Acorn Developer
CONFERENCE '97
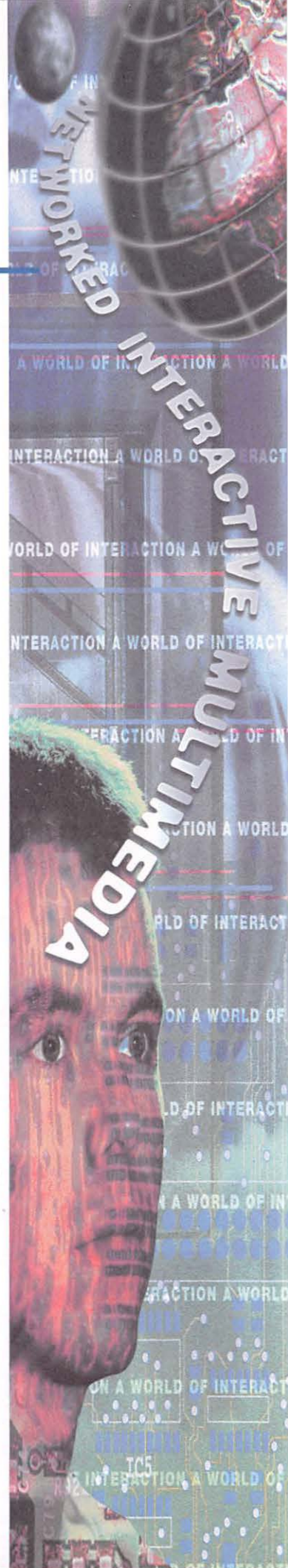
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Contents

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AGP23.79.04

Agenda

09:00	**Keynote address**	Chris Cox & Dave Walker
09:30	**Acorn Technology**	Steve France
10:00	**ARM**	Hedley Francis
10:30	**Coffee**	
11:00	**Developer Support and Licensing**	Dave Walker & Stuart Payne
11:30	**Network Computer**	Laurie Hardwick
12:30	**Lunch**	
13:30	**Java**	Piers Wombwell
14:00	**Toolbox**	Neil Bingham
15:00	**Coffee**	
15:30	**Risc PC 2**	Peter Fox & Mike Stephens
16:30	**Close**	

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AGP23.79.04

Acorn Technology

Today and Tomorrow

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Core strengths

Silicon design $\longrightarrow$ Hardware

OS design $\longrightarrow$ Software

System integration

Complete systems
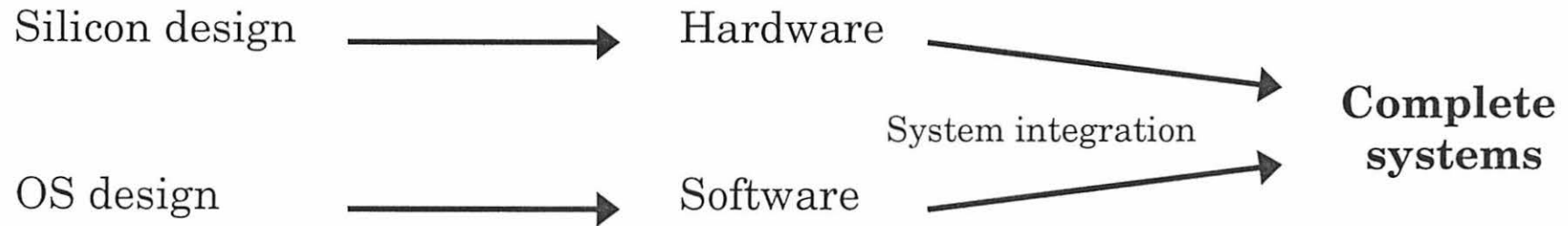
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Hardware

A7000+   STB22

Risc PC   NC Ref. 1

Stork   Fast NC

Newspad   ExecPhone

Acorn Architecture

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Acorn Architecture

- Common core

    - Many 'bolt-on' additions

- Benefits

    - Customer support

    - Rapid prototyping

    - Fast time to market

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Systems on chips

Manufacturing
cost

710

7500

7500 FE

SA110

ARM xxx

ARM yyy

Performance

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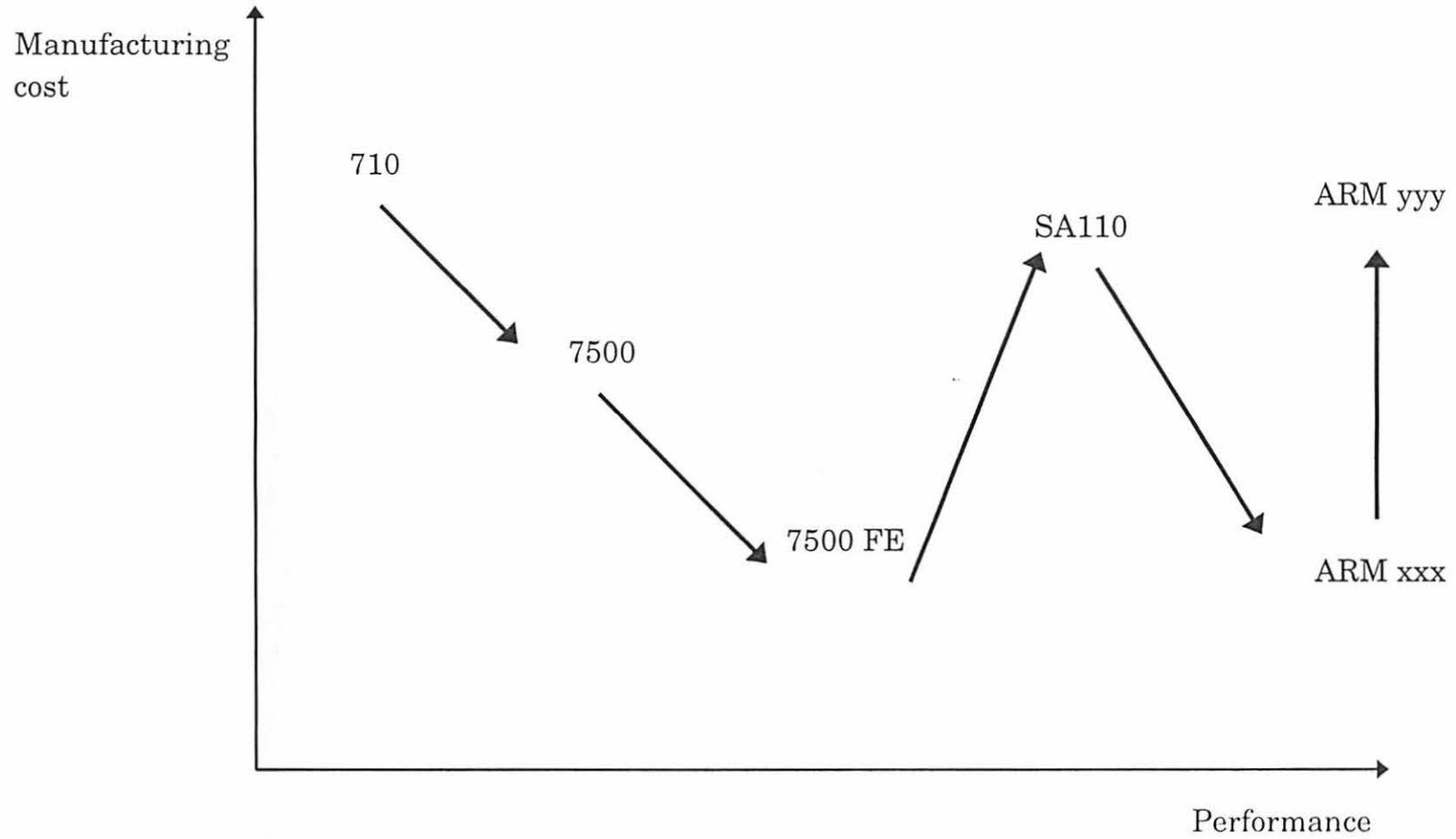
Operating systems

RISC OS   RISC OS - DT

NC OS   NC^2

STB OS   STB

Galileo?

Acorn
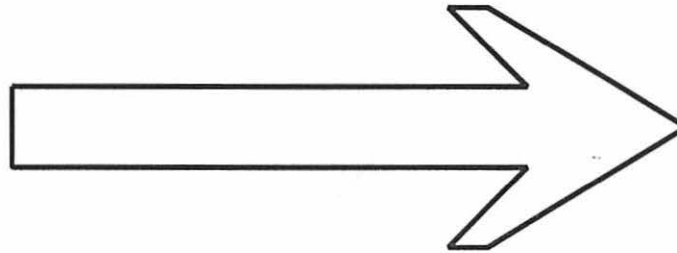
Questions...

What is Galileo?

- New OS development

- Target products

    - Low cost

    - Embedded

    - Interactive

    - Networked

    - Multi-media.

- Key features

    - Quality of service

    - Robust

    - Modular

    - Enhances the best of RISC OS

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Questions...

Why do it?

- RISC OS is difficult to adapt in some areas

  - Portability

  - Robustness

  - Real-time

  - Guarantees

- Other OS do not meet all requirements

  - Inefficient on ARM

  - Non-robust...

- Key technology IPR

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RISC OS and Galileo

ARM 6	ARM 7	Strong ARM	ARM xxx	
RISC OS 3.5	RISC OS 3.6	RISC OS 3.7	RISC OS 3.8	RISC OS x.x

7500   7500

STB OS	NC OS

Galileo Beta	Galileo 1.0	Galileo 2.0

Other CPU

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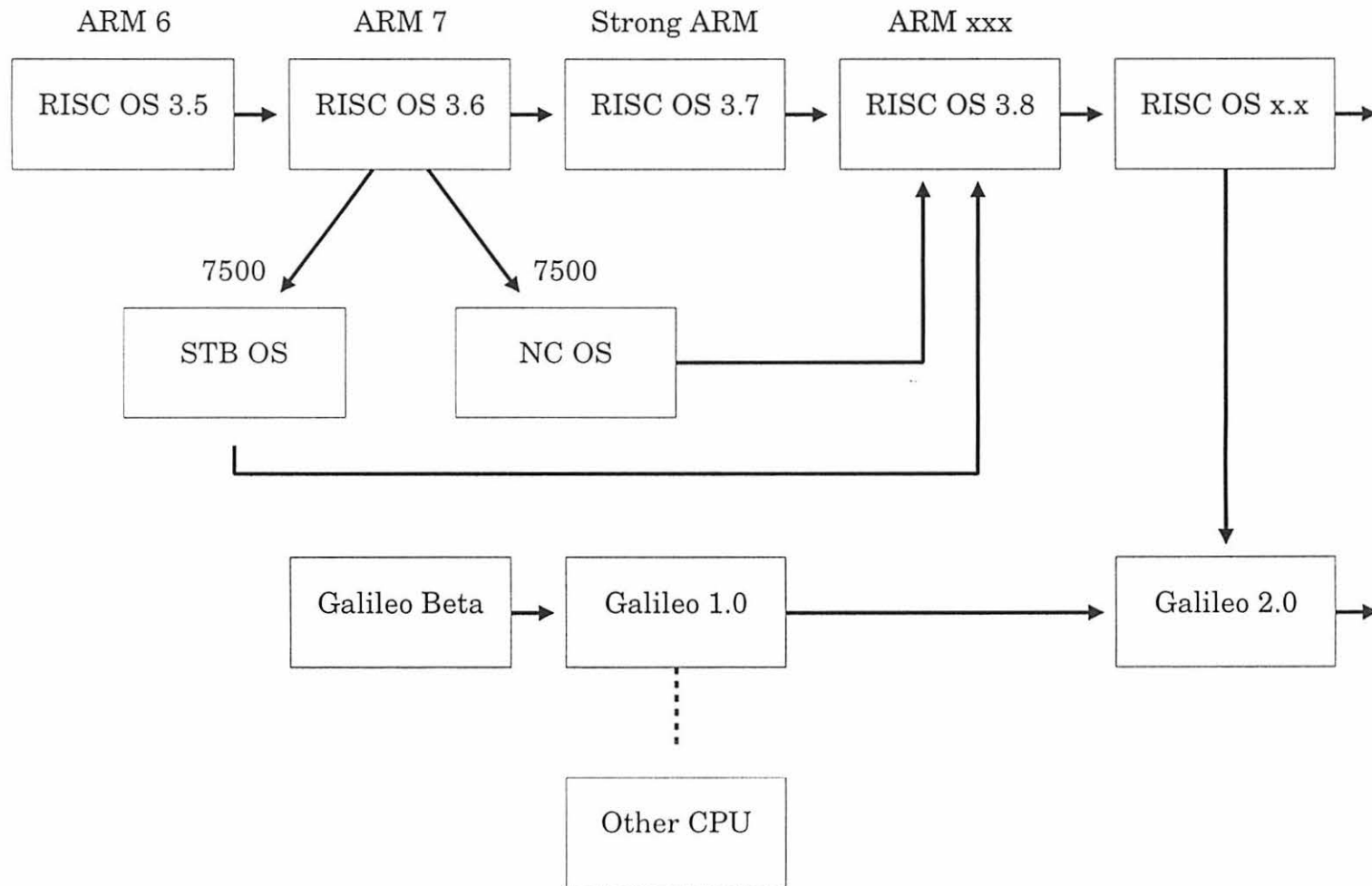
Development summary - Java summary

Virtual machine

Personal .... RISC OS
(High end systems)

.... Galileo

Embedded

Card

Memory size

v

Functionality

Acorn
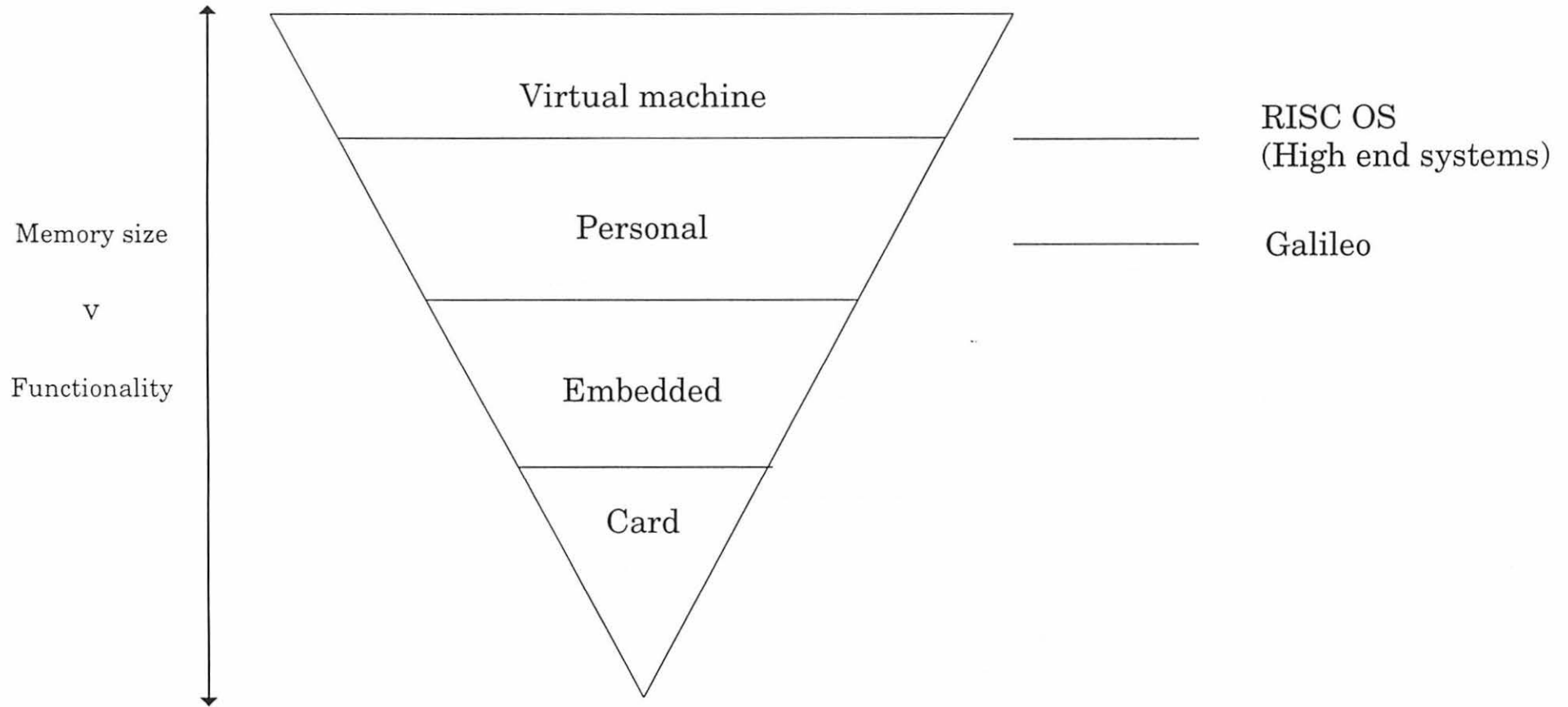
Development recommendations

Embedded systems
Targetted functionality

High end
High functionality

◄─────────────────────────────►

```
Personal Java
+
Galileo
```

```
Java VM
+
RISC OS
```

(future)

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Development recommendations

Application

Java AP1

Middleware

OS

Portability   *Java Applets*

Performance   *C Code*

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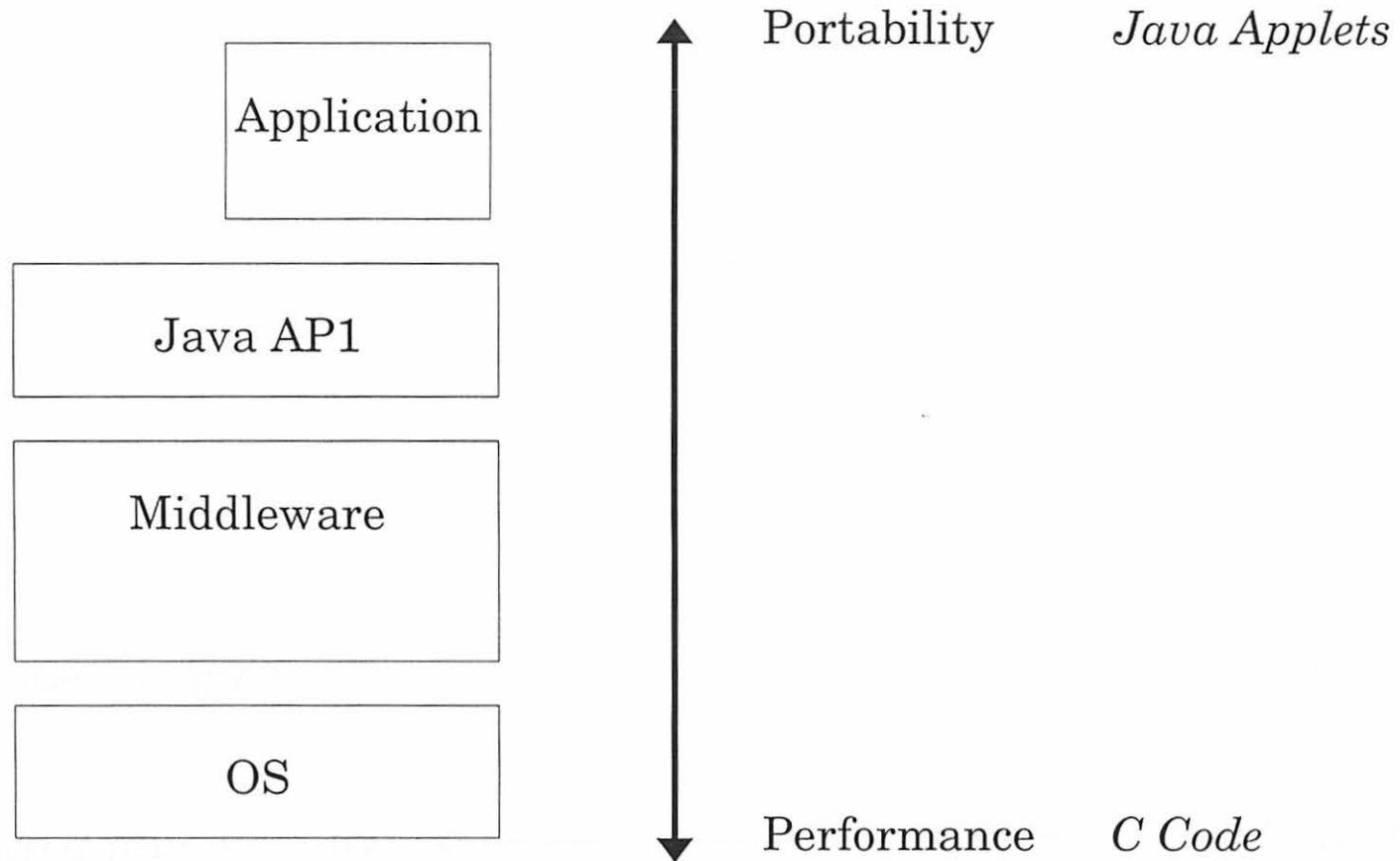
Market size

Internet Appliances

		2000
Commercial		6.7 M
Consumer	PC Subs	2.2 M
	TV Enhancement	9.0 M
	Internet devices	59.3 M
Educational		0.9 M
Total		78.1 M

Zona research, November 1996

Announced customers

Uniden	Wongs
NTT	AKAI
ETRI	Samsung
Casio	Curtis Mathes
Sagem	Zenith
RCA	Oracle
Funai	Proton
Raytheon	

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Global sales channels

- Japan — NTT

  - "... producing a range of videophone enabled internet products and are pleased to call on Acorn, a world leader in this area ..."

- Korea — Samsung

  - "... Acorn's TVCentric technologies are ideally suited to the consumer devices which use TV based displays ... Acorn's existing designs give us the time to market advantage ..."

- Taiwan — Launch 20th August 1997

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Your route to market

Software Developer → **Acorn** → World Wide Market
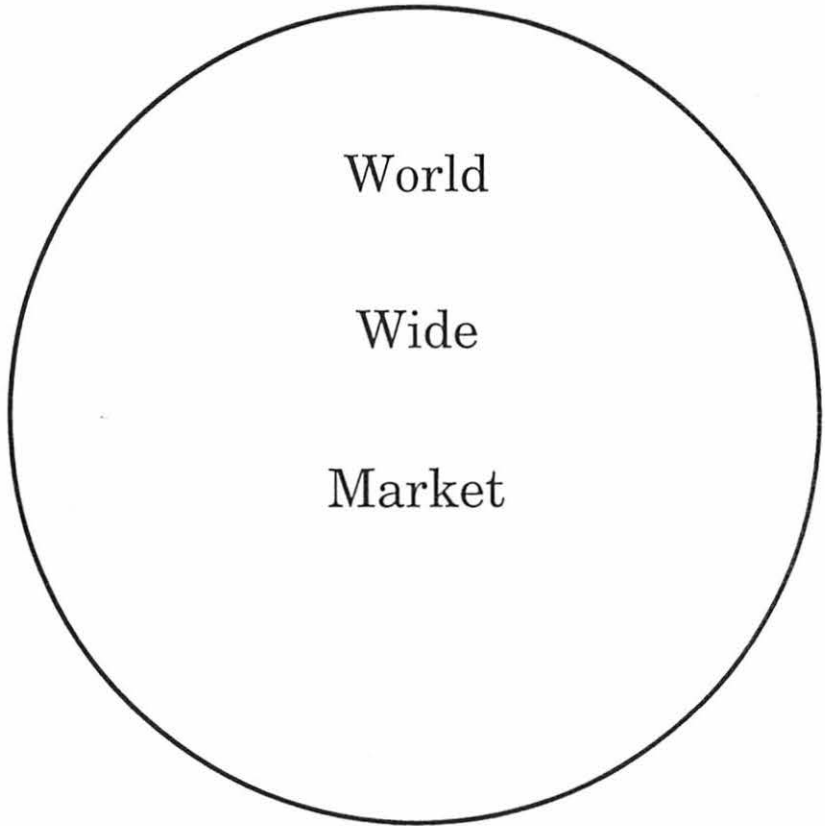
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In summary

- Acorn has changed

- Low risk development strategy

- Provides a route to a global market

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Advanced RISC Machines 96/97
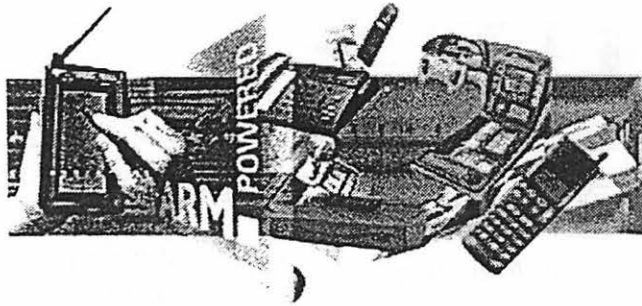
Hedley Francis
Senior Software Engineer
Advanced RISC Machines Ltd

- ARM the company
- ARM architecture overview
- ARM Based Chips
- Summary

ARM the company
1997 - another excellent year

What does ARM Produce?

- **ARM 32-bit processors**
  - Our vision: to make the ARM architecture the open standard in high volume embedded systems.
- **Toolkits for developing on our processors**
  - C and C++ Compilers, Assemblers, and Linkers
  - Graphical Project Managers and Debuggers
- **Applications software**
  - Real Time Operating Systems
  - SoftModems, JPEG, TCP/IP, GSM, DECT
- **Consultancy**
  - helps third parties develop systems using ARM processors
  - systems include ASICs, Boards, and Products

Complete products
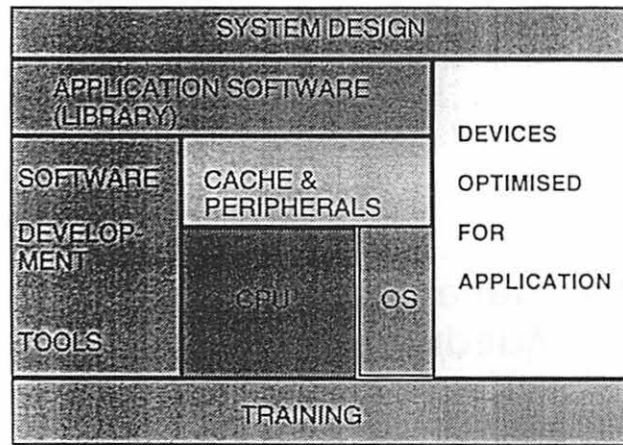
ARM Based Products

Portable Products

- PDAs
- Pagers
- Organisers
- Cellular phones
- Smart Phones

Deeply Embedded control
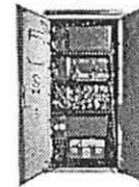
- Base stations
- Switches
- Modems
- Smart Cards
- Networking
- Printers

Multimedia

- Computers
- Set Top Boxes
- Game machines
- Web browsers
- Interactive TV
- "Network Computers"

How well is ARM Doing?

ARM Employees & R+D Spend

☐ R&D Spend   — No of employees

ARM Revenue & PBT

☐ Revenue   ☐ Income before Income Taxes
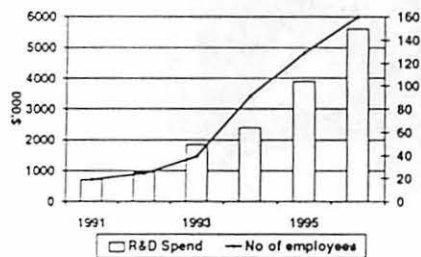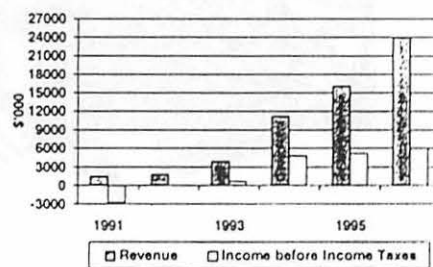
ARM is a Global Company

- **Now 7 Offices worldwide:**
  - Cambridge UK, Maidenhead UK
  - Los Gatos California, Austin Texas, Seattle Washington
  - Munich Germany, Tokyo Japan, Seoul Korea.

Over 20 ARM Silicon Partners
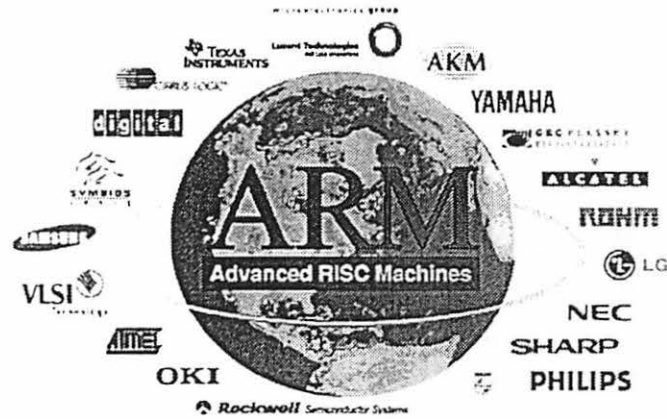
The last year

- New Licensees this year were Sony, Philips, Hyundai, Rohm, Samsung, Rockwell, Lucent Technologies
- Other Licencees are VLSI, GPS, TI, Sharp, Cirrus Logic, Digital, Symbios, Samsung, Alcatel, Atmel, NEC, OKI, Yamaha, LG, and AKM

ARM Business Units

- This year business units were set up in ARM
  - Allows ARM to branch out into new and more profitable areas.
  - Allows better management of the rapidly growing company.
- Business Units include:
  - Software Systems - RTOS and Applications software
  - Development Systems - development boards and support
  - Product Licensing
  - Consulting - design services at chip, board, and product levels
  - EDA - electronic design tools
  - Support Services - documentation, training, and support

Extending the Partnership

Operating Systems

Tools and Development Systems

Design Services

Application Software
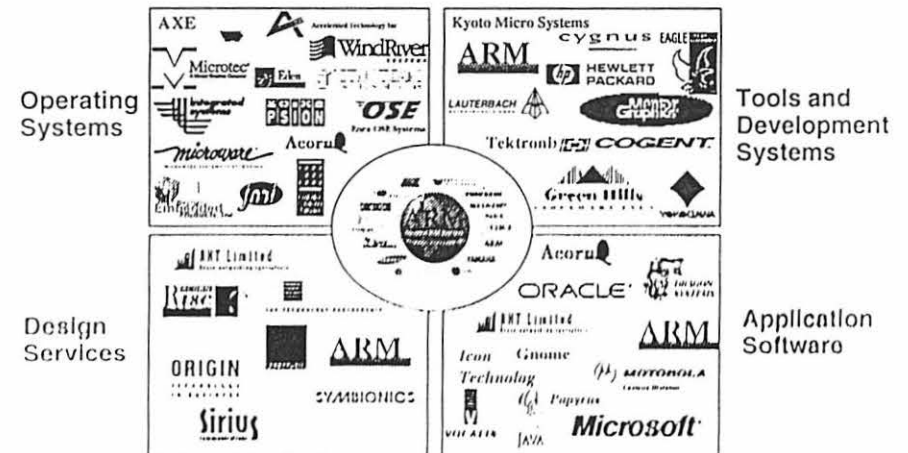
ARM Architecture Overview

New entrants for 1997

- **ARM8 and ARM810**
  - over twice the performance of ARM7 on the same silicon process with the same power consumption.
  - Partner embeddable core (unlike StrongARM)
- **Piccolo DSP Coprocessor**
  - coprocessor to ARM7T at same clock speeds
  - sustained single cycle multiply accumulate
- **ARM7100 and ARM7500FE**
  - Highly integrated cores
- **Tools 210 and 211**
  - latest versions of the ARM toolkit

ARM Processor Evolution
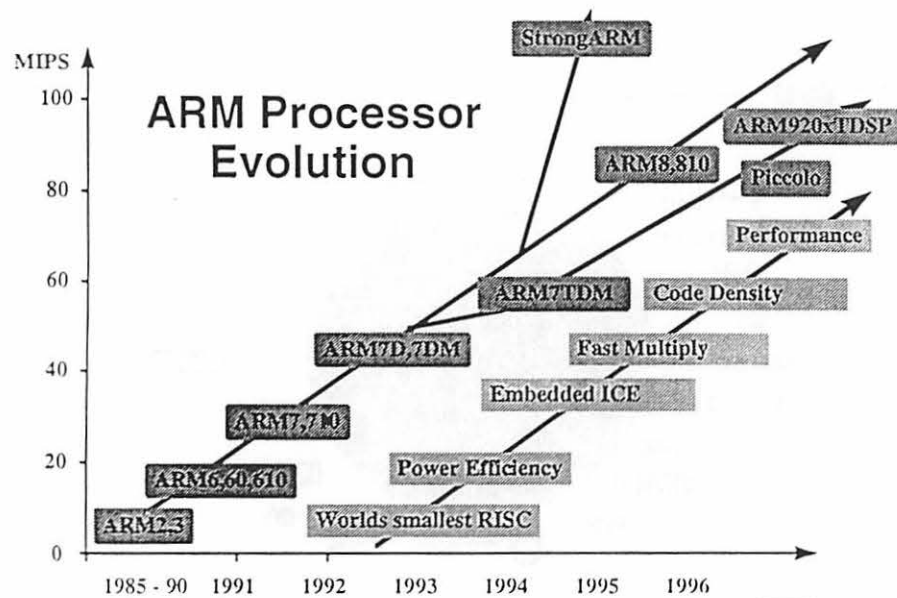
Piccolo ARM7TDSP System
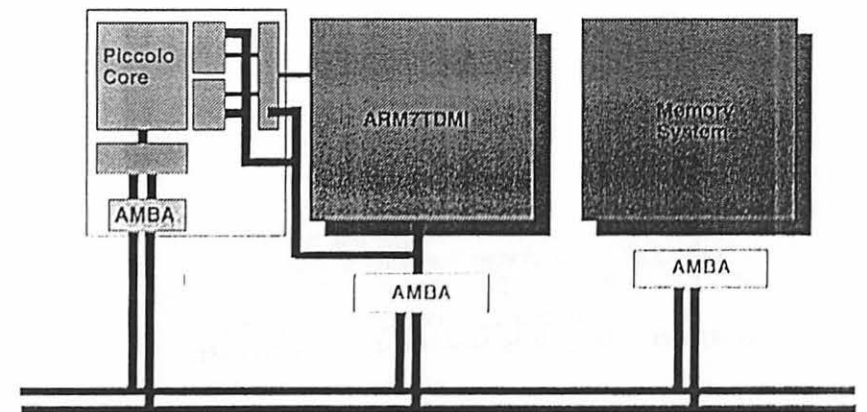
'Piccolo' Meets the DSP, µC Challenge

Today's µC, DSP Solution
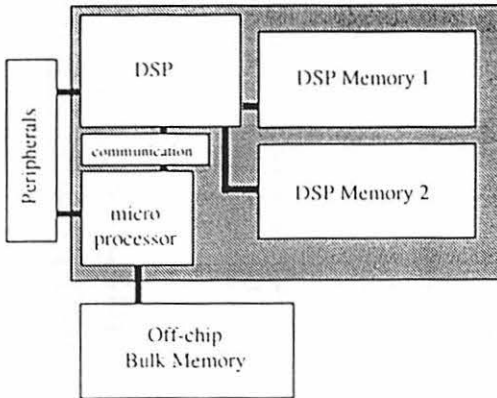
'Piccolo' Approach

Licensable DSP
Extension for
ARM µC

High DSP
Performance

Easy to Use

Cost Effective

Power Efficient
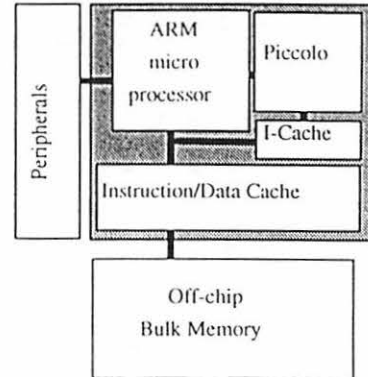
Piccolo Core Architecture

32 x 16 or
12 x 32 Registers &
4 x 48 Accumulators

Multiply
Add/Sub
Logical

A
L
U

Scale

Data Bus

Input Reorder
Buffer

Output
Queue
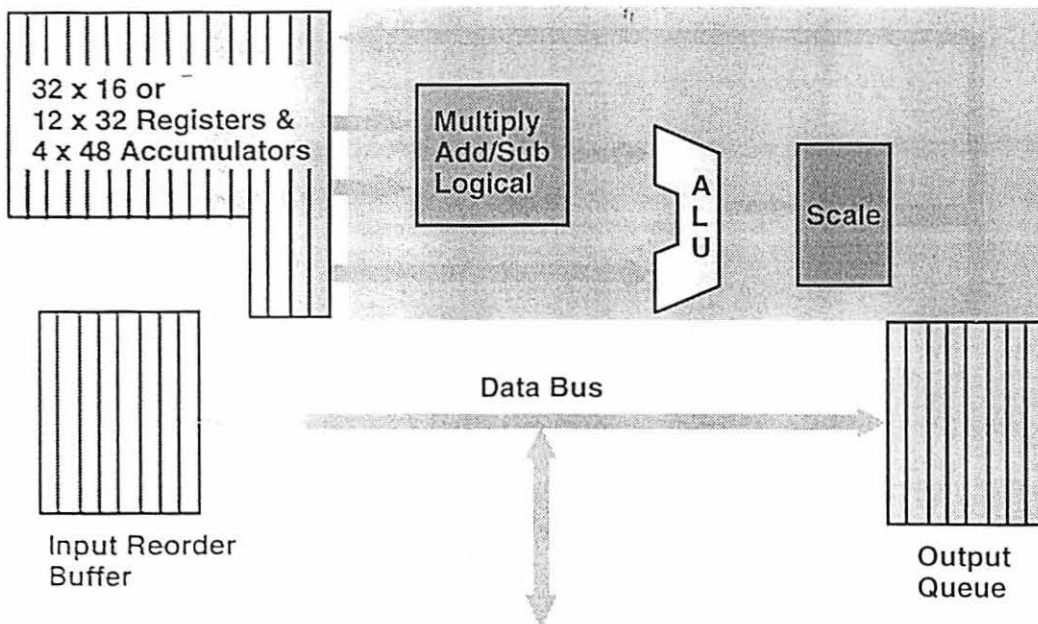
ARM Based Chips
by segment

Portable Computing
(PDAs, electronic organisers, handheld instruments)

- Cirrus CL-PS7110 - ARM7100 single chip electronic organiser
- Sharp LH77790 - microcontroller with LCD control
- Digital SA-110 - high performance CPU

Mobile phones and datacomm

- TI TMS470 - digital baseband platform for wireless telephones
- AKM AK2388 - GSM baseband chip
- Cirrus CL-MD3450,3452 modem/telephony chips for PCMCIA
- PCSI PC21101T - PHS chip set baseband controller
- PCSI PC18101F-01 - pACT chip set controller
- Sirius Communications DIRAC - Digital spread spectrum rx
- VLSI VP22002 - GSM/PCN kernel processor

Other telecom embedded control

- Cirrus CL- MD3451,3453 - modem/telephony for desktop apps
- GEC Plessey Butterfly - Communications controllers
- VLSI VNS80000 VIP - ISDN processor
- MykoTronx MYK-80 Capstone - encryption engine
- MykoTronx Clipper range - encryption engines
- VLSI Gatekeeper VMO6868 - AT&T IVES encryption engine
- VLSI VMS210 - high speed encryption engine
- NetArmor - encryption engine codesigned by Atalla and VLSI

Consumer Multimedia

- VLSI VYF86C703T - targets digital set-top applications
- VLSI ARM7500 - ARM7500 single chip netsurfer and
  consumer multimedia computer
- Cirrus CL- PS7500FE - ARM7500FE with Floating Point, a
  higher bandwidth EDO memory interface and a
  higher clock speed
- TI TMS320AV7000 series of DSPs specifically designed for
  digital set-top box applications

CIRRUS LOGIC ARM7100 (CL-PS7110)
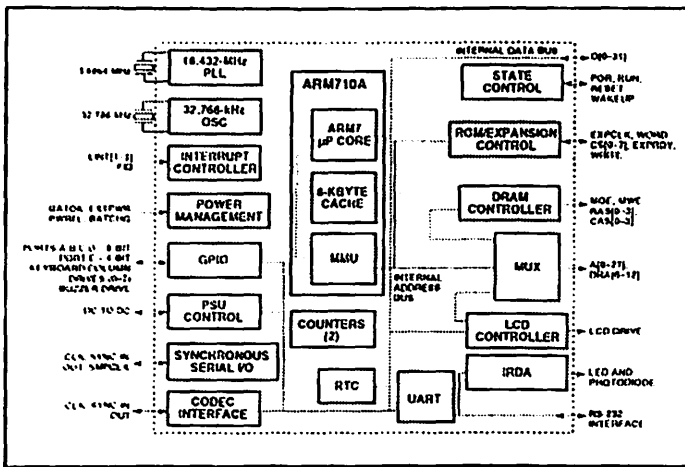
- ARM710 @ 18MHz
- 8K Cache + MMU
- ROM & DRAM control
- Greyscale LCD control
- IRDA Infra Red Link
- Audio Codecs
- Serial Interface
- Keyboard controller
- 20mA in full operation

PSION
S E R **5** I E S

- Highly integrated PDA 'on a chip'
- Powers the Psion 5 series
- See www.cirrus.com/prodtech/ov.netmobile/

CIRRUS LOGIC ARM7500FE (CL-PS7500FE)
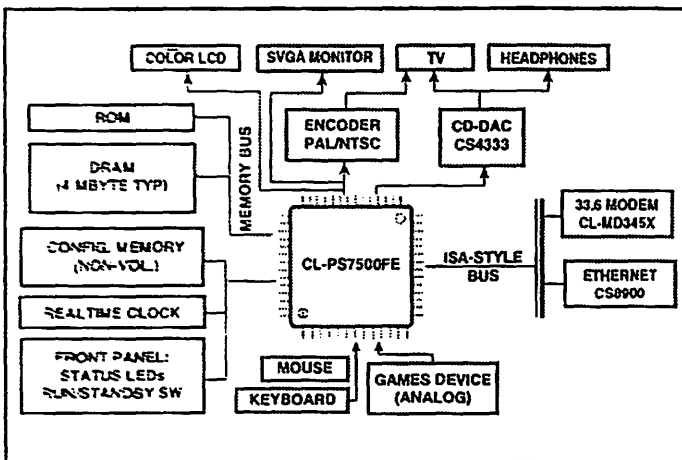
- ARM710 @ 40MHz
- Cache + MMU
- ROM & DRAM control
- RGB + LCD control
- Audio Codecs
- Serial Interface
- Keyboard controller
- Mouse Controller

- Highly integrated NC 'on a chip'
- Powers the Acorn NC and A7000+
- See www.cirrus.com/prodtech/ov.netmobile/

Embedded Control

- **ADS I/O Modules** -- for Pixel Press Single Board Computer
- **Samsung KS32C6000** - Laser printer controller/ general microcontroller
- **VLSI VPS10101 Ruby II** - General purpose PC card controller
- **VLSI VCS94250** - PCI/SSA IO processor
- **Atmel AT91** - Microcontroller with on-chip flash memory

---

digital — *Products include:*

- **StrongARM SA-110**
    - 233MHz CPU using only 1 watt of power
- **21285 - PCI and DRAM interfacing chip**
    - a single-chip interface between SA-110, synchronous DRAM, ROM and a PCI bus
    - see: www.digital.com/semiconductor/strongar.htm
- **NC Reference Design**
    - free from: www.digital.com/info/semiconductor/dna.htm
    - also included is RiscBSD and Java Virtual Machine
- **Powers the Acorn RiscPC**
- **Powers the Newton MessagePad2000**

ATMEL — AT91

- **Standard Part Microcontroller**
- **ARM7TDMI (includes Embedded ICE Debug)**
    - 16MHz with Flash (33MHz with ROM)
- **On chip Flash (up to 128 kBytes)**
- **On chip RAM (up to 2 kBytes)**
- **2 Serial USARTs**
- **2 DMA channels**
- **3 Timers & Watchdog**
- **see www.atmel.com (search for AT91)**

Summary

- **ARM is going from strength to strength**
- **There are lots of ARM ASSPs out there.**
- **For more information and news see:**

www.arm.com

- **Or e-mail: info@arm.com**

Developer Support and Licensing

Outline

Acorn Developer Support: What We Do

...and What We Don't

New Licensing Models

Xemplar Developer Support

Acorn

Acorn Developer Support: What We Do

- Access to Developer online resource (including programming examples).
  The Acorn developer web site can be found at http://www.art.acorn.co.uk/SALES/DEVELOPERS/

  The "ReadMe" file provides an overview and index of what is on the site, and the "ChangeLog" file keeps a record of changes and the dates on which they occurred.

  This is a closed web site, and a user ID and password are required for access. These have been pre-allocated by developer support.
  If you are not aware of your ID and Password then contact isvquery@acorn.co.uk (Xemplar developers please contact xds@xemplar.co.uk).

- Discounted pricing on hardware, software and documentation.

- Access to Developer Support documentation for hardware and software.
  This comprises Developer Support Application Notes and a number of advance releases of API specs.

- Email and telephone interface to support engineers.
  Me... email isvquery@acorn.co.uk, phone 01223 725922.

- Technology licensing agreements.
  More later

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- Regularly updated references to Developer's products in a Product Directory, online at Acorn, which is visible to the public.

- "Hard" advance information on forthcoming systems / software.
  - This conference :-)

- Pre-release "advance / evaluation copy" scheme (at discretion of relevant project manager).
  - Contents of the Developer CD, Software Evaluation Agreements

- Product testing
  - Preferably at Acorn House (for reasons of access to resources)

- Rights to distribute specific binaries, by arrangement.

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...And What We Don't

- Resource Allocations

  Allocations of: SWI chunks, SWI names, Filetypes etc. This is done by emailing the completed datafile produced by !Allocate to allocate@pinesoft.demon.co.uk . If an icon is supplied with a filetype application, it will be registered as the default icon for that filetype.

  Requests for other allocations should be emailed to this address as plaintext.

- Help porting software to MacOS

- Help with PC card Software

- "Overly deep" Design Support

- Stock control info

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New Licensing Models

Three types of licence:

Software Evaluation Agreement (SEA):

Always effective for a limited timescale; usually three months. After SEA expiry, the code covered by the SEA must be destroyed.

Code licensed is usually binary; sources are only available for a limited number of items and only by exceptional special arrangement. SEAs are usually arranged without fee (an SEA is generally issued as part of the precursor arrangements for a BDA).

Binary Distribution Agreement (BDA):

Licenses the developer to ship Acorn binary code commercially, bundled with their product.

Can be made on a per-unit royalty basis or as a one-off lump payment.

Can be restricted by additional conditions (eg in the case of some licensed code, it should be made as difficult as possible for a user to decouple the licensed code from the developer's application).

Non-Disclosure Agreement (NDA):

Not strictly a licence, but a guarantee of confidentiality :-)

An NDA condition set is embedded in SEA documents, but can be issued on its own for software issued to developers which is not subject to a limited timescale (some of the contents of the Developer CD, for example).

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Software Evaluation Agreements: What Happens

- Developer requests agreement.

    I need: names and version numbers of all applications and / or modules required, what platforms they need to run on, and details (if necessary) as to why the code needs to be evaluated for more than 3 months.

- I check that the code is available and send two copies of the SEA forms to the developer by post.

- Developer signs both copies of the form and returns them to me.

- I get the forms countersigned and dated by an Officer of Acorn

- I lodge a copy of the software distribution in the Drawing Office

- One copy of the signed SEA form is filed at Acorn, the other is sent with the software to the developer.

- When the SEA period expires, a reminder letter is sent requesting destruction of the licensed code.

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Binary Distribution Agreements: What Happens

Licensing request received

Determine latest version of code available

Is it known to work on all the right OS versions? — N → Get and approve test plan from Developer

Y

Lodge code in DO

Issue limited-time SEA

Developer tests code

Developer sends test report to Acorn

Does it work? — N → Determine cost of updating

Y

Fix from Support funds if available

Go for the BDA? — N

Y

Enter commercial negotiations

Issue code destruction notice when SEA expires

STOP

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Xemplar Developer Support

The 'C' version

```
Struct {
        Acorn * Acorn_support,
        Apple * Apple_support,
        struct {
                Education focus,
                XemplarKit discounts,
                Offers   special,
                Marketing info,
                Website access,
                Literature sent_automatically,
                Technical support,
                }Xtra_Goodies;
        }Xemplar_Developer_Support;
```

The 'Assembler' version

```
        LDR      R0,StuartsPhoneNumber
        SWI      "PhoneIt"
```

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Outline

Intro to the NC

NC Marketing and Availability

Development Environment

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Connections

VGA Monitor

Pal Video

PS/2 Keyboard and Mouse

IR Driver

Bi-Directional Printer

Modem or Ethernet

IR Handset or Keyboard

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NC Key Features

OS	NCOS 1.1
Processor	7500FE
Display	TV or Monitor
Connection	Ethernet or Modem Module
File System	NFS
Server	Unix - local or via Dial up
Applications	HTML
	JAVA - Loaded from Network
	Shockwave - Loaded from network
	Native RISC OS - Subject to Modifications

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Reference Design - 1

Mandatory

Wired or IR Keyboard/ Pointer/ Controllers

Touch screen

Green

Red

Parallel Port

Integral Printer

Power Supply

Battery

Joysticks

CD-drive

HDU Cache

Other Expansion eg PCMCIA

Keyboard Pointer/Cursor

Smartcard Read/Writer

Status Indicator

Printer Support

Unique ID

Power

n|c

Compliant Device

Display Device

Audio Output

Network Connection

4MBytes RAM

ROM

NV RAM

Monitor VGA

TV (CVBS)

Integral LCD

Headphone

Line Output Audio

Internal Loudspeaker

Audio Input — External or Internal Microphone

28.8 Modem
Ethernet 10Base2/T
ISDN

ATM2/25
Cable Modem

DRAM SIMM
Expansion

Replaceable ROM Card
Flash

E2PROM device

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NC Rear Connections
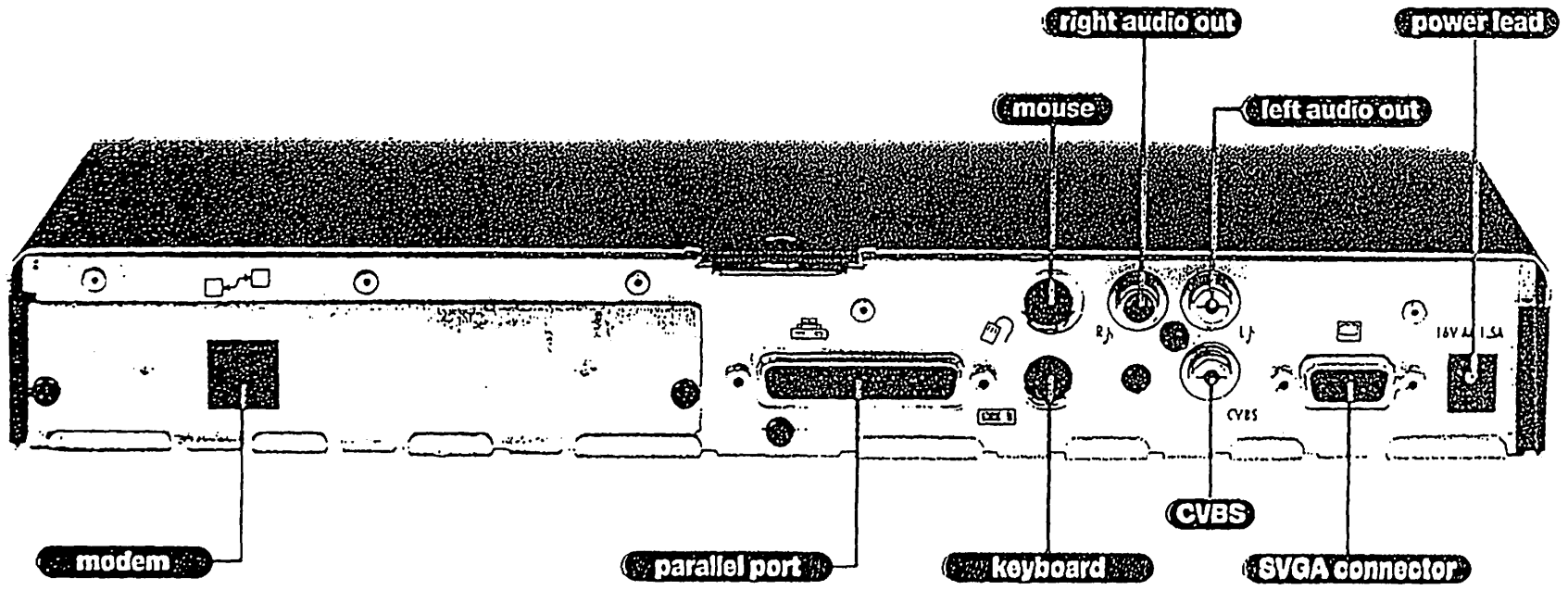
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TVCentric Implications

Anti Aliased Text

Anti Twitter Handled in Software

Screen resolution

	PAL	NTSC
Resolution	720 x 576	640 x 480
Safe area	8% x 5%	3% x 5%
	604 x 518	601 x 432
Remove Border	614 x 554	610 x 448

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MARKETS

Acorn Sell Designs

Home Connection   via Modem to ISP or IAP

RCA for the USA
Zenith for the USA
NETProducts UK

INTRANET   Schools, Hotels, Small Business

Xemplar
AKAI Guestlink

Cards and Connections

Server and Services

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Software Delivery

NCOS 1.1	NFS From Server
NCOS 1.15 onwards	FTP not recomended HTTP Put HTTP Get
	Through Client Server Filing System CSFS
Charging Model	?
Intranet	Site licence on server

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Internet Service Providers

Changing definitions

Internet Service Providers   Provide content and services
Internet Access Providers   Provide Access

Emphasis for now on getting services going

Will need applications

May not have RISC OS experience

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DEVELOPMENT ENVIRONMENT

	NCOS NOW	Future OS Releases
ANTI Twitter	Software	Hardware
Processor	7500FE	Strong ARM
Java	Intranet	In ROM
OS	1.06	1.15 or higher
Filing	NFS	CSFS (HTTP, FTP)
File UI	Filer	??

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NCOS and RISC OS

No Task Manager

No Display Manager   NC Config

No Printer Manager   NC Config

No Icon Bar

No Windows or furniture

Emphasis on Single Task

OS is fully Multi Tasking

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SERVER SET UP

Development environment

RISC PC	TCP/IP
	OMNI Client
	Ant Internet Suite
	Ethernet Interface

Server	NFS
	Bootp
	HTTPD Apache or Netscape
	Proxy server
	Modem and external line
	DNS

| NC | Ethernet card |

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Smart Card

Modem	Ethernet
PIN	PIN
Telephone number	(Uses Bootp)
User name (for dial in)	User name on server
Password	Password
NFS server (IP)	Uses Bootp entry
DNS server	DNS server
Time Server	Time Server
Home URL	Home URL
Read Only Directory	Users Home Directory
Connection Script	

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Connection Process

Modem

Start Browser
Display Smart Card Message
Show connection screens
Dial specified number from card
Authenticate using User/Password
Mount Read Only Mount
Execute !NFSBoot/!Run
    Configure browser
    Set up additional services
    Mount users home directory
Users Own Configuration
Fetch Home URL

Ethernet

Call Bootp
Mount directory specified in bootp
Execute !NFSBoot/!Run
    Configure browser
    Set up additional services
    Display Smart Card Message
Mount users home directory
    User and Password from card
    Users Own Configuration
Start Browser
Fetch Home URL

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Example Application

Boot file   Set Alias$URLOpen_Tumble Boot:Demos.Tumble.!Tumble %%*0

App Run File

```
| > !Run
Set Images$Dir <Obey$Dir>.^.Images
Set JPEG$File <Obey$Dir>.^.!ChangeFSI.CFSIjpeg
Set Tumble$Path <Obey$Dir>.
Run Tumble:9t
```

HTML File   HREF="Tumble:"

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NCFiler

Open   **Delete**

?   X

Create a new document:

[   ]   Create

Open an existing document:

📝 Film Reviews

📝 Breakdown Cancellation

📝 Tom's Story

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NC FILER

This uses a similar system to the Configure module. Briefly, NCFiler implements a single *command (*NCFiler_Filer) which accepts a series of parameters from a HTML form encoded in either of the 'get' or 'post' ways. The first argument is always 'context=...'.

Currently supported parameters are:

context=FirstPage, Directory=(string)
    Generates the initial Filer page for the specified directory.

context=FilerApp, Directory=(string), Action=(string).
    This is called when the user clicks on one of the Open or Delete icons in the top frame of the Filer page.

context=CreateFile, Directory=(string), Filename=(string)
    To create a new file, from an HTML page created in response to the 'context=FilerApp' command.
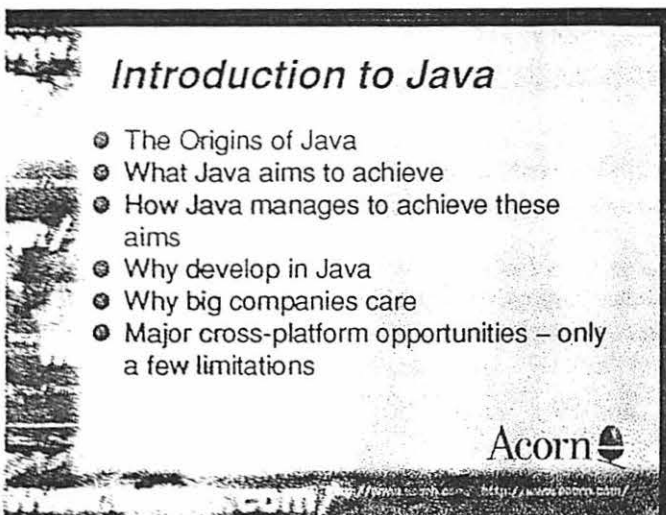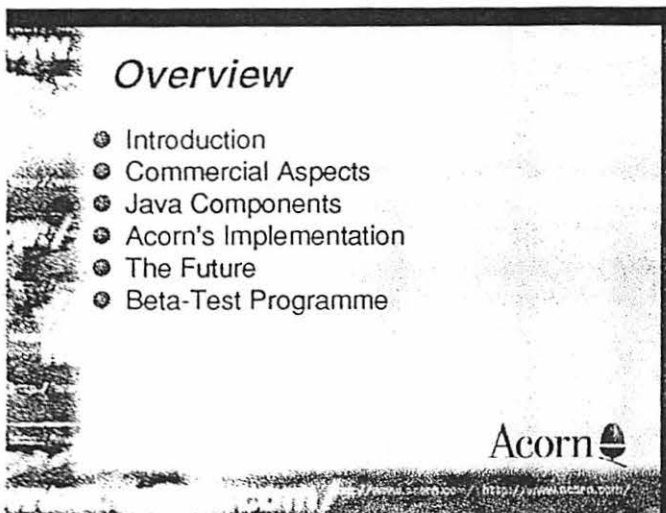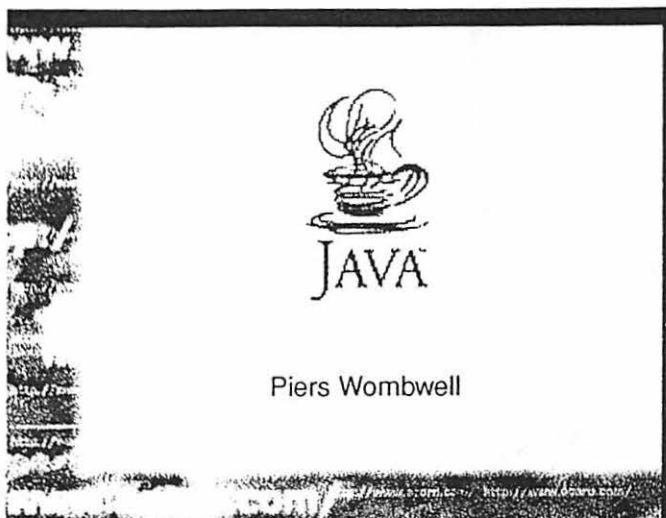
context=OpenFile, filename=(string)
    To open an existing file, from an HTML page created in response to the 'context=FilerApp' command.

context=DeleteFiles, filename=(string) {—O ,filename=(string)}
    To delete existing files, from an HTML page created in response to the 'context=FilerApp' command.

Acorn

Java Presentation

Piers Wombwell

JAVA

Piers Wombwell

Overview

- Introduction
- Commercial Aspects
- Java Components
- Acorn's Implementation
- The Future
- Beta-Test Programme

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Introduction to Java

- The Origins of Java
- What Java aims to achieve
- How Java manages to achieve these aims
- Why develop in Java
- Why big companies care
- Major cross-platform opportunities – only a few limitations

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Commercial Aspects

- Acorn now has its own Java Licence
- We can sub-licence Java for Developers to include in own products (royalty due)
- Validation Suite
- Core piece of Acorn Technology

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Java 1.0.2 Components

- Virtual Machine
- AWT (Abstract Window Toolkit)
  - Event dispatching
  - Window support
  - Gadget support
  - Layout managers
  - Menu support
  - Graphics and Font support

- Network support
- Multi-Media support (Sound!)

Acorn

Java 1.1 Components

- Major changes to AWT
  - Event Delegation - Listener based
  - Pop-Up Menus
  - Mouseless Operation
  - Printing
  - ScrollPane class
  - Drag-and-Drop support
  - Clipboard data transfer

- JDBC (Java Database Connectivity)
- RMI (Remote Method Invocation)
- Java Beans

Acorn

Java Presentation
Piers Wombwell

Java Foundation Classes

- Extra components:
  - Sliders
  - Warning/Error dialogues
  - Specialised textfields (currency, date, etc)
  - Colour Selection dialogues
  - Toolbar support
  - Plus many more...
- Pluggable Look and Feel
- Accessibility Support for People with Disabilities
- 2D API

Acorn

Acorn Implementation

- Fully pre-emptive multi-threading VM
- System requirements:
  - RISC OS 3.5 or later
  - 8M RAM minimum
  - StrongARM recommended for heavy usage
- Fast interpreter, no JIT yet
- Java runtime environment only
- Spin-offs:
  - Nested Window Manager
  - Various Toolbox Enhancements

Acorn

The Future

- JIT (Just-In-Time Compiler)
- Product release of 1.0.2 with Acorn Browser
- Java 1.2 release (skip over Java 1.1)

- An obvious candidate for incorporating into Galileo

Acorn

Milestones

1997:
- Sept: Acorn Product release with InterTalk
- Dec: JIT release to Acorn Developers

1998:
- Jan: Beta release of Java 1.2 to Developers
- Q1: Acorn Product Release

Acorn

Beta-Test Programme

- What's on the CD

- Applets are best developed using X-Files or over NFS, because of the need for long filenames

- Applets are best used with Sun's appletviewer, or using the latest Fresco (unsupported)

Acorn

Support

- Java support email address:
  java-support@acorn.co.uk

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Java Presentation

Piers Wombwell

Java Foundation Classes

- Extra components:
  - Sliders
  - Warning/Error dialogues
  - Specialised textfields (currency, date, etc)
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Support
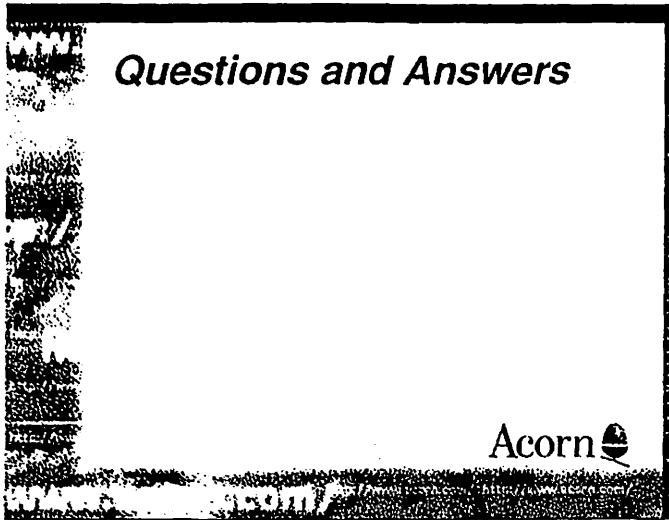
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Questions and Answers

Acorn

Toolbox Presentation

Neil Bingham

The Toolbox

Neil Bingham

intro.1 1

- Introduction
- Why use the Toolbox?
- What is wrong with the Toolbox?
- Basic Users
- New features
- Future plans
- Documentation
- Questions & Answers

Acorn

intro.2 2

Why Use The Toolbox?

- High level of abstraction.
- User Interface taken care of for you.
- Allows the coder to concentrate on the program features.
- Easy to use from C & Basic.
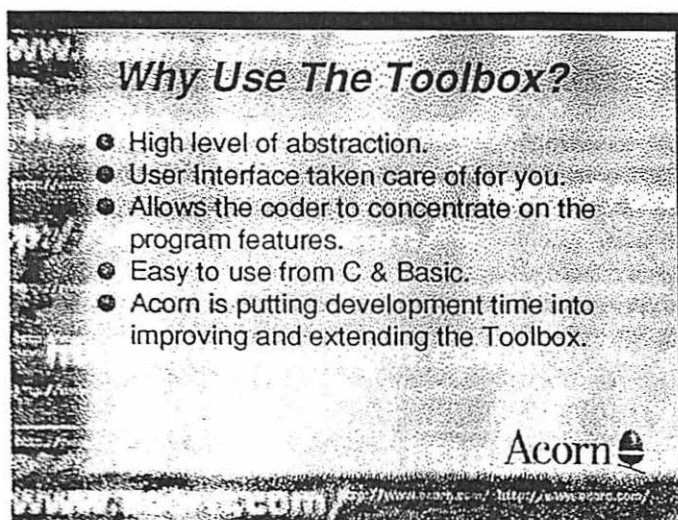- Acorn is putting development time into improving and extending the Toolbox.
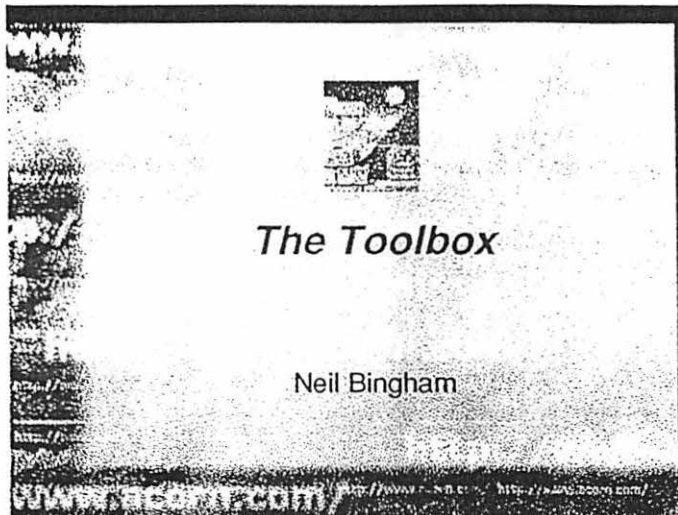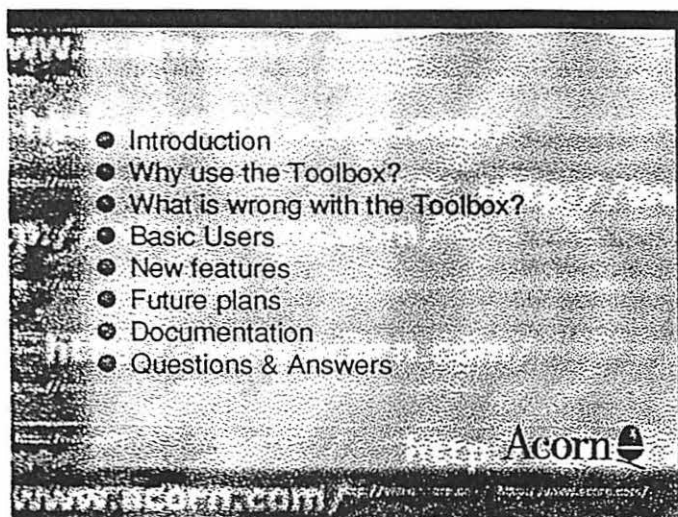
Acorn

whyuse.1 3

Toolbox Presentation

Neil Bingham

Toolbox Problems

- Image problem.
- Memory required to use the modules.
- Fragmentation of RMA.
- Installation problems.

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wrong.1   4

Basic Users

- Toolbox is ideal.
- Basic is quick to write apps in - Toolbox is quick to code UIs in.
- Support for Basic to be improved soon.

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basic.1   5

New Features

Gadgets

- ScrollList
- TextArea
- ToolAction

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newbits.1   6

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New Features

Extensions

- IResEd.
- Window Module.
- Menu Module.
- Iconbar Module.

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www.acorn.com/

newbits.2   7

ScrollList Gadget

- Spin-off from the Java project.
- Used to store lists of data.
- Easy to use API which provides details of
- clicks, selections etc.
- Utilises the Nested WIMP.
- Icons can be placed beside entries.

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www.acorn.com/

newbits.sl_1   8

ScrollList Gadget

API Features

- Fully documented in my C Toolbox StrongHelp manual.
- Entries can be referenced via string values or index position.
- A make visible command exists to move the visible area up or down a list to the desired position.
- Select-one or select-many functionality included.

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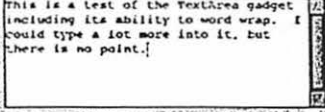newbits.sl_2   9

Toolbox Presentation

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TextArea Gadget

- Spin-off from the Java project.
- !Edit-like functionality in a gadget.
- Events provided to allow for Copy, Cut and Paste operations.
- Optional keyboard selection.
- Optional word wrapping.
- Utilises the Nested WIMP.

This is a test of the TextArea gadget including its ability to word wrap. I could type a lot more into it, but there is no point.

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newbits.ta_1   10

TextArea Gadget

API Features

- Fully documented in my C-Toolbox StrongHelp manual.
- Text size, font and colour configurable.
- Highlighting of text from code possible.

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newbits.ta_2   11

ToolAction Gadget

- Spin-off of NC contract.
- Can be best described as a 'graphical ActionButton with extras.'
- Gadget has three states: Selected, Unselected and Greyed.
- Utilised extensively in !NCFresco and the new Acorn browser.
- Doesn't require the Nested WIMP!

URL Itodat

Acorn

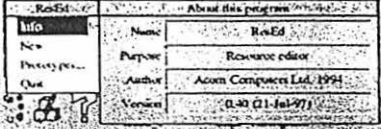newbits.tl_1   12

Toolbox Presentation

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The Resource Editor

- Support for ScrollList and TextArea gadgets added.
- Support for extensions to the Window,
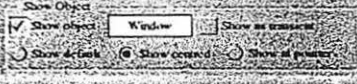- Menu and Iconbar modules added.
- Several long standing bugs fixed.

resed.resed_1   13

Window Module

- Now at version 1.40.
- Nested WIMP support added.
- Numerous bug fixes included.
- Font names, & colours, can be specified for Action Buttons, Writables, Display Fields & Buttons.
- New Show Object centred & at pointer added.
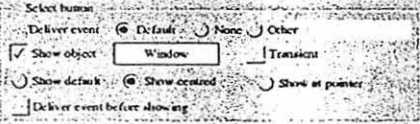
mods.w_1   14

Iconbar Module

- Now at version 1.14.
- Numerous bug fixes including icons taller than 34 pixels no longer get clipped when menus open.
- Show object centred and at pointer added.

mods.i_1   15

Toolbox Presentation

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Menu Module

- Now at version 0.26.
- Show object centred and at pointer added.

[Dialogue box showing Click action options: Deliver event (Default / Other), Show object (Window), Show as transient, Show default / Show centred / Show at pointer]

Acorn

mods.m_1   16

Future Plans

- Convert modules to use Dynamic Areas for workspace.
- Improvements to TextArea.
- Support Drag 'n Drop out of ScrollLists.
- Allow colours to be specified in 24-bit values.
- More gadgets...
- What do you want?

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future.1   17

Documentation

- We are evaluating methods of improving programming documentation.
- For the Toolbox, all C Veneers are documented in the C-Toolbox StrongHelp manual.
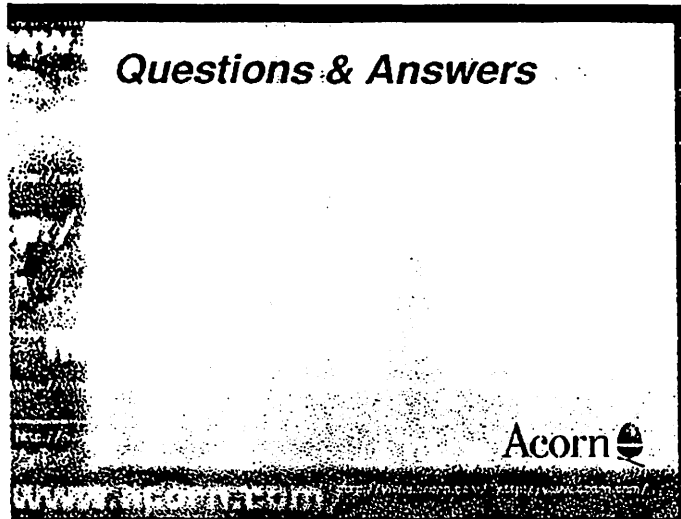- A version will be produced for users from BASIC soon.

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docs.1   18

Toolbox Presentation

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Questions & Answers

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qa.1   19

Ursula is RISC OS ?.?? for Phoebe

- This talk gives only a brief overview

- All information is subject to change

- Details of API changes to be released later

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Scope of Ursula:

- Supports Phoebe h/w only (initially)

- Backward compatible with RISC OS 3.7

- Significant upgrade of RISC OS

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Features of Ursula:

- Supports Phoebe h/w

- Enhances OS performance

- Enhances filing system

- Enhances GUI

- Delivers new look

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Phoebe support:

- SDRAM main memory, EDO VRAM (4 Mb)

- SRAM used as OS 'secondary cache'

- PCI support

- Enhanced IDE

- PC style CODEC device

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Enhanced OS performance:

- Critical OS code/data locked into SRAM

- Screen memory is cached (OS handles clean)

- Task swapping is lazy (demand paged)

- Maybe others...

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Enhanced filing system:

- New FileCore gives better big disc utilisation

- New FileCore gives >77 files in a directory

- New FileCore gives long filenames

- New CDFS stack

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Enhanced GUI:

- Nested Wimp

- New Toolbox gadgets

- Filer, Pinboard, Configure etc. overhauled

- New look

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RISC PC II - 'PHOEBE'

by:

Peter Fox
Senior Design Engineer

Acorn

Contents

- How to improve the RISC PC

- Block Diagram

- IOMDII

- Memory options

- New VIDC20

- PCI

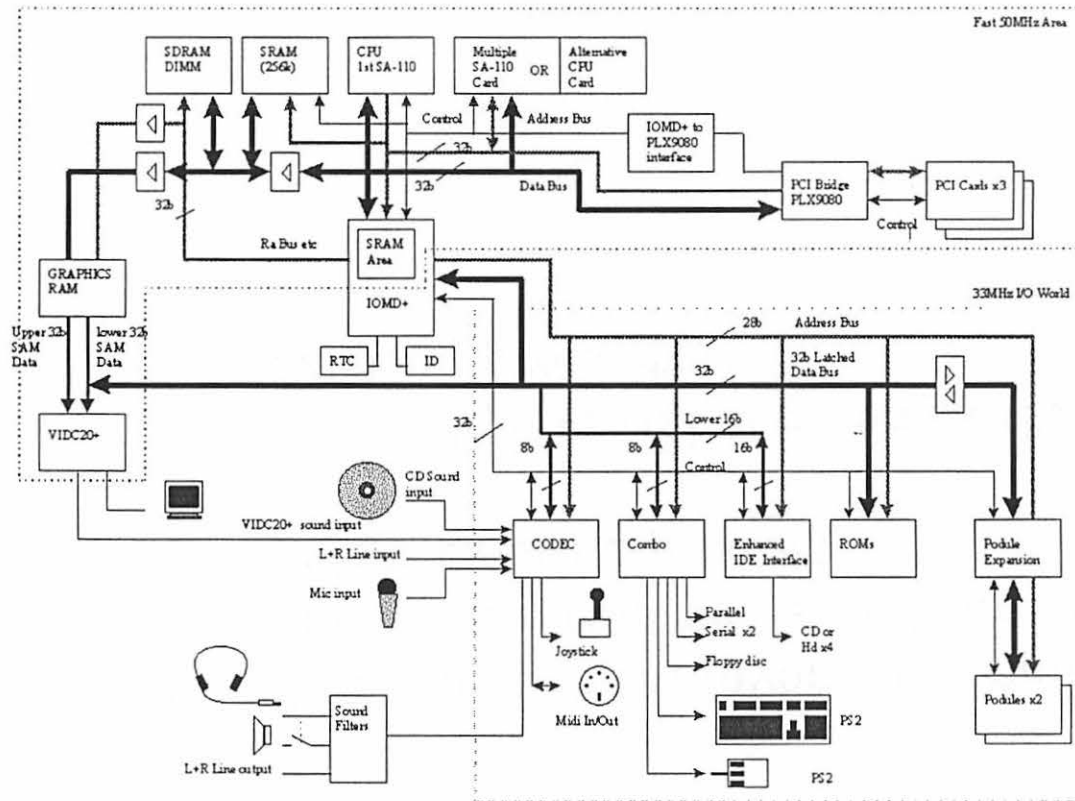- Status so far

- Summary

6th Aug 1997 - Developer 2

Acorn

How to improve the RISC PC

- There have been many new developments in the desktop world e.g. EIDE, CODECs and PCI e.t.c. since the launch of RISC PC.

- Acorn have been involved in many new areas of design in recent years and can use this experience to better existing products.

- The full potential of StrongARM is not used in existing product.

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Block diagram

Fast 50MHz Area

| SDRAM DIMM | SRAM (256k) | CPU 1st SA-110 | Multiple SA-110 Card | OR | Alternative CPU Card |

Control | Address Bus
IOMD+ to PLX9080 interface
32b
Data Bus
PCI Bridge PLX9080 — PCI Cards x3
Control

GRAPHICS RAM
32b
Ra Bus etc
SRAM Area
IOMD+

33MHz I/O World

Upper 32b SAM Data | lower 32b SAM Data
RTC | ID
28b Address Bus
32b Latched Data Bus
32b
Lower 16b

VIDC20+

CD Sound input
VIDC20+ sound input
L+R Line input
Mic input

8b | 8b | Control | 16b

CODEC | Combo | Enhanced IDE Interface | ROMs | Podule Expansion

Joystick
Parallel
Serial x2
Floppy disc
CD or Hd x4

Midi In/Out
PS 2
Podules x2

Sound Filters
L+R Line output
PS 2

Acorn

⚡ IOMDII

- New bus architecture to improve performance and reliability at high speed. - No more stretched Mclk etc.

- Will interface to SDRAM, SRAM, EDO VRAM

- Can support multiple bus masters.

- Contains SRAM area for message passing between bus masters

- Upto 8 I/O DMA channels and 3 fixed DMA channels

Acorn
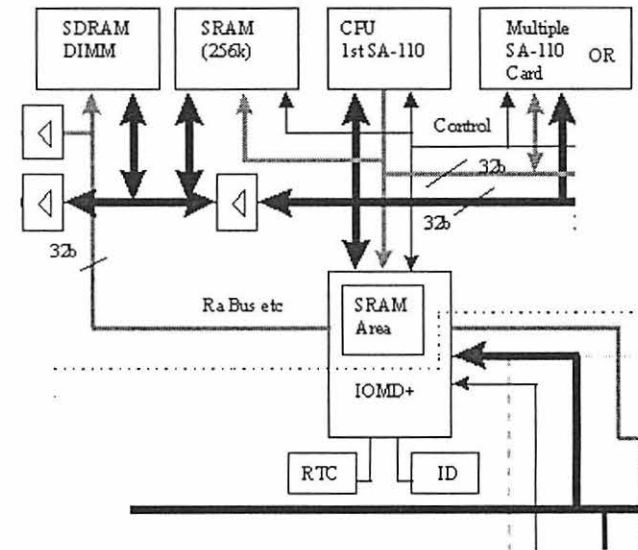
Memory configuration

- 2 x 168 pin SDRAM DIMMs giving a possible 256MB of SDRAM

- 4MB EDO VRAM video memory

- 256KB SRAM

- 256bytes CMOS battery backed RAM

Acorn

New VIDC20

- VIDC20 shrunk from 1micron to a 0.6 micron process

- 100% Performance increase giving upto 400Mbytes bandwidth

- Faster 4M EDO VRAM interface running upto 50Mhz

- Pixel clocks between 150 - 200Mhz

- New Screen modes of :-
  - 1024 x 768 in 32 bits per pixel
  - 1360 x 1024 in 16 bits per pixel
  - and possibly   1600 x 1200 in 16 bits per pixel

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PCI

- 3 PCI Slots giving connection to a multitude of PC expansion cards

- 33Mhz Interface

- Bandwidth of upto 132Mbytes/sec

- Support for long and short PCI cards

Acorn
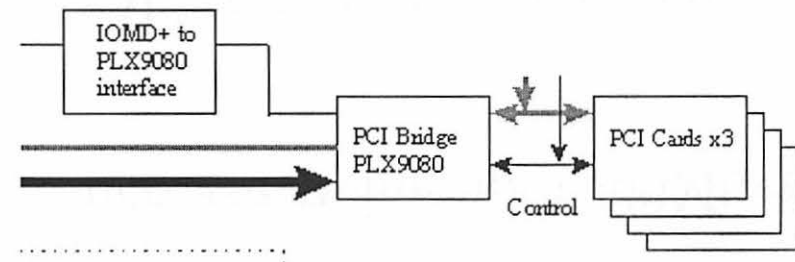
✶ CODEC

- Soundblaster compatible register set

- Stereo Line in/out ports

- Microphone input

- Mixing of VIDC20, CD, and all inputs into the CODEC

- 15 pin PC game port with MPU-401 compatible MIDI interface
  and analogue joystick interface

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Status so far........

- PCB designed and running code using new bus architecture
  and FPGA version of new IOMDII

Acorn
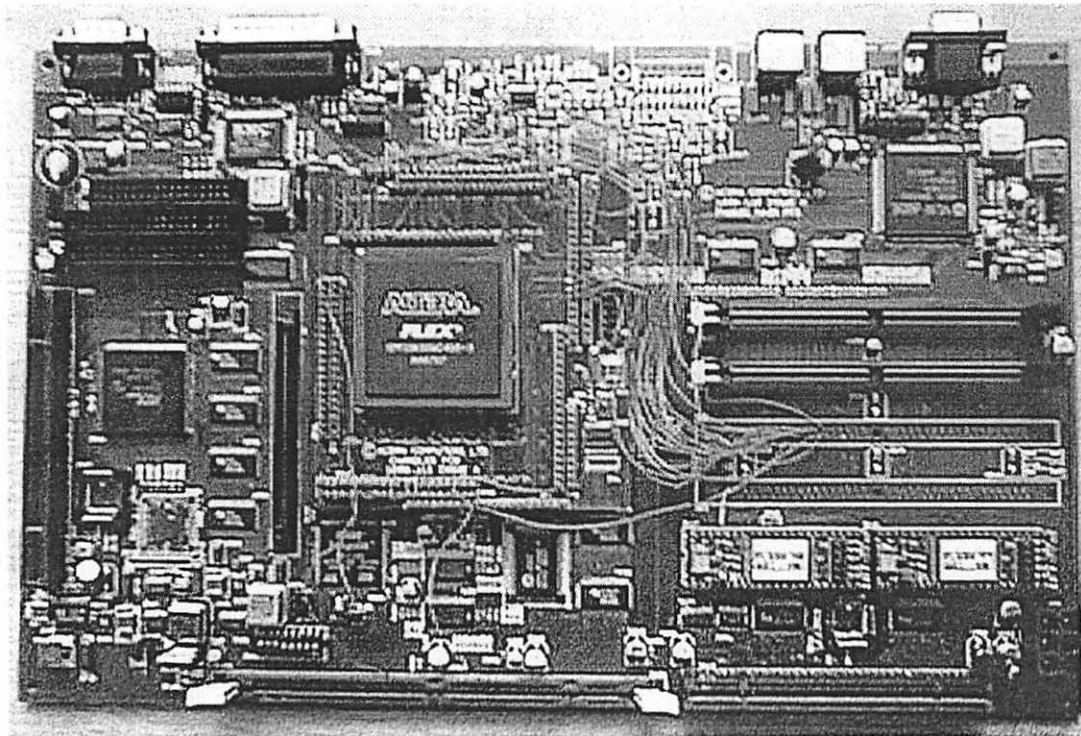
Summary

- Fast open bus running 50-66Mhz

- IOMDII allowing use of SDRAM, SRAM and multiple bus masters

- New VIDC20 giving 100% performance increase over old chip

- PCI interface with 3 PCI slots

- E-IDE interface allowing transfers of 16.6MB/sec and upto 4 drives

- CODEC support with line in/out, MIDI and Joystick interfaces

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Acorn Developer CD

Release Note

This note should be read in conjunction with the **README** file in the root directory of the Developer CD.

ACORN_R.JAVA.DEMOAP, **THIRDP_F.ARMLINUX.DISTRIB.REDHAT.RPM**, and **THIRDP_F.CAUSALTY.DOCS.OLDDOCS.DOCS** have all been compressed with !X-Files (Spark-archived as **RESOURCE.XFILES**) in order to retain their >10-character filenames in full. The Java demo applet should be run either from the X-file or from a UNIX server for this reason. Before using RISC OS to copy files out of their X-file archives to a server, be sure to set NFS$TruncateLength to 30.

The RiscBSD distribution (**THIRDP_F.CAUSALTY**) has a problem with its installation manager (/usr/local/sbin/inst) in that the install kernels have gawk compiled into their appended root filesystems but not awk. The enclosed floppy disc contains a copy of awk which should be copied (using UnixFS) into a public-write area on the UNIX root partition, from where it may be copied or moved to
/usr/bin .

A copy of tar (also to go in /usr/bin) is also included on this floppy, in case a problem arises decompressing the tarfile of the sets. Both RiscBSD executables are contained in the RiscBSD directory.

The Shockwave player (within **ACORN_R.DIRECTOR.PLAYER**) requires an updated !Run file; this is within the Shockwave directory.

The beta Universal Boot hierarchy (**ACORN_R.TESTING.UBOOT**) can also be considered to be a late beta of the A7000+ NET resource distribution.
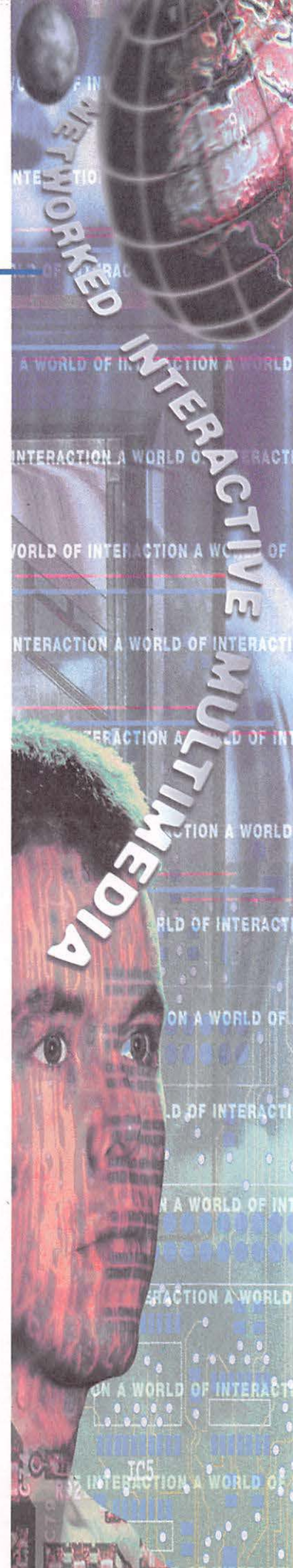
Notes from Causality Ltd relating to **THIRDP_F.CAUSALTY**:

Up to date information on any bug fixes, patches or new kernels can be found in the information section on Causality Limited's WWW pages (**http://www.causality.com**)

RiscBSD distributions and upgrades can also be found on the RiscBSD FTP site
ftp://ftp.ph.kcl.ac.uk/pub/acorn/RiscBSD/

If you are installing RiscBSD from the Acorn Developers CDROM it is recommended that you check the above WWW pages for newer kernels and release notes. New features and drivers are being added all the time.

There have already been several changes since the mastering of the CDROM and thus it is recommended that you use the latest install kernel described in the WWW pages for your installation along with its release notes.

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AGP23.79.04