED DATA	NON-PERSONAL RELATED DATA
TIME RELATED DATA	SCHEDULE		
	REMINDER		
	TO DO LIST		
	.		
NON-TIME RELATED ADTA	MEMO		
	TEL/ADDRESS		
	DICTIONARY		
	LIBRARY		
	.		

o Operation of data base

- . Data search using 'keyword' or 'wild card'
- . Easily construct a user original database chart by using CUT and PASTE functions.
- . Search of all related data. For example, by specifying a person's name (as the keyword) in the schedule, the system will display all related information about that person in window form. Related information display are such as telephone number, address, company position and etc.

(Example of automatic edit)

1. Change all text character, then touch the edit key



2. Then, with the arrow horizontal read



next key touching position

3. Moving through down read by touching the key at the right side



4. By touching the selected place, a 7 junction read will be done





CASIO Computer Co., Ltd.

Palm Computing Inc.

Hamura R&D Center  
3-2-1, Sakae-Cho, Hamura-shi  
Tokyo, 190-11, JAPAN

CASIO COMPUTER Co., Ltd.

TEL:0425-79-7287 / FAX:0425-79-7731

May 27, 1992

FACSIMILE COVER SHEET

To : Specifications Of "Cover" Application Software

Date : May/27/1992

Fax Number : 4-1-415-854-0345

Attention : Mr. J. Hawkins

Company : Palm Computing Inc.

From : J. Yoshida

As you have discussed in detail and we have been pleased on it. Your company's "Cover" has excellent performance in speed and ability. But, to achieve a better performance, we have to work together on some issues.

Total Number of Pages    8    Including This Page.

Attached specification is only a brief context. detail specification will be discussed further during our development process. Please read through the specification and give your comment. Looking forward to work with your company. Thank in advance for giving your best support.

Best regards,

*J. Yoshida*

Juichi Yoshida  
Manager of Development  
CASIO COMPUTER CO., LTD.

Palm Computing Inc.

CASIO COMPUTER Co.,Ltd.

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Manager of Development  
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REMINDER	(every day, week, month, year or any time duration)
TO DO LIST	(data with dead line)

Non-time related data.

memo, telephone and address, dictionary, library and etc.

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TIME RELATED DATA	SCHEDULE		
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	.		
NON-TIME RELATED ADIA	MEMO		
	TEL/ADDRESS		
	DICTIONARY		
	LIBRARY .		
	.		

## o Operation of data base

- . Data search using 'keyword' or 'wild card'
- . Easily construct a user original database chart by using CUT and PASTE functions.
- . Search of all related data. For example, by specifying a person's name (as the keyword) in the schedule, the system will display all related information about that person in window form. Related information display are such as telephone number, address, company position and etc.

### Example of database chart

1. Checks the road character,  
then touch the screen



2. Drawing straight down  
road by touching the pen  
at the right place



3. Then, wish to draw a  
horizontal road



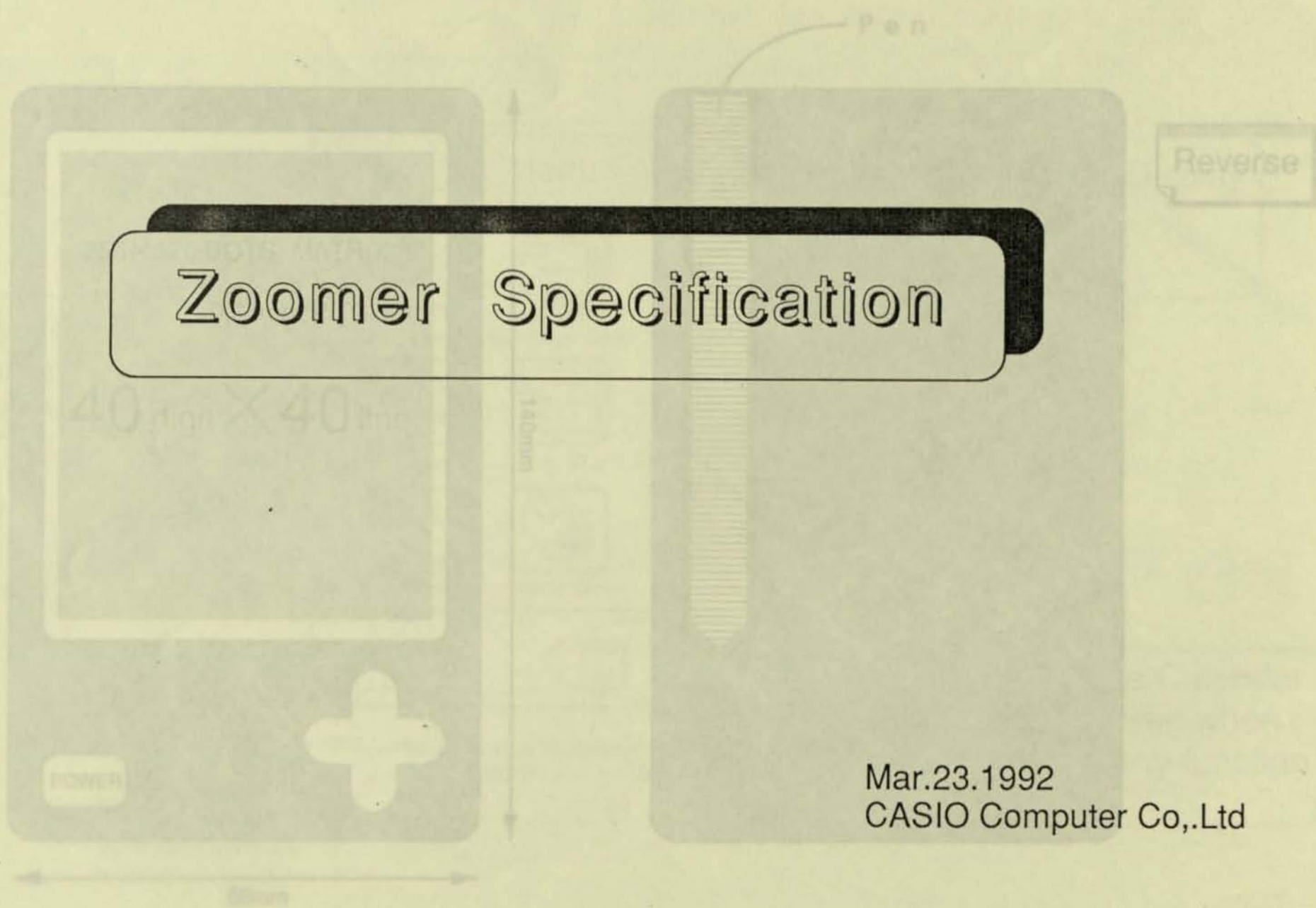
4. By touching the adjusted  
stick, a T junction road  
will be born



road pen touching position



# Zoomer Specification



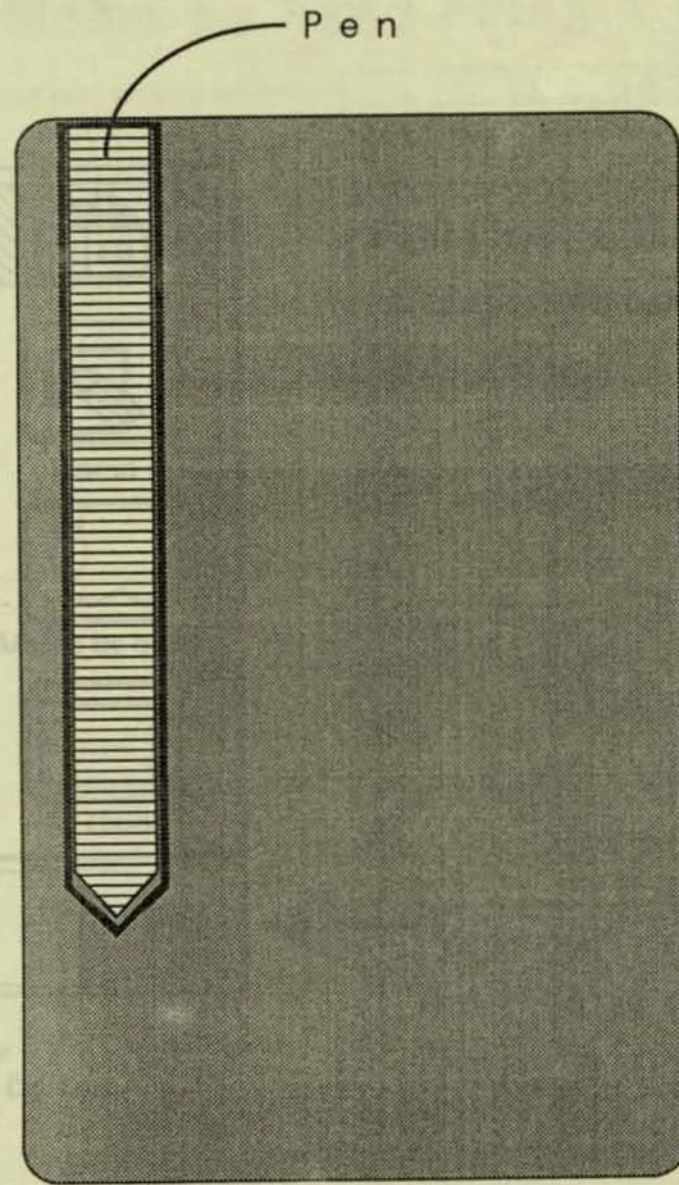
Mar.23.1992  
CASIO Computer Co.,Ltd

# Menu Screen



88mm

140mm

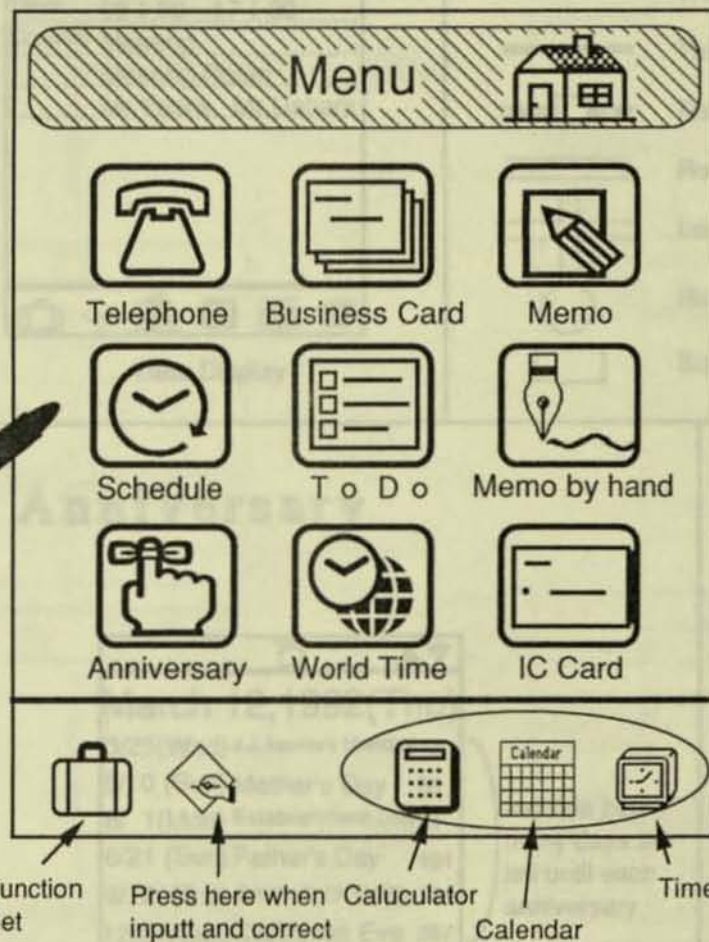


Reverse



# ● Menu Screen

Input by a specific pen on a touch panel LCD screen



Full Dot LCD Display  
40 Digit X40 Line  
(6X8 Dot font)

You can see Calendar and Time even when you are in any function

Press here in order to set functions such as adjustment of brightness on screen

# Sample of Function Display

## Schedule

March

9(Mon) ↑ To Boston

10(Tue) ↓

11(Wed) Mr. Yoshii Birthday

12(Thu) <sup>AM 9:00</sup> Meeting ▶

13(Fri) <sup>PM 5:00</sup> Skiing

14(Sat) ↓

15(Sun) ↓

Weekly Schedule Display

Date March 12, 1992(Thu)

Time 09:00~17:00

Content Meeting

Meeting Room

Mr. Yoshii... Mr. Uehara

Date Display

## Memo by hand using a pen

Samples of drawing prepared

- Thin line
- Thich line
- Railway
- Road
- Intercourse
- Round
- Square

J.J.Kawahara

045-831-

4 O'clock

## Telephone

A B C D E F G H I J

Akiyama Masako 045-831-8353

Asai keiko 03-3356-2524

## Anniversary

March 12, 1992(Thu)

3/25(Wed) J.J.Azuma's birthday 13

5/10 (Sun) Mother's Day 59

6/ 1(Mon) Establishment Day 81

6/21 (Sun) Father's Day 101

9/12 (Sat) Jimmy's birthday 184

12/24(Sun)Christmas Eve 287

Indicate how many days are left until each anniversary

## Calculation, Calendar, Time

Move freely on screen

Name

Telephone Number

# ● Example of Input Characters (Schedule Mode)

Input by pen

2

Name Mi

Telephone

Address

M i K

Input by pen

1

Name

Telephone

Address

Alphabetical key-board is displayed on screen when pressing here by pen.

Alphabetical Input

2

Name Mi

Telephone

Address

Q W E R T Y U I O  
A S D F G H J K  
Z X C V B N M

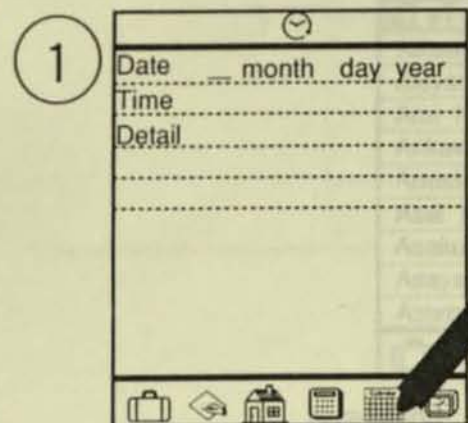
Alphabetical input by pen

# ● Example of Data-Input Image(Schedule Mode)

<Setting date and time on schedule mode>

In case of data-input schedule on March 12,1992

★ NEW

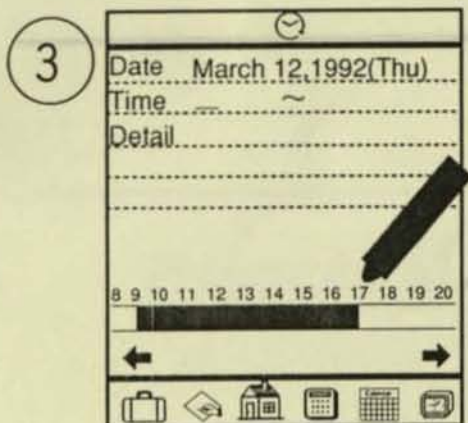


Press Calendar by pen

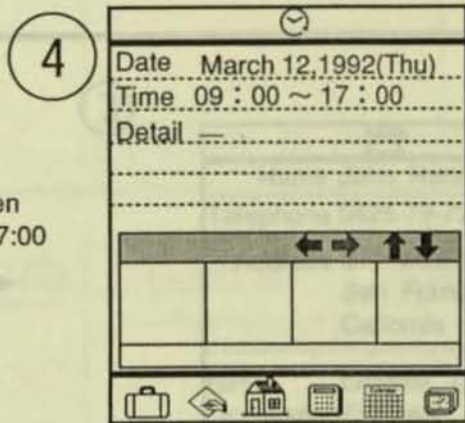


Press March 12

Completion of setting date



Touch screen from 9:00-17:00



Completion of setting time

★ Current



1 Press Calendar key

2 Press [1] key

3 Press [2] key

4 Press Schedule key

5 Press [9] key

6 Press Time key

7 Press Time key

8 Press [1] key

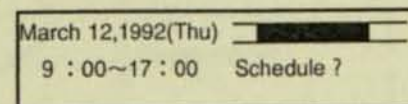
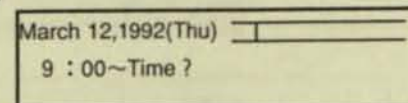
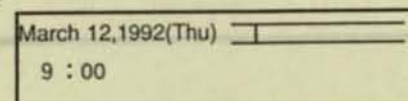
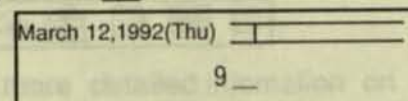
9 Press [7] key

10 Press Next key

Procedure of setting date

Completion of setting date

Procedure of setting time



Complete of setting time

Display of the required person.

# ● Example of Searching Data (Telephone)

①

A	B	C	D	E	F	G	H	I	J
Aikawa K									045-831-8353
Akiyama M									03-3356-2524
Arai K									0425-79-6626
Arikawa Y									045-891-6047
Armstrong S									0425-33-5421
Asai N									0423-77-1192
Asakura Y									045-893-7070
Asayama H									03-3454-6002
Azuma M									045-854-5231

Searching by alphabetical order



②

A	B	C	D	E	F	G	H	I	J
John Harts									0425-79-7267
Jimmy White									03-3356-2524

When you need more detailed information on a specific person, press his or her name by pen.

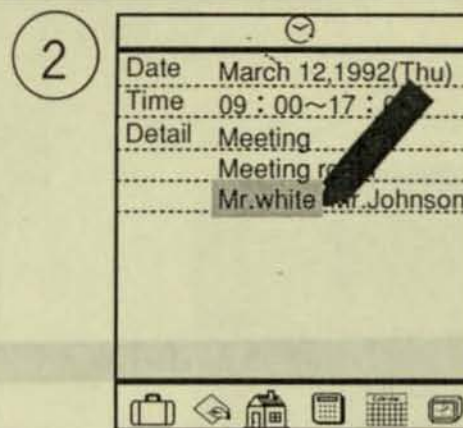
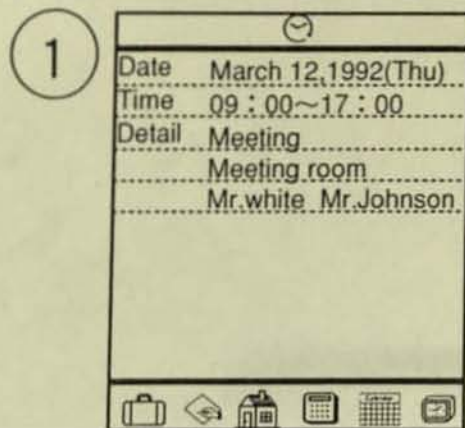
③

Name	John Harts
Telephone	0425-79-7267
Address	Sky Bd.50 San Francisco California
Birth	October 1, 1961
Occupation	Engineer
Remarks	Married

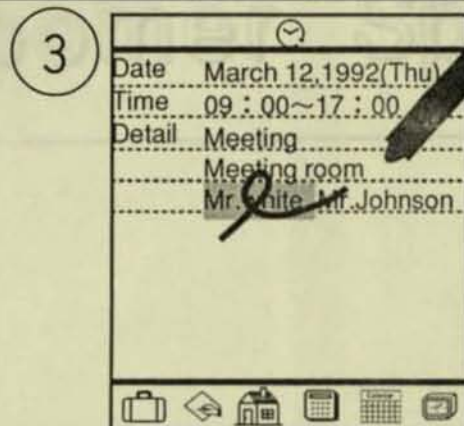
Display of the required person.

Gesture	Meaning
	Copy
	Search
	Correction

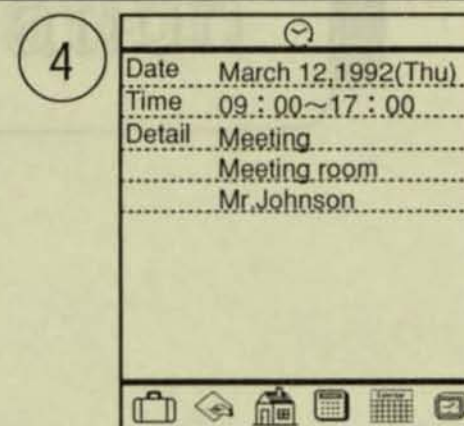
# ● Example of Edit by gesture (Schedule Mode)



Touch Mr. White by pen



Delete Mr. white by gesture



## Example of Gesture

Gesture	Meaning	Gesture	Meaning
▪	Instruct where to insert		Copy
—	Select text		Insert
	Delete		Correction