

CLEAN

August 1998

NEWSLETTER



Exclusive:
Interview with
Phoebe
Developer



Competitions
and Freebies -
don't
miss out!



The South-East
Show: The
successful day
in Stevenage



It's nearly
time...
Phoebe
the facts



Acorn
Marketing on
the up!



Acorn World:
Great Offers
on entry

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ALL THE INFO YOU NEED
INTRODUCE A FRIEND...
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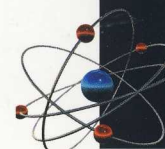
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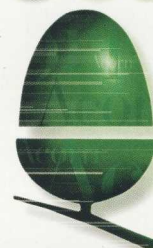
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BRIEF OVERVIEW OF PHOEBE
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Acorn



Please note that all Clan
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The Clan magazine is a
quarterly publication to
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developers in the Acorn
Community

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Phoebe Development team



The NC has much been berated in the press of late and once again Acorn is challenging convention with continued success in its thin-client solution, drawing attention and interest world-wide.

This low cost, low management solution is currently already installed in schools in the UK, Hinchingsbrooke School in Huntingdon, Cambridgeshire being one them. They are also of particular interest in Australia and New Zealand where they are currently installed in John XXIII College in Western Australia. Acorn's NC team, Alastair France and Chris Grogan have beaten a path between Cambridge & Australia with three visits down under between them over the last few weeks!

Acorn firmly believes that thin client computing is the way forward, and is once again leading the way in this, the next computing revolution. See it for yourself at Acorn World '98. For more details turn to page 10.

CHRIS COX ON THE RECENT MANAGEMENT CHANGES AT ACORN

The recent changes in Acorn's senior management is some of the best news for Acorn enthusiasts in a long time. Any anxious Acorn users out there should rest assured that these latest changes are a significant step in ensuring the long term viability of Acorn as a company, and therefore in our ongoing commitment to product development and support.

"Acorn has a reputation for developing ground-breaking technologies, which have many different uses, and in the past has been guilty of trying to do too much. This has often led to industry commentators, the media and even the Acorn enthusiasts to question the company's focus and commitment to its platforms."

"The appointment of David Lee as CEO three years ago was the first step in improving Acorn's focus. In establishing Acorn as a key technology developer, David Lee concentrated the company on its best asset - its technology - and the embodiment of this in its products."



Stan Boland

"In June this year, Acorn took the next step forward by appointing Stan Boland as CEO. Stan Boland is aiming to focus in even further on Acorn's key strengths, with a number of exciting strategic plans. Under this next phase in Acorn's evolution, the Workstations division is as crucial an element of the business as ever before, and none of the recent senior management changes have any bearing on any of the existing plans for continued product development and distribution. Phoebe is still scheduled for launch at Acorn World in October, and continues to be previewed to a 'select few' until then."

"So the key message to you all is: rest assured. Acorn's future's looking brighter than ever!"

Chris Cox

Head of Workstations Division, Acorn Computers



PHOEBE'S NEARLY UPON US

Some of you have seen a prototype, some of you have had a quick play with a mock up, you've all heard of her (unless you've been on Mars for the past 6 months) and now at last you can meet the real her.

Phoebe is making her first public appearance in October, when she's officially being launched at Acorn World '98.

Make sure you don't miss out. See page 10 for more exciting news on Acorn World and make sure you get your ticket today!



ACORN AND AAUG FORM STRONGER LINKS

Acorn is pleased to announce that after a recent meeting with Neil Spellings, Chairman of the Association of Acorn User Groups (AAUG), plans are afoot to forge stronger links between the 2 groups.

The AAUG web site will contain a new area (<http://www.argonet.co.uk/scs/AAUG/>) containing information from Acorn on plans, developments and events. By doing this Acorn are hoping to improve communication to this important group of Acorn users, and ensuring that far-flung members such as those in New Zealand and Australia aren't always the last to hear about what's going on!

Details of AUG events and meetings will be fed through to the Acorn site, and there will be links to the AAUG site from the Acorn site.

For any further information on the AAUG, contact the Chairman, Neil Spellings,



on aaug@argonet.co.uk

Individual AUGs are detailed on the AAUG website: <http://www.argonet.co.uk/scs/AAUG/>

THE CABLE & SATELLITE SHOW JUNE '98

The Cable and Satellite Show is the industry event and meeting place for broadcasters, retailers, cable operators, ISPs & PTTs - all of whom converge in London for 3 days a year from over 90 countries to find out exactly what is happening in their industry. The show is Europe's leading broadcast and communications event - the place to be to keep in touch with the very latest emerging trends and technologies.

Andy Mee, Acorn's VP Marketing and Business Development, said "This year's Cable and Satellite was a great platform for the launch of Acorn's exciting new SA 1500/1501 DiTV solutions. The show surpassed our expectations, and we achieved all the goals we went out with. We were also very impressed with the high calibre of visitors and made some very valuable contacts."



CLAN FOCUS

MARKETING ACORN WORKSTATIONS

There have been comments from the Clan in the past about Acorn's lack of marketing activity, but you'll be glad to hear that things are improving. The new Workstations Marketing team started in June in the form of Suzy Wright and Nichola Lewis. Some of you will have met them at the Big Ben Club in Holland in June and at the South-East Show in July.

Our new PR Agency, 'Midnight Communications' was brought on board back in April 1998, and their plans to broaden Acorn's awareness through the press are well underway, so keep your eyes peeled.....All press releases go up on the Clan web site before they appear in the press, so make sure you check it regularly to stay one step ahead!

Our new advertising agency 'The Company' have developed a hugely powerful advertising and awareness campaign which strongly positions Acorn as an innovative, technology-driven computer manufacturer.

Look out for this going live around September time. Again, details will be on the Clan Website. (<http://www.acorn.com/clan/>)

With these strong foundations we're hoping that you'll be seeing a lot of Acorn, Phoebe and a little later on - the NC. Marketing plans are still being finalised, but we'll keep you updated via the Clan Website.

Acorn's dealer channels are being kept updated through a new newsletter and by a much improved website. The UK Dealers are currently running a Trade-in promotion until the end of September 1998 which you should already know about. Check out the September and October issues of Acorn User or the Clan Website for a full page advert, or visit your local dealer today. The 20/20 credit scheme is replaced from 1 Aug with a great new, zero deposit scheme. Again, see the ad in the September and October issues of Acorn User, or the website, or visit your local dealer.

Things are moving ahead!

Keep up-to-date by visiting the Clan Website regularly.

WEBSITE INFO/UPDATE

As you may have noticed the Clan Website is undergoing a facelift. New areas are being added or updated each week, courtesy of Gareth Tupper who's been brought in specifically to improve the website areas. If you want to be kept up-to-date with changes as they happen, simply complete the on-line form at <http://www.acorn.com/acorn/comments/form/> and we'll keep you posted via email.

Don't forget that the Clan Website is for you. Let us have your feedback on the new site, and your ideas for additional pages. Email clan@acorn.com.

It was brought to our attention that some of you were having problems with your passwords, the reason being, some membership numbers were preceded by a 'zero' You should access the Clan Website using your membership number, omitting the 'zero'.

DO WE HAVE YOUR CORRECT DETAILS?

We are updating our database at the moment so please take a few minutes to check your address etc. Is it correct? If not please let us know by email: clan@acorn.com

ACORN WORLD COMPETITION

Have you ever wanted to take spontaneous pictures with a camera and then view them instantly? Here's your chance. The Clan Magazine and Acorn World have teamed up to bring you this fantastic competition to win one of three Casio QV100 Digital Cameras! All you need to do is answer the three questions below and bring the completed form to the Clan Stand at Acorn World '98.

Questions:-

- 1) Who co-founded Acorn Computers with Hermann Hauser?
- 2) Which London venue played host to Acorn World in 1996?
- 3) In which year was the Clan launched?

Name:

Membership No:

Address:

Tel/email:

Prizes will be awarded at the Acorn World Show There will be three draws in total, one at the end of each day of the show.



Answers:-

.....

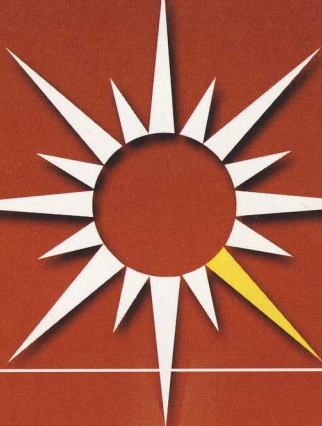
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Acorn goes...

South East



A Show Review by John Stonier

The Acorn Southeast Show took place on Saturday 27th June 1998, at Stevenage Arts & Leisure Centre, Stevenage, Herts.

In the space of a few hours, the main hall in the leisure centre was converted from a large empty room housing six badminton courts to a large computer show, buzzing with activity.

Between 8am and 10am, companies busily set up their stands, displayed their goods and waited for the show to open in anticipation of the people that would be attending. It was a frantic time for me and my helpers ensuring that everybody knew where they were supposed to be and that everything was in order before the doors opened.

At 10am the doors opened and a small number of people walked in, surprised by the large size of the show. The sound of people chatting and computer noises soon took over the silence that had prevailed beforehand.

The Games Arcade proved to be very popular with the children as they got to grips with the bad guys in R Comp's version of 'Doom'. The 'Bring & Buy' charity stand was covered in second hand equipment, software and books at giveaway prices. Second-hand BBC micros were being sold for a fiver, as well as monitors for twenty pounds. There was never a dull moment as people rummaged around looking for a bit of useful junk. The total amount raised came to £236.00!

Throughout the show, various talks took place in the theatre. Despite a small number of technical glitches, most of the talks went smoothly. Paul Richardson (ExpLAN) started the programme with a talk about Christian resources, followed by Leonie Gillman (Xemplar) explaining how Xemplar are supporting schools. Brian Richardson (Camb. Software House) demonstrated their award winning King Arthur CD. Chris Cox's (Acorn) talk proved to be a big success, as people eagerly turned up to find out what Acorn were planning in the future. Finally Nick Van der Walle of Astute Graphics wound up the proceedings, with a very interesting talk about the state of graphics at present and where it's going in the future, placing an emphasis on 'Avante' - A vector graphics application. There was also the opportunity to see Acorn's new Risc PC II - Phoebe. A non-working version of it on Acorn's stand gave many people an insight into the mechanism and working of it with help from Dave Walker (Acorn) and for those interested in seeing it up and running, Chris Cox and Peter Henry (Acorn) guided people through, and demonstrated what they could expect from the new Risc PC II which will be officially launched at Acorn World, 16-18th October 1998.

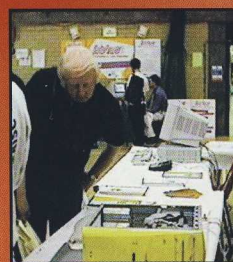
The show attracted five hundred visitors, many of whom found the atmosphere very friendly. Throughout the day there was plenty of room to move around without feeling squashed, due to the ample space between the rows of stands. Many visitors were seen walking out of the show with something under their arm which indicated that lots of bargains were to be had. Many exhibitors seemed quite happy at the end of the show.

The show finished at 4.30pm when exhibitors started packing up and by 6.30pm the main hall was once again empty and and you'd never had known that a large Acorn show had taken place. I and a few friends headed to the Pizza Hut to rest our weary legs and fill a large vacuous hole in our stomachs.

Many thanks to all Welwyn Hatfield Computer Club members who helped me run such a successful show. We even had to deal with a minor water leak!

My next show is on Saturday 28th November at the National Motorcycle Museum, Birmingham. So if you want more information about the Acorn Midlands Show, visit the show web site at <http://www.argonet.co.uk/acornshow> or ring me on (01707) 390410.

John Stonier (Organiser).



"The show attracted five hundred visitors, many of whom found the atmosphere very friendly. Throughout the day there was plenty of room to move around without feeling squashed"



Photography by: Matt Cook



Phoebe

...The Facts

The Story of the Risc PC II

Well as you all know, Phoebe's coming, so here's how and why the new Risc PC came about.

Building on the Risc PC

The Risc PC has been a phenomenal success for Acorn, and when we set out to design its successor we were looking not only to build on the strengths but to sort out any weak points as well.

Strengths

Very Expandable Design
Processor Easy to Upgrade
PC Card Capability
Innovative Case Design
Excellent Video Performance
Highly Efficient Operating System (RISC OS)

Existing Weak Points

Memory Architecture/Speed
I/O Capability
Non Industry Standard Expansion

For a product which started to be designed six years ago the Risc PC has done unbelievably well. However, in that time many of the components such as memory, hard drives, etc. have improved dramatically in their performance. So two years ago, back in November 96, we began to decide how to take advantage of these new devices....

Design Objectives

Harness Full Potential of StrongARM

Support Multiple Processors

**PCI Support
Update I/O to Modern Standards**

Fit the Existing Case & Retain Podule Support

Best Possible Graphics Performance

Run Existing RISC OS Applications

Enhance RISC OS Functionality

When we set out on the development of the best RISC OS computer ever, we had a number of specific objectives. For example, we wanted to take full advantage of modern peripherals including PCI cards. We wanted to harness the full power delivered by the StrongARM - and even more importantly, we wanted to build an architecture that could support several StrongARMs. We wanted the best possible graphics performance that we could achieve. The system had to be capable of running existing applications. We wanted to significantly improve RISC OS. And all of this we wanted to fit into the existing case design.

Fitting PCI Cards into RISC PC

This is the one area where our initial objectives proved to be unachievable. Whilst we could fit the new system onto the footprint of the existing Risc PC, the PCI cards were a real problem. Just fitting them proved difficult, but with a power requirement of 31W per card coupled with new EU directives on fifth harmonic distortion (calling for extra filtering on the PSU), we were finally forced to move towards an entirely new case design.

Since we were making such a radical change to the case design, introducing the first ever tower case to the Risc PC range, we decided to go one step further. Making the front panel yellow ensured that the Risc PC II would be distinctive in visual terms as well as performance.

The New Case

The new case builds on the good points of the existing design whilst also including the removable processor card, the ability to easily add new peripherals, the ability to open the case without requiring a screwdriver and significantly improving the ease of access to the motherboard.

System Architecture

In order to meet the design objectives of the project, we needed to completely redesign IOMD2 to give a high speed I/O world and multiple bus mastering, improve VIDC20 to give bigger and better screen modes, add a PCI bridge to give additional expansion, a Codec for better standard audio support, a new IDE interface allowing four Enhanced IDE drives and still keep the podule world for backwards compatibility. In supporting all these new features we have also revised the main memory to synchronous DRAM, improved the VRAM to EDO VRAM and expanded it to 4 MB, added an extra serial port, single joystick port, IrDA and MIDI ports to give a full high performance machine.

ASIC Development

Modified to Accommodate 3 Podules

Built-In PCI Sockets

230W PSU

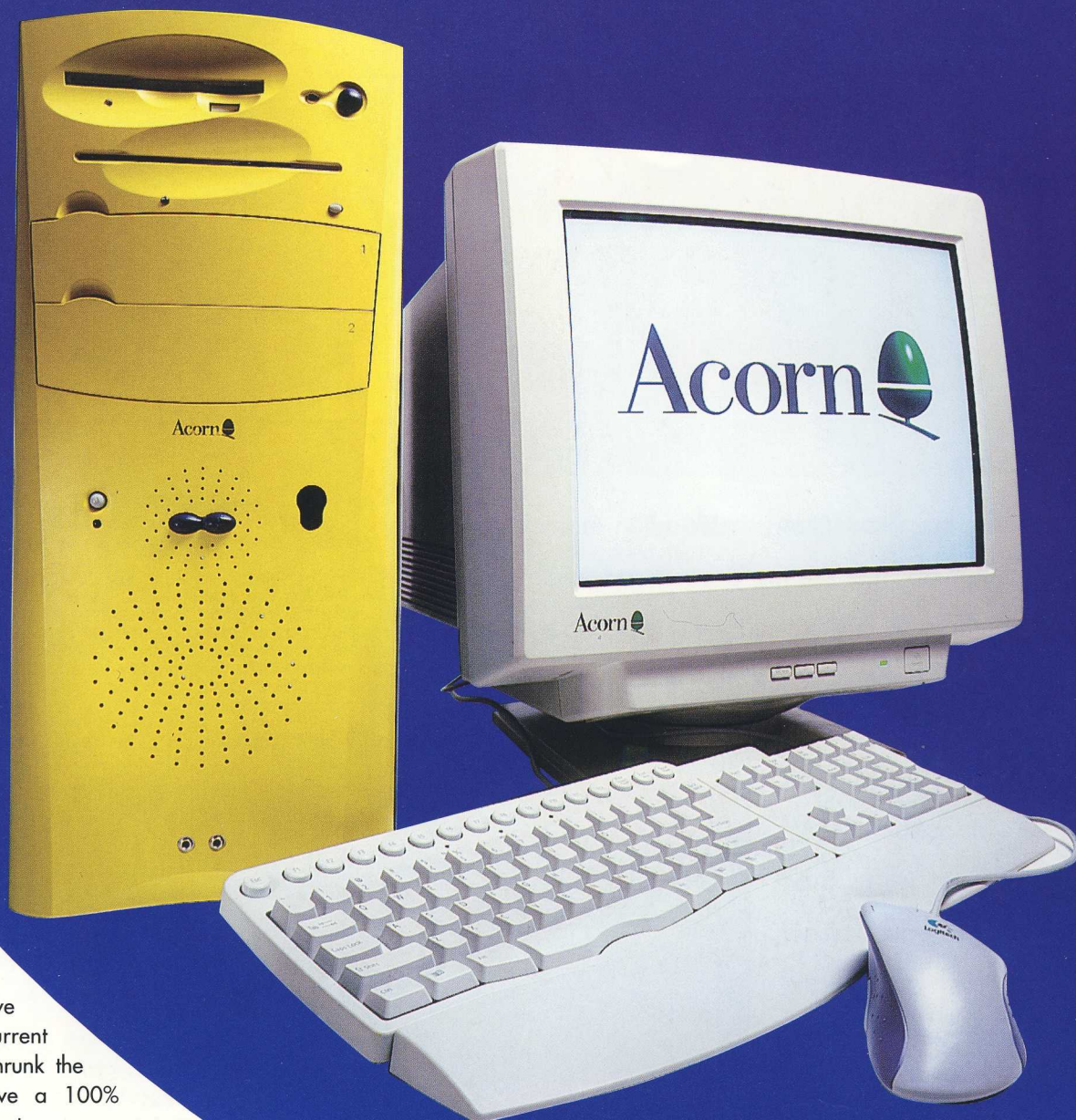
No Screws Required for Access

Peripherals Separate from Main System

At the heart of the whole project lies the new I/O and memory controller chip. This one device has to perform hundreds of different tasks flawlessly for the system to function effectively. To make sure that this happens not only have we rigorously modelled the device but we are testing it in a giant FPGA to make sure that we have the optimal device for RISC OS.

Features of the new IOMD2 include a multiple bus mastering system and message passing for multiple processors. To drive the video





performance, but at the same time retaining compatibility for existing software, we have taken the current VIDC20 design and shrunk the chip geometry to give a 100% performance improvement.

Updating RISC OS

IOMD2

64 MHz Bus Performance
FPGA Prototype
0.35u Process
Semaphore for Multiprocessing
Multiple DMA Controller
Multiple Bus Master
Arbitration System

VIDC20R

Die Shrink of Existing Design
100% Performance Increase
Fully Compatible with Existing Software

The software task normally begins with identifying the modifications required to support the new hardware, but for this project we knew that we had to do more. Areas such as filename length restrictions had been problems for too long and had to go. So they did. Also, !Boot had become too complex and we needed a vastly improved method of configuring the system and applications. So we wrote one. And we also needed to update the look and feel but without throwing away the many excellent existing features. Which we did.

New Look GUI

One of the most visible areas for improvement were the icons. The problem with them was that after trying out various different sets throughout the course of the project, the original RISC OS ones tended to look better. So when we were faced with the decision between throwing away one of the best features of our system or improving on it, we chose the latter.

So How Much Has All This Cost?

This entire project will cost £2.1 Million to complete and has been running since November, 1996.

We hope you think it was worth it.

For more information on Phoebe, including photos, check out the Phoebe area at <http://www.acorn.com/acorn/>



Having words with...



With all great productions, more often than not the people behind the scenes are missed out of the limelight. So with this in mind we decided to speak to the Project Manager of the new Risc PC, Pete Fox, Senior Design Engineer - just one of many engineers responsible for Acorn's latest innovation. We asked Pete to tell us a bit of background about Phoebe, such as how and why she came to be....

CLAN MAGAZINE: You must be really excited about the new Risc PC nearing its launch date, it must seem like a lifetime ago since you first started to pen the initial ideas. Can you tell me when and how you first started to work on Phoebe?

PETE FOX: Well, it all started in November 1996. I had a meeting with a few people in the Workstations division at Acorn and it was decided that the StrongARM Risc PC needed improving, so plans for an upgrade started to be developed. It was shortly after then that we realised that we had so many improvements and ideas between us that we decided to develop a whole new product.

CLAN MAGAZINE: There have been a lot of mixed opinions surrounding the colour and name of the new Risc PC, how on earth

did it become yellow and called Phoebe?

PETE FOX: We knew we'd have to come up with something different, and not just different but professional and modern. And it also needed to be upgradable. The new Intel NLX design in a mini tower configuration was perfect, all it needed was a final look that stood it apart from the rest. The actual case concept and style was

devised by a London design agency called Fitch who are worldwide designers promoting names such as Reebok, Lee Cooper, Netfax and Iomega. All of the hardware boards were named after characters from the popular American TV series 'Friends', just because we were all fans. The machine's project name was Phoebe and it just stuck. You get used to it surprisingly quickly!

CLAN MAGAZINE: Due to the nature of the role you played in developing Phoebe, you must be well

aware of the significant developments and additional benefits of this Risc PC over its predecessors. What do you think are the key ones?

PETE FOX: The major requirement with this project was to bring the Risc PC up to date with other modern PCs. Not only that, but to develop a computer that was superior and faster than any other product designed by Acorn.



"The new Risc PC II boasts improved memory speed, hard disks, superior sound and video systems, industry compatible expansion cards and therefore a tremendous opportunity for new high performance products to be run. The potential of it is enormous."

Pete Fox.

The hardware architecture has been completely re-designed, it's the first opportunity we've had to develop this further following the successes of Risc PC and A7000. We have designed a new IOMD ASIC to increase the speed of the machine upto 64MHz, and redeveloped the VIDC20 ASIC to give a 100% performance increase. The RISC OS 4 kernel has been completely revised to improve the speed and functionality of the operating system

CLAN MAGAZINE: What, in terms of the desktop appearance have we got to look forward to? Will any of the new improvements be apparent to us visually?

PETE FOX: A considerable amount of time has been spent on developing new icons. There's around 250 in total but, beware of imitations! Some guy has set up a website claiming to have actual Phoebe icons for downloading. That's completely untrue: they are merely poor imitations of the true Phoebe icons. The new icons are 256 colour high quality designs. You've never seen such an enhanced pinboard. Users will be able to enjoy screen savers and backdrops like never before. The new machine can accept long file names, the capacity of its directories has increased dramatically, basically, everything that was good on the Risc PC has now been made even better.

CLAN MAGAZINE: It can't have been all plain sailing on the development team. What went wrong?

PETE FOX: Oh plenty! But the pitfalls encountered along the way have now been resolved which make Phoebe one of the most powerful and reliable computers on the market. The new configuration system in RISC OS gives a central area for set up of the machine, which includes 3rd Party add on products. Let's face it, Acorn have created the most up-to-date RISC OS Platform around. It has an ICA Client delivering Windows (like previous Risc PCs based on a 486 card) which is just one of the ways that we're hoping Phoebe will break into new markets for Acorn. Based upon the success of the Risc PC, we are very excited about how our customers will react to its replacement. We're sure they'll like it!



The Phoebe Development Team



Acorn WORLD

London Arena, Docklands
16 - 18 October, 1998

With just over two months to go until the doors open at London Arena for Acorn World '98 preparations are steaming ahead towards what is surely going to be the busiest and most exciting exhibition for many years.

Details are being confirmed all the time. So for the very latest details visit <http://www.argonet.co.uk/acornworld98/>. In the meantime, here's a summary of the latest news at the time of going to press.

A special three day pass will be available exclusively for Clan members and can be ordered directly from Acorn by email to eharvey@acorn.com or by telephone on 01223 725 295. The cost for this special pass will be only £12.00 (£10.00 for children) which represents a saving of over £15.00 on the standard ticket prices! More good news for The Clan: your friends can come cheap too! Order standard tickets in advance by calling the London Arena Ticket Hotline on 0171 538 1212 and save money over buying them on the door.

Once at the show, you've got your own private 'members only' Clan lounge at the show again, providing you with an area to take a quick break from the hustle and bustle of the main event with light refreshments available. Placed upon the balcony, the Clan Lounge is a area where you can take five and catch up on what you've seen with your friends, whilst looking down over the

rest of the show. We'll also have some Risc PCs up there so you can test out any of your new software straight away!

An exciting collaboration between four of the companies at the forefront of Acorn graphics and imaging will be bringing a dedicated 'Graphics and Imaging Area' to Acorn World for the first time. Avante - from Astute Graphics - is being publicly launched at the exhibition, and London Arena will set the scene for not only the official launch of Phoebe, but this associated new flagship package as well. The graphics and imaging area itself is currently proposed to encompass the extensive range of RISC OS graphics and publishing software from key developers such as Alternative Publishing (file import/export), Akalat Publishing (acknowledged experts in the Acorn field of graphics and publishing with a dedicated publication "Acorn Publisher") and Spacotech with their unique Photo Real range of professional printer drivers exclusive to the Acorn market. Spacotech also develop and produce the premier RISC OS bitmap application "Photodesk", a direct equivalent to Adobe's "Photoshop". This area will be presented on one of the largest and most stylish custom-built stands at the show and is certain to grab every visitors imagination. Don't miss it!!

Following on from the huge interest shown in Samsung's 'Thinko' (one of the first 'Acorn at Heart' licensed products to be fully launched) at Wakefield earlier this year, we thought that a 'Technology Partner's Pavilion' would be an exciting opportunity to view companies that Acorn are closely working with such as Funai Electric Company Limited, Samsung, Netfax, ETRI and DERA. For updates on this and all other features and exhibitors check the web site regularly to keep on the ball!

(<http://www.argonet.co.uk/acornworld98/>.)

There's loads more going on at the show including Acorn's 20th Birthday Museum, 'The Classroom of the Future', the seminar programme and all the various exciting exhibitor's product launches - but there just isn't room to tell you everything in this issue. Visit the web site for the full picture and remember to get your tickets in advance!

16-18th October 1998

3 Day Pass
email eharvey@acorn.com
or phone 01223 725295

Hotline 0171 538 1212
for advance tickets



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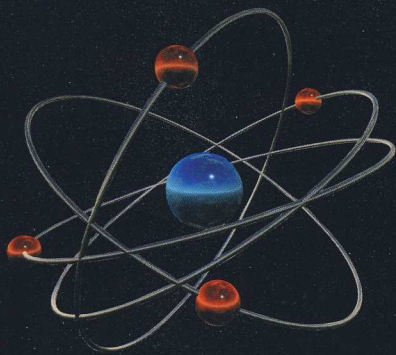
ARGO
THE INTERNET EXPERTS

CLAN INTRODUCTION SERVICES!!

Fancy owning a special, limited edition piece of Clan merchandise?
Simply introduce a friend into the Clan, and it's all yours!

All you need to do is get your friends to fill out the Clan Website on-line form <http://www.acorn.com/acorn/clan>. Alternatively phone 01223 725282 (International +44 1233 725282) and we'll post them an application form. But do remember to get your friends to state your name (on the application form) and membership number so we can get your freebie to you as soon as possible!!!





UNDERGROUND

As you already know, one of the benefits of being a Clan Member is that you have access to information that isn't readily available to the general public. Obviously with Phoebe about to hit the streets, there's a load of technical information that some of you are dying to get your hands on! Rather than try to cram it all into this issue of the Clan Magazine, below are just a few highlights and we'll be releasing detailed specifications via the Clan Website on a regular basis.

Writing Software for Phoebe / Ursula: Preliminary Guidelines

It is intended that the transition from Risc PC / RISC OS 3.7 to Phoebe / Ursula should be significantly easier for third-party applications to make than the transition from Risc PC / RISC OS 3.6 with ARM710 to Risc PC / RISC OS 3.7 with StrongARM. The vast majority of the problems observed with third-party applications in the move from ARM710 to StrongARM were connected with the architecture of the new CPU; as Ursula supports only ARM Architecture 4 (ie StrongARM), problems of this specific nature will not arise at release time.

Incompatibilities with Risc PC

- Phoebe has two serial ports; currently, OS_SerialOp is only capable of understanding one port. Changes to the serial API to accommodate the second port are still to be finalised. It should also be noted that the second serial port is missing its DSR line, and this port is also taken over by the IrDA interface when IrDA is in use.
- As CDFS has been completely rewritten, third-party CD ROM drivers and CD audio players will need to be examined to see whether they need rework to fit in with the new API.
- CDFS 3 (to be shipped with Ursula) has no support for SCSI CD ROM drives, although drivers can be written for such devices.
- A new mechanism for handling service calls has been introduced, which requires the format of relocatable modules which make use of service calls to be changed if service calls are to be despatched efficiently. Although leaving a module which uses service calls "as is" will not cause the system to break, it will cause it to slow down significantly (although not to a speed less than that of any other version of RISC OS; it will merely remove the performance advantage the new handler mechanism gives). The changes which need to be made to such a module are described in the Ursula kernel spec.

FileCore

The rework of FileCore to support filenames >10 chars and directories of >77 objects has some repercussions for applications:

- The location of the root directory on the disc has moved. This means that disc editors and recovery programs will break on discs which support long filenames and directories, although they should fail without causing harm.
- Directories are no longer fixed-size 2048 byte

entities; they can dynamically grow and shrink to accommodate information according to the new limits of 80,000 or so objects per directory and 255 char filenames. However, any given directory object can never span more than one disc zone.

- Any application code which makes assumptions about lengths of filenames or numbers of objects in directories based on limits imposed by the RISC OS 3.7 FileCore is likely to break. Where directory contents need to be enumerated, they should be enumerated into an area which can be grown dynamically underneath the enumeration process. For the purpose of testing, it is sufficient to ensure that code works correctly when reading from and writing to a filing system which has a similar lack of restrictions to the new FileCore (eg NFS).

Side-effects of these changes which have dependencies on other unmodified parts of the system are:

- Sprite names remain restricted to a maximum length of 12 chars. Therefore if an application wishes to IconSprites a !<apname> sprite for a filer display, the apname must be unique within its first 12 characters (the apname can be longer, but the sprite mapping will only look at the first 12 characters).
- The format and size of Wimp messages will not be changed in Ursula. Therefore, when files are loaded and saved from Desktop applications, their fully-resolved pathnames must not overflow the Wimp message block. This block is able to support pathnames of about 200 characters.

Things You Might Expect to Cause Problems But Which Actually Don't

- The keyboard driver has been reworked to provide more comprehensive support for PS/2 keyboards. The SWI interface and handler locations remain unchanged from Risc PC. Ursula's keyboard handler has support for 105-key keyboards however the additional keys are mapped to currently-unused numbers.
- Mouse support has also been changed below SWI level; the SWI interface and event handlers remain the same, however. As with the keyboard, direct access is forbidden by the PS/2 interface.
- Screen memory is now cached, to decrease redraw times. This does not affect shadow screens or video bank switching. However, hardware scrolling would cause corruption on a cached screen; this is fixed by the kernel being able to detect an attempt to perform a hardware scroll so that it can uncache the screen before the scroll takes place. Therefore, although hardware scrolling will continue to work, screen update will slow down as a result.
- MIDI support will be implemented as a set of SWIs

identical to those provided in the software supporting the original Acorn MIDI card.

- Support for the Euro currency symbol is provided; it is included as character &F0 is the Sidney (Symbol) font, it is likely to go in the system font at &80, and we're also keeping an eye on the proposed ISO Latin0 standard (which will carry it at &84) for implementation if ratified.
- The size of the command line buffer has been increased so that operations such as
- copy <large filename> <other large filename> <flags> can be executed without running into the 256-character limit imposed on earlier OS versions. The limit on command line length is now 1024 characters.
- Memory allocation has been tight in RISC OS >=3.5 when in the Supervisor language environment, particularly bearing in mind the processes a machine goes through in the pre-desktop phase of the boot sequence. The size of the Supervisor stack in Ursula has therefore been increased from 8K to 32K.

Guidelines for Authoring Software for Phoebe / Ursula

- Code written in C or BASIC will generally work, but see issues (particularly FileCore and service call ones) above.
- Code using the shared C library or Toolbox is generally fine. Using RISCOS_Lib may cause problems, depending on the variant. Anything linked with ANSILib will not work.
- A module patcher will be supplied with Ursula that is capable of detecting whether a module handles service calls, if so, whether it conforms to the new module standard, and then if not, patching it. This is only a temporary solution though. If you find your software runs at a reasonable speed and does not slow the rest of the machine down only because the patcher is patching it, you should fix it at source wherever possible. For modules written in C, a new CMHG will be made available for this purpose.
- The new !Configure system can be extended by writing plugins, however its efficiency of use drops if every application starts installing !Configure plugins solely to configure the application itself. It is only appropriate to write a !Configure plugin if its use is restricted to configuring system-wide resources.
- The new FPE is expected to be up to 15% quicker in software than the current one; this does not take into account the fact that the hardware will also be running more quickly.
- It's worth bearing in mind the concept of lazy task swapping; this will vastly reduce the slowdown associated with paging large applications in and out of application space on wimp polls, and thus increase the preferability of having growable areas of unshared workspace within application space.

Don't miss out on the rest of the Phoebe and Ursula technical specifications. Add yourself to the email list by registering at www.acorn.com/acorn/comments/form/

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