

# Use of Handheld PDA units at DFG

**DRAFT: February 14, 2002**

## Introduction

The recent interest in the use of PDA (personal digital assistants) in the field to collect data raises many issues not the least of which is, "Which PDA do I need to purchase?".

For several years, DFG has been using Palm Pilot devices mostly for organizational tasks. A widespread effort to use the Palm in the field has not been implemented although a couple are planned or are underway. Several folks from DFG (high sierra lakes survey) attended a demonstration of a USGS implementation earlier this year. The USGS experience was a positive one, but limited to one year and also limited in size and scope. They used the Palm Pilot with development software called, PenDragon.

This document is not an exhaustive summary. It is only an attempt to address the majority of the issues concerning:

- current PDA usage
- various models
- considerations
- questions and discussion items
- third party products
- DFG current and future development

## Current PDA usage

To date, there is not a DFG-GIS "standard" PDA. However, the only PDA that is supported by ITB is the Palm Pilot. The Palm Pilot is also the most widely used PDA within the department.

There are a few folks within DFG that use the Compaq Ipaq. Most notably in GIS, is Chris Stermer. The folks in North Coast Region 1 at the Information Services Branch may be undertaking development; contact Eric Haney. Chris has at least one full season of field data collection experience with multiple teams. Contact, Chris for more information.

Some wardens on the north coast will be testing a Palm application (PenDragon) implementation this season to log abalone harvest data. The primary warden contacts are John Mullin and Martin Hauan. The developer contact is Isaac Oshima.

The high sierra fisheries folks who are surveying fish and amphibians also plan to test a Palm application (PenDragon) to collect their field

data. Contact either: Curtis Milliron, John Hanson or Jim Hopelain for more information.

When trying to decide which PDA to use, we generally advise limiting your decision first to whether a Palm or CE device is needed. Below are models and some considerations that may influence your decision.

### **Various models**

Examples of **Palm** units: Palm III, V, VII, m125, m500, m505, Sony Clie Peg, HandSpring Visor, etc...

Examples of **CE** units: Compaq Ipaq, Casio, HP Jornada, MobilePro, Sidearm, Husky etc...

### **Considerations**

**Processing power:** The CE units currently far surpass the Palm units in processing power and potential storage (up to 5 GB in a PCMCIA card). The crux is that the CE units need the power because of their higher operating system requirements. For most purposes, a pilot has plenty of processing power. Exceptions to this would be in cases where major calculations needed to be done on the handheld or running applications such as GIS or moving map displays.

**Battery:** Battery life on the Palm is much greater than that of CE devices. This matters most for field crews that stay out for extended periods where the weight and logistics of extra batteries is an issue. For extended field usage, generally for the Palm you will only need to carry an extra set (AAA). A CE unit will need more and/or perhaps external battery packs (a 4AA battery backup pack is available for the Ipaq).

The use of additional batteries, depends on whether or not the unit has built-in batteries versus replaceable ones and whether or not external power can be applied.

**Ruggedness:** As stated earlier, DFG has limited experience in the field with PDAs. So far, there have been no serious problems noted. To my knowledge, PDAs have not been used in hazardous situation though; for example, at an oil spill or in a stream where the handheld might get submerged. There are a number of Windows CE devices that have ruggedized features, which range in price from the Panasonic toughbook 01 (\$1,000) to the \$3,000 Sidearm.

**Color / Resolution:** Unless you need to view images and/or quad scans then this will not be too much of an issue. If you do, then the CE has a distinct advantage although some Palms (HandSpring Prism, m505) support color at high resolution. The processing power on the CE will be advantageous for color display at high resolution.

**Memory:** Palm devices generally come with 8 MB of memory on-board. CE memory on-board varies, but the iPaq comes with either 32 or 64 MB. The new palm units accept expansion memory that will equal the CE device's memory. The differences of on-board memory are similar to that of processing power; the CE devices need more memory just as they need more processing power. (A CE device would not be able to run on 20 Mhz and 8 MB of memory while the Palm can.)

**Peripherals:** There are many variables for peripherals on both the CE and Palm. There are also variables amongst the CE devices and also amongst the Palm devices themselves. In the DFG experience, we have interfaced GPS units to both Palm and CE devices.

**Software:** CE devices have far fewer applications available. Palm on the other hand has myriad applications, commercial, shareware and freeware available. There are several database applications for both platforms. There are perhaps two, that run on both platforms.

As far as GIS software, we have tested only the ArcPad product from ESRI, which only runs on specific CE devices.

## Questions and Discussion Items

How many units are needed and how much money is available?

Are Palm units preferred over Ipaq units for you?

Do you need quad images on the handheld, etc...?

Can you utilize a moving map display to navigate your crews in the field?

Do you need GIS functions (i.e. digitizing, point collection, etc.) in the field.

Do you need interfacing with a camera, an actual physical connection or is being able to relate the data enough?

Do you need to interface with a GPS?

When do you need this implemented?

Are your data collection protocols set?

Will you need to revisit these locations?

Will you need to navigate via gps and handheld pda back to the sites? (gps only or gps and pda)

If you have GIS needs, do you have enough legal copies of ArcView?

Have you allocated time and resources for training (personel, organizational, etc....)

If doing so, what kind of pictures will you be taking? (what kind of detail are you hoping to capture)

How many pictures per plot etc... (estimate of the total number per season)?

Do you have the storage for these files? (Note: Chris Stermer's willow flycatcher photos take up 5 megabytes per site per visit. This means that doing 200 sites would take up around a gigabyte of space. So...

(# of photos per site) X (# of sites visited in a season) X (# of surveyors) X (size of pictures) = disk storage needed per season

What data storage needs do you have for the handheld device for data?

Do you need in-field backup of your data?

Will each surveyor need their own PDA? If so, are surveys duties split?

Will your users need a keyboard?

Can all users frequently bring devices and data to one location / computer or are they geographically too widespread?  
Do I need "picklists" such as a lake list, species list, etc...?  
If you need "picklists" on the device, how much storage does this require? How many records per list?  
Do you have an existing database that the PDA collected data needs to be merged?

### **Third Party Products**

Although not considered a handheld PDA, OSPR has purchased and various folks have used a Pen-based, wearable computer. Please, contact Judd Muskat for additional information.

There is also continuing development in the commercial sector for both database and GIS applications. Examples include ESRI's ArcPad software, FieldWorker Software Suite, etc...

#### **Window CE**

FieldWorker  
<http://www.fieldworker.com/>

ArcPad  
<http://www.esri.com/software/arcpad/index.html>

HandBase  
<http://www.ddhsoftware.com/index.html>

Oziexplorer  
<http://www.oziexplorer.com>

#### **Palm Pilot**

GeoGIS  
<http://www.geoinsight.com/Products/Mobile/GeoGIS.cfm>

ThinkDB  
<http://www.thinkingbytes.com/>

PenDragon Software  
<http://www.pendragon-software.com>

HandMap  
<http://www.handmap.net/Palm/>

HandBase  
<http://www.ddhsoftware.com/index.html>

## DFG application development

DFG has not developed many of its own applications for CE devices to date, but this most likely will occur. Currently, we have at least two beta or hybrid applications available on the Palm and one hybrid application for the Compaq iPaq (CE device).

PDA development is currently being done at the ITB (Information Technology Branch, contact Lora Konde) and is also believed to be occurring at North Coast Region 1, ISB (Information Services Branch). PDA development is also occurring in the Resource Assessment Program, WHDAB (Contact Chris Stermer)

## Contacts

|                    |              |  |
|--------------------|--------------|--|
| Eric Haney         | 530-225-2052 | <a href="mailto:ehaney@dfg.ca.gov">ehaney@dfg.ca.gov</a>     |
| John Hanson        | 916-358-4351 | <a href="mailto:jhanson@dfg.ca.gov">jhanson@dfg.ca.gov</a>   |
| Jim Hopelain       | 916-653-7584 | <a href="mailto:JHopelai@dfg.ca.gov">JHopelai@dfg.ca.gov</a> |
| Lt. Martin Hauan   | 707 442-2807 | <a href="mailto:MHauan@dfg.ca.gov">MHauan@dfg.ca.gov</a>     |
| Lora Konde         | 916-445-5758 | <a href="mailto:lkonde@dfg.ca.gov">lkonde@dfg.ca.gov</a>     |
| Curtis Milliron    | 760-872-1125 | <a href="mailto:Cmilliro@dfg.ca.gov">Cmilliro@dfg.ca.gov</a> |
| Warden John Mullin | 707-743-2718 | <a href="mailto:jmullin@dfg.ca.gov">jmullin@dfg.ca.gov</a>   |
| Judd Muskat        | 916-324-3411 | <a href="mailto:jmuskat@dfg.ca.gov">jmuskat@dfg.ca.gov</a>   |
| Isaac Oshima       | 916-323-1635 | <a href="mailto:ioshima@dfg.ca.gov">ioshima@dfg.ca.gov</a>   |
| Chris Stermer      | 916-323-1618 | <a href="mailto:cstermer@dfg.ca.gov">cstermer@dfg.ca.gov</a> |