



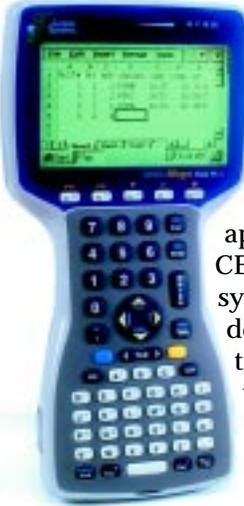
Field Computing News

Volume 3

Juniper Systems

Summer/Fall 2001

Allegro Field PC Meets Expectations



Allegro Well Received

Since the introduction of the Allegro Field PC™ in 2000, it has been very well received in the natural resource market and for use in other rugged applications. The dual Windows CE® and MS-DOS® operating systems, rugged field-ergonomic design, and expansion capabilities are among the features valued by our customers.

▼ In late May, the USDA Forest Service purchased 66 Allegro Field PCs to collect field data for their Forest Health and Monitoring Program in the Western U.S. Data are collected on soil, plants, erosion, and trees on hundreds of plots in each of the western states.

The elements outlined in the selection criteria for a hand-held field computer for this application included:

- Both Windows CE and DOS operating systems
- Standard non-proprietary battery pack that lasts between 12 and 16 hours between charges under normal operating conditions
- Battery charge indicator
- Non-volatile solid state data storage and a PC card slot
- Waterproof, shockproof design with an operating range of -22 to 130 degrees F
- Lightweight ergonomic design
- Standard RS-232 and IrDA communication ports
- Anti-glare display with adjustable contrast, backlight, heater, adjustable font sizes in DOS, and a touchscreen that can be turned off
- Keys large enough for use with a gloved hand and a full set of function keys
- GPS/GIS capabilities
- Expandability for integration of additional or new components



Forestry technicians use Allegro Field PCs to record wildland inventory data in Arizona. In the photo above, the age of a tree is determined by counting the annual growth rings on a core sample. (Photos used with permission of the Forest Service.)



▼ Weyerhaeuser announced their decision to standardize on the Allegro for data collection applications in their Timberlands Division. (See related story inside.) ■

Mobile GIS/GPS Options

Expansion Pod Integrates GPS Positions with the Allegro in a Handheld Package

Our new GPS expansion pod integrates the Trimble Lassen LP™ GPS receiver with the Allegro in one hand-held, fully sealed unit. The expansion pod receives autonomous GPS positions that are used in conjunction with the following programs (see related story on page 4):

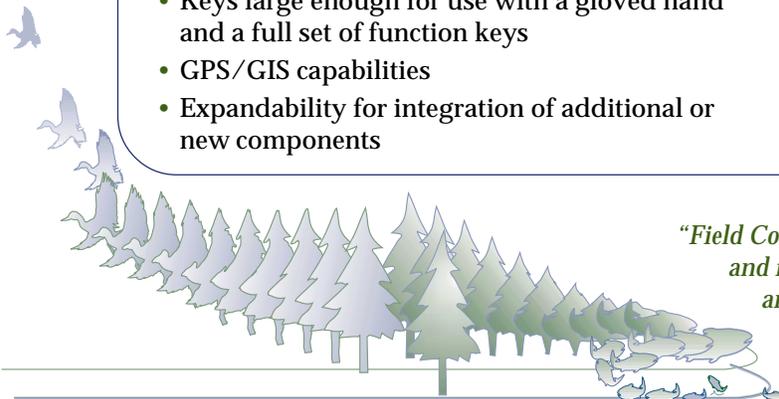


- New GIS/GPS programs for Windows CE including ArcPad™, TerraSync®, and Site Mate™
- Our LandMark GPS™ mapping and navigation program
- Data collection applications generated using DataPlus Professional™ or EASYDC™

(continued on page 2)

“Field Computing News” is our forum for announcing new products and features, sharing field computing tips, and publishing application articles about our customers. Thanks to everyone who contributed information for this issue.

Jackie Litizzette, Editor



Mobile GPS/GIS Applications

GPS Expansion Pod (continued from page 1)

The Lassen LP module is a high-performance, low power, micro GPS receiver manufactured by Trimble Navigation, a leading innovator of GPS technology. You can use both TSIP or NMEA protocols with the Lassen LP receiver enabling you to use it with a wide variety of GPS/GIS software.

As shown in the photograph on page one, the GPS expansion pod replaces the standard PC card door on the Allegro. The compact 3.3 V active micropatch antenna is securely mounted to the top of the Allegro. The antenna can be detached and mounted on an extension pole or on a vehicle if necessary (cable is required). Please call us for pricing and technical specifications on the GPS expansion pod. ■



Our LandMark GPS with the Trimble AgGPS 132 receiver is used for wetland delineation to collect real-time differentially corrected GPS positions.

GIS/GPS Programs: Windows CE and DOS

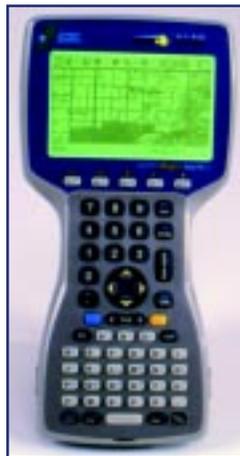
Resource managers have been taking maps to the field for over 100 years. In this new 21st century, technology has made it possible to link geographic data with resource data right in the field. With these new tools, a resource manager can quickly collect and verify data to be used in a GIS.

The influx of the new GIS/GPS programs available for Windows CE field computers has created a revolution in resource management field data collection. Several of these GIS/GPS programs are now or will soon be available for the Allegro Field PC. Some of these programs are highlighted below:



ESRI's ArcPad™ is a full-featured software package for using, collecting, and reviewing geographic data in the field. The software supports a wide range of geographic projections and file formats. Features include:

- Feature and attribute identification
- Distance, area, and direction measurement
- Creating, editing, and locating shapefile data
- Integrates with GPS positions
- Integrates with ESRI's ArcView GIS 3.2 software



ArcPad running on the Allegro Field PC

Trimble Trimble's TerraSync® Software is a versatile GIS data collection and data maintenance tool for Windows CE devices. TerraSync provides access to and seamless inter-operation with Trimble GPS Pathfinder® receivers and GPS Pathfinder Office software. The primary functions of TerraSync

software are updating existing GIS data, collecting data for a GIS or spatial database, and navigating in the field.



Site Mate™ from Farm Works Software provides site specific mapping and scouting in the field. It allows you to easily create maps of field or area boundaries, weed areas, spray paths, and soil sample locations.



LandMark GPS™ provides GPS data for mapping, distance and area determination, and navigation. GPS data can be exported for use with a GIS. The LandMark software runs in DOS on the Allegro.

Please contact us if you are interested in using the Allegro Field PC in a mobile GIS/GPS application. We can help you assess which system best meets your application needs. Look forward to making your GIS data collection more efficient in the field. ■

EDS Provides GPS, GIS, and Other Data Collection Products Online

Electronic Data Solutions, our representative in the Northwestern U.S., and Taylor Consulting are proud to bring you www.geoposition.com, an online mall of data collection products.

You will find pricing and information for Trimble GPS, ESRI GIS products, iGage All Topo Maps, Laser Technology rangefinders, Juniper Systems field computers, Hydrolab water quality instrumentation, and Calitech calibration solutions and buffers for water quality probes. An extensive listing of replacement cables and batteries is also available. VISA or Mastercard is accepted at our secure site. ■

Notes From the Field

Weyerhaeuser's Historical Use of Handheld Computers in Their Timberlands Division

By David Gilluly, Weyerhaeuser's Field Computing Specialist

David provides technology evaluation, vendor relationship management, and overall strategic leadership in the use of field computing for Weyerhaeuser's Timberlands Division. David joined Weyerhaeuser in 1996 after serving as President of Forest Resources Systems Institute (FORS) for nine years. Now living in the Pacific Northwest, David spent the first ten years of his forestry career in the Southeast and grew up in the Northeast. (Photo provided courtesy of Weyerhaeuser.)



Introduction

This article presents a brief general overview of Weyerhaeuser's use of handhelds for forest management. It is not intended to provide a detailed strategic view of Weyerhaeuser's use of handhelds (as this information is confidential). Unless otherwise noted, the information presented refers to Timberlands use of handhelds in the past three years, although other business units use them.

Weyerhaeuser Timberlands

Weyerhaeuser is a Fortune 100 forest products company that celebrated its 100th year in 1999. Weyerhaeuser owns and intensively manages

approximately six million acres of timberlands in the U.S. and manages over 16 million acres across Canada. Its U.S. ownership is in two distinct geographical regions: Western and Southern. The Western region includes western Washington and Oregon; the Southern includes Alabama, North Carolina, Georgia, Mississippi, Louisiana, Arkansas, and Oklahoma. Canadian Timberlands are located in BC, Alberta, Saskatchewan, and Ontario.

The current hardware standard for Timberlands is the Allegro Field PC from Juniper Systems. DataPlus Professional software from EDS is the handheld application development standard.

Handheld Computer Applications

Weyerhaeuser was an early adopter of handheld technology and continues to be progressive in its use of the technology. Essentially all field data collected for silvicultural activity monitoring and auditing as well as forest inventory are done with handhelds. These activities include planting, competition control, thinning, environmental monitoring, harvesting, and others. Weyerhaeuser's strategy is to leverage the technology to ensure the highest quality of data while providing an efficient means for data capture for field personnel. Key elements of this strategy include:

- Low cost of ownership, hardware and software
- Standard hardware and software across Timberlands
- One-time data capture at the source of observation
- Validation at the time of capture
- Access to statistics and other critical decision making information in the field
- User friendly systems

Handheld Hardware

Weyerhaeuser utilizes company standards for handheld hardware and software. The current hardware standard for Timberlands is the Allegro Field PC from Juniper Systems. The Allegro recently replaced the Juniper Pro4000 Field Computer as the standard, and therefore there are many Pro4000s in use across the company. Most company log scaling on the U.S. West Coast is performed using Husky Hunter 16s and FS 2s, but the Allegro will soon replace those handhelds, as well. The Allegro (and Pro4000 and Pro2000 Field Computers prior to the Allegro) was selected as the company standard for a number of reasons, including:

- The Allegro's dual boot OS (WinCE and DOS)
- Competitive pricing
- Excellent vendor (Electronic Data Solutions) and manufacturer (Juniper Systems) support (partially due to their forestry expertise and long-standing commitment to the forest products industry)
- Proven reliability in harsh environments

Notes From the Field

Weyerhaeuser (continued from page 3)

Overall, the Juniper Systems field computers have held up very well to sustained use in the woods. There have been occasional recalls due to electronic component malfunction. Juniper Systems has typically done repairs at no cost and within a reasonable time frame. We do not have substantial field experience with the Allegro yet, but we expect comparable low maintenance costs and failures.

Handheld Software

Weyerhaeuser currently uses DataPlus Professional™ as its handheld application development standard. All forest management applications in use in the U.S. used for field data collection were developed using DataPlus. Weyerhaeuser is committed to using DataPlus applications running under the DOS operating system on the Allegro in the short-to-mid term.

We are diligent in monitoring trends in handheld technology and continuously consider the costs and benefits of adopting new technologies. We are particularly optimistic about the potential benefits of using Windows CE for field applications. We currently do not have production applications for Windows CE in use in the company, but are field testing ESRI's ArcPad and a number of other applications. The ability to display spatial data such as roads and hydrology along with plot locations and associated attribute data on a compact, rugged handheld is very appealing to field foresters. Windows CE also promises greater integration with lasers, GPS, and other peripherals.

Since the Allegro Field PC boots in both DOS and Windows CE, it provides a viable transition from DOS to Windows CE without making legacy DOS software and hardware obsolete. ■



Computers in the Forest: Snapshots in the West and East

By Jan Saalfeld, VP of Juniper Systems

Field computers are becoming a familiar data collection tool in the forest and in the lumber yard. Jan interviewed representatives from two companies regarding their use of rugged field computers for forestry applications.

West – Ralph White, R. White Woods Inc., Victoria, British Columbia, Canada

On the West Coast of North America, Ralph White is the owner of R. White Woods Inc., a forestry consulting firm. Ralph explains that R. White Woods Inc. (RWWI) employs skilled individuals to work on a variety of forestry projects including tree improvement, growth and yield, and various research trials. Additionally, they conduct ecological classification, GPS mapping, editing of forest research papers and production of reports.

Hardware and Software Tools

R.White Woods Inc. utilizes the latest and most accurate electronic devices for tree height calculations, plot survey and layout, and the recording of field data. Since 1987, they have used rugged handheld computers to collect forest data in excess of 18 million observations. The company attitude of “no matter how good it is, it can always be better” has helped RWWI focus on being careful and checking their work. This approach has helped RWWI to develop a client base that is very pleased with their services.

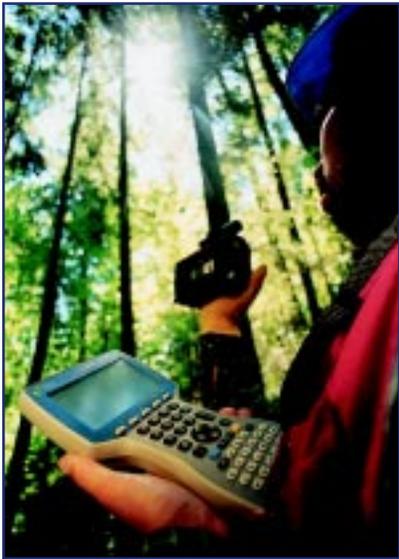
Ralph's crews are using the Allegro Field PC as their electronic data collection computer. The field computer they use must be fully waterproof and withstand the rigors of use in snow, rain, and hail

because much of their work is done on the Queen Charlotte Islands and Vancouver Island.

George White uses an Allegro Field PC to collect tree data in a dense forest canopy for R. White Woods, Inc., B.C., Canada.

(Photos courtesy of Sean White Photography)

Computers in the Forest: Snapshots in the West and East (continued from page 4)



A laser rangefinder connected to an Allegro Field PC automatically records tree height.

Ralph uses his EASYDC™ application generator software to create data collection forms that meet the requirements of his clients. He builds comprehensive data validation checks within each form to trap data collection errors. For growth and yield projects, Ralph downloads the previous measurements of

the trees on the permanent plots so that as new data are entered, the entries can be checked against the old measurements.

Cost/Benefit Analysis

Many people ask Ralph how to justify the cost of a field computer. He was able to illustrate how the cost is easily justified during a recent project. In March 2001, Ralph was working on a project with three crews over a 15-day period. Two of the crews used the Allegro Field PC with the EASYDC program to collect the forest inventory data. One crew used paper tally cards. The contract required that the data be delivered in electronic Microsoft Excel® spreadsheet format. On a day-to-day basis, the crew using the paper tally cards spent an extra hour each day collecting their data and transcribing it so that it was in the proper format. The crews collecting data on the Allegro Field PC were faster and their data were more accurate due to in-field validations.

Ralph says, "what better justification can there be when I am 12% faster in the field and I get more accurate results? This result saves me money and makes my clients happier."

East - Ed Pomeroy, Operations Analyst, Georgia-Pacific Corporation, Wendell, North Carolina

Ed has facilitated Georgia-Pacific's use of rugged field computers and inventory management software to collect forest inventory information in the eastern U.S. Both their Forest Management Assistance Program (FMAP) foresters and procurement foresters utilize this equipment. Ed says "the field computers, coupled with a robust forest inventory program, greatly enhance our company's ability to procure wood fiber in today's competitive environment."

Software and Hardware Tools

Georgia-Pacific uses the Allegro Field PC to collect inventory data. For software they use Two Dog™ Forest Inventory software from Foresters Inc, which consists of two programs: Field Dog and Office Dog. Field Dog provides fast field data entry into a user defined data entry form. It runs on DOS based field computers. Office Dog is a Windows program for a desktop computer. It processes field data quickly and accurately, providing volume values and reports.

System Benefits

A major benefit of the system is that the foresters achieve a one-time data entry of the forest inventory data. Historically, inventory data were recorded on tally cards and then keyed into the office computer, which resulted in potential data entry errors. The Field Dog program allows a forester to view the data on a plot by plot basis. The forester can do a statistical summary of the data by plot to validate the data while in the field. The foresters are able to immediately check the tree count, volume, basal area and value on an on-the-spot basis. If a mistake is noticed, for example, a forester overruns the tract boundary and accidentally tallies trees on a plot that is not in the cruise, the trees entered on this plot can easily be deleted from the tract. The ability to easily correct for this type of error was impossible with the old cumulative tally card method.

Ed states that the Allegro and the Field Dog program are also excellent training aids when a new forester joins the company. Because Field Dog enables a forester to immediately review a particular plot's volume and value, a new forester can review how a slight error in grading or in height estimation can affect volume and/or value.

Using these tools, the forester can quickly see how important it is to be accurate in his/her field measurement methods, and can improve upon and refine cruising skills. With the ability to view on-the-fly volumes, a forester's learning curve is rapidly increased.

Sawmill Applications

Georgia Pacific not only uses handheld computers in their forest inventory applications, but they are also used at their hardwood sawmills for log scaling and lumber end tally. The log and load volumes are calculated as logs are entered into the field computer. A scaler has an on-line report of the volume of each load based on size, grade and species groups. These reports are printed from the field computer and log scale data is also sent to the PC on a daily basis for settlement and analysis purposes. ■

"The field computers, coupled with a robust forest inventory program, greatly enhance our company's ability to procure wood fiber in today's competitive environment."

Ed Pomeroy

Announcements

New Allegro Accessories and Features

The following new accessories and features are now available for the Allegro Field PC:

▼ A nylon carrying case protects the display from scratching as you move around in the field. Achieve hands-free operation with the Allegro neck strap.



▼ The GPS expansion pod integrates the Trimble Lassen LP GPS receiver with the Allegro (see related article on pages 1 and 4).

▼ The vxHpc Terminal Program from Cambridge Computer Corporation runs on the Allegro, allowing you to send files via a modem and capture data from a serial device. Read more about this program and download a demo version from: www.cam.com/vxhpc.html.

▼ Visual CE can be used as a database development tool for the Allegro. It is similar to Microsoft's Pocket Access and interfaces with Access on your PC. Read about this software at: www.syware.com.

▼ There is now a 32 M RAM option, providing more space for application processing.

▼ An international font keyboard bezel option is available.

▼ Windows 3.0 will be available the third quarter. ■

Sale on Refurbished Field Computers

We have a limited supply of refurbished Pro4000 Field Computers™ in like-new condition. The Pro4000 is a rugged, DOS computer with a 486 processor running at 66 MHz. These units have 8 M of data storage. The following items are included as a package:

- Pro4000 Field Computer
- Standard Rechargeable Battery Pack
- AC SafeCharger™
- Red Nylon Field Carrying Case
- Serial Communication Cable
- Owner's Manual and Utility Software
- One Year Warranty



The price is \$1,780 in U.S. dollars. These units are being sold on a first-come, first-served basis.

Eric Hill, Director of Operation at Besse Forest Products Group, has a slightly used Pro4000 for sale. Contact him directly for details: Phone: 906-783-8231 ■

Professional Meetings

We are displaying our products at these meetings:



ESRI User's Conference, San Diego, CA,
July 10-12



American Fisheries Society Meeting, Phoenix,
AZ, August 19-23



Society of American Foresters Convention,
Denver, CO, September 13-15

Juniper Systems specializes in field computing solutions and mobile GIS/GPS. We are a Division of HarvestMaster, Inc., a Campbell Scientific Company.

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