Agenda VR3
Linux PDA test report

PENGUIN IN YOUR POCKET

The recently released Agenda VR3 is the first of a new generation of PDAs based on the Linux operating system. Under its chic exterior lies a solid Linux core, but is its bite is as good as its bark? Carsten Zerbst investigates

PDA Personal Digital Assistant, or in other words, an electronic organiser. The most well known PDAs are those from Palm, Handspring and Psion. Handspring bases its Visor on the Palm OS, which is licensed from Palm. In contrast the PDAs from Psion have a keyboard and are significantly larger. Psion however recently announced its intention to discontinue selling its own devices to the end user.

Linux has acquired the reputation of being an ideal base for **PDAs** in the past few years. From the many PDAs announced, there are only two candidates presently available: LISA supplies the Compaq's iPaq with Linux (Compaq itself only distributes this with the Windows CE operating system); and the Agenda VR3 – the first genuine Linux PDA, which has been available since July 2001.

Agenda Computing presented the first production VR3 machines at the Linux Expo. They are marketed directly by Agenda at the price of around £200, though this will depend on exchange rates, shipping and local taxes. Included with the PDA you also get a cable in order to connect to the serial port of a PC, a cradle, a headphone/microphone combination and a leather cover. A CD, which includes software for the PC as well as clear operating instructions, is also included. Third party software is also now available – the Agenda Software Repository is a good place to look.

First impressions

The VR3 measures approximately 4.5in by 3in (8cm by 11cm) and thereby fits comfortably in the hand. The display cover is connected to the housing and can be folded to the rear. On the one hand, it cannot be lost as easily as the cover of the Handspring or Visor, on the other however it gives a somewhat awkward impression. Only time will tell if this is the optimal solution; in any case the cover can be easily removed. The supplied leather case provides space for the Agenda (with or without display cover), the stylus, as well as a few business cards.

The display has a viewable area of 2 1/8in by 3 1/4in (5.5cm by 8.5cm), which is over half an inch (1.25 cm) longer than the Palm display. The main reason for this is that the VR3 uses the entire display surface for applications. The handwriting recognition or the keyboard are only displayed when required and therefore do not permanently take up the bottom inch (2.5 cm).

The 160 x 240 pixel display represents 16 grey scales and can be easily read in direct sunshine or with bad lighting. A quick check of the schedule at night is possible as well due to the internal lighting.

As with all PDAs, the quite strongly reflective glass surface can be annoying. There is even a program that turns the display completely black, so that it can be used as a make-up mirror – perhaps the mirror effect should be regarded as a marketing feature.

The housing has six keys. Two for up/down, two for left/right and two shift keys. The two large shift keys each operate two micro-keys and could therefore theoretically function as toggle keys. Unfortunately both micro switches are wired parallel on the circuit board and thus can't be differentiated from each other. The arrangement of the buttons on the Agenda is equally suitable for left and right-handers; however both hands are normally required for operation.

Software

When switching the machine on for the first time, the Agenda displays its 'Booting' messages. An **xdm** is started for logging on after the touch screen has been **calibrated**. There are two users ready for selection: default without password and root with the password agenda. We will no longer have to go through this procedure after this as logging on again is not necessary. There is unfortunately no logging out, so that the data may be read by anyone at any time.

The cornerstone of the user interface is the Launchpad, which starts all the graphical applications. This includes everything that one would expect on a PDA – available are not only the classic **PIM** applications, but also system programs and various games. Another practical feature is the status bar, which includes a combination of the time of day and a battery display. The status bar can additionally be used to switch between the different windows.

One should not forget that the number of applications run at the same time is restricted by the availability of CPU and memory. The speed and performance of the Agenda, in its as-delivered condition, is nevertheless very disappointing. In this respect, an update to the new SNOW binary (described later in this article) is advised. The Agenda, even after the update, gives a somewhat lethargic impression – especially when starting applications. While, for instance, the equally expensive Palm PDA makes its applications immediately available, the Agenda is decidedly more hesitant.

Under the hood

Under the hood, we find a 66MHz **MIPS** processor, as well as 16 Mb **Flash** memory and 8 Mb RAM capacity. Internal extensions do not seem to be intended nor planned for. Available on the outside is a serial port, an **IrDA** port as well as a mini-jack for audio input and output.

The VR3 lives on two AAA batteries, and therefore has no spare power to give away freely. With a small tool, the power management settings can be easily adjusted. This means lights out for the PDA after the pre-set time. The VR3 also has an ingenious power saving solution: removing and replacing the stylus in the PDA also turns it on and off. Nevertheless, the batteries do not last particularly long and were run flat after a week's intensive use. Agenda would have perhaps been better to select the AA size batteries, which are not much larger, but have almost three times the capacity.

Dates, addresses and more

Agenda did not go in for any major experiments with its main PDA applications; the scope and user interface of the programs are not dissimilar to the Palm. In the schedule, dates can be entered with the beginning and end times, and an accompanying description. In no case should this be forgotten, as dates without a description are simply lost.

The Agenda schedule can remind you about your dates with an alarm that features an adjustable preset lead-time. An inactive VR3 gives an acoustic reminder, otherwise it will give you a message the next time you switch it on. The reminder can also be set to go off daily, and different repetitions are possible for different dates. This also works when carrying out changes, for example altering one date can automatically alter similar dates.

Contacts – your glorified address book – is organised with similar functionality: Names are accompanied by addresses, which can be stored in different systems (postal address, telephone, email).

MIPS Spread processor architecture. MIPS processors are produced by different manufacturers and used in all sorts of different devices, from high-end servers (for example Silicone Graphics) all the way to small, power-saving PDAs.

Flash A Flash memory system can be repeatedly written and read almost like normal RAM. The main difference is that it also memorises data when the power is off. Another difference to RAM is that writing is in comparison quite slow and may not be arbitrarily repeated.

IrDA The abbreviation actually stands for the Infrared Data Association. However it also defines the standard for infrared ports, determined by this organisation.

Calibration A touch screen reacts to contact, i.e. with a stylus. During the calibration, it is determined at which point the program surface responds to such a contact.

xdm The X11 display manager is the graphic log-on program, into which the user enters his user name and password.

PIM Personal Information Manager. Most importantly, this includes the schedule planner, contact register and note book.

Each case can also be accompanied by remarks and notes. Addresses can be assigned different categories to better manage the entries. The categories can be created and designated at will. The transfer of addresses by infrared (beaming) between the Agenda and a Palm poses no problems and can be accomplished in both directions. The VR3 however receives the addresses without first asking the user.

These two applications are probably the most important on a PDA. They are flanked by a pocket calculator, an expense book, a small word processor for notes, a To Do list and a world clock.

Plus and minus

There are a few points of criticism to mention here. The somewhat tardy behaviour, as mentioned earlier, is rather perturbing. The Mail program is displayed in the Launchpad, but is not yet installed. Items from the to-do list cannot be easily transferred into the schedule as a date, and dates without a description disappear after entry into Never-Never land.

On the other hand, there are genuine pluses. The find program searches the data of the standard applications and displays the appropriate records. The audio input and output is not yet used to its full potential at present, however Agenda has already announced that a dictation program is on its way. Additionally, there is a port for the Madplay MP3 player. It must be noted here that we could not get this to work during the test. In view of its mono output and small memory, the VR3 is in any case not an adequate substitute for an MP3 player.

With stylus and keyboard

The acid test of any PDA is in the operation. The operation with a stylus is mostly easier than with a mouse. On the other hand, there are times when one yearns for a real keyboard. There are two available possibilities for the entry of text: a virtual keyboard and handwriting recognition. Once the virtual keyboard is accessed from the icon below the display, you can then start hitting your virtual keys.

As mentioned, the Agenda comes with handwriting recognition as an alternative to the keyboard. As with all devices of this type, we can not speak about a true recognition of the written word – these machines only understand certain letters. As with the Palm, four input areas are available on the display. Small and capital letters, numbers and special characters are detected. The letters used here are similar to those used by Palm (in contrast to Windows CE), so that no new writing style needs to be learned. The rate of handwriting recognition is slower than with the Palm, however the VR3 displays the written letters. You therefore don't have to write blind.

Looking to the future

The development of the Agenda is naturally an ongoing process. This includes both the kernel and the programs supplied with the PDA. These can both be brought up to date through the serial connection. Before you do this however, you should first save your data onto the PC. The kernel and the programs (referred to as the rootdisk) can be downloaded from the Agenda homepage.

There are currently two differently types of binaries for the VR3, and these should not be mixed with each other. On delivery, Agenda uses normal binaries with **ELF** libraries. With this technique, all references have to be calculated and transformed into library functions – all this costs computing time. This, in contrast to normal desktop computers, is a major issue on the weaker PDAs. Including libraries into all programs is, for space reasons, not an alternative.

A SNOW storm

Jay Carlson has come up with the idea of using libraries with fixed, allocated memory spaces and to this end he created the SNOW **ABI**. This naturally requires more work when compiling, however the

Information

LISA	*http://www.lisa.de/*
Agenda Computing	*http://www.agendacomputing.de/*
Agenda Software Repository	*http://www.supermegamulti.com/agenda/index.asp*
Mirror	*http://www.newbreedsoftware.com/mirror/*
PPP-connection and other software	*http://www.agendacomputing.de/agenda-e/software-e/index-soft-e.htm>*
Andrej Cedilnik page	*http://www.csee.umbc.edu/~acedil1/agenda*
Busybox	*http://busybox.lineo.com/*
Mailing List	*http://lists.agendacomputing.com/*
Developer Page	*http://dev.agendacomputing.com/*
Community Portal	*http://www2.math.uni-potsdam.de/agenda/*
Dawn	*http://members.home.com/zakharin/Software/Dawn.html*
vrflash	*http://www.apex.net/~jeff/agenda-utils/*
Agenda Wiki	*http://agendawiki.com/*
PMON	*http://www.csee.umbc.edu/~acedil1/agenda/update.shtml*
rsync	*http://rsync.samba.org/*
SNOW ABI	*http://www.desertscenes.net/agenda/snow/*

success comes with the speed. A VR3 with SNOW binaries starts substantially faster, making this version the only really sensible choice for serious use. The only catch however is that all programs, including the Kernel, have to use SNOW.

Open architecture provides the normal user with the possibility of independently developing software for this platform. The difference between the Agenda and a normal Linux PC is small (in contrast to the Palm) and development tools are available free of charge. For speed reasons, the decision between ELF and SNOW falls in favour SNOW. The Agenda is also interesting for the commercial market as a base for mobile applications.

Missing at present are the extensions. A modem, Ethernet card and keyboard are apparently on their way; a dream would be a jacket for PCMCIA cards (as with the iPaq from Compaq). Very nice mobile applications could be developed with this. On the other hand, the Agenda VR3 is inexpensive enough that it represents a genuine alternative to other embedded solutions. Two things at the top of the hardware wish list unfortunately rule each other out: longer battery life and higher processing speed.

All in all

Altogether, the Agenda VR3 is fun to use and takes good care of all the normal daily functions of a PDA. With its synchronisation with desktop programs, GNOME users at least can work with a single data basis. There are off course still a few things in this respect that need to be improved or corrected, for example more consideration needs to be given to the KDE user.

Recommending either Palm or Agenda is difficult. Even the smallest Palm performs normal functions faster. Next to its undisputed geek-appeal, the Agenda wins plus points with its seamless integration into the Linux landscape. Additionally, it offers (depending on your perspective) more possibilities than the Palm because of its many and varied ports. All in all, it is worth serious consideration if you can live with the somewhat slow processing speed.

The author

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ELF The current format for binary programs and libraries under Linux.

ABI Application Binary Interface. The generic term for formats and procedures that find and connect the libraries at program start