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Authors: Stewart Palmer & Mark Moir

Acorn

Developing CD-ROM products for Acorn machines

This document is intended to give pointers and helpful information on the development of CD-ROMs for Acorn machines.

Applicable Hardware :	All Archimedes All Risc PCs	Related Application Notes:	None

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Support Group
Acorn Computers Limited
Acorn House
Vision Park
Histon, Cambridge
CB4 4AE

1. Introduction

This document is intended to give pointers and helpful information on the development of CD-ROMs for Acorn machines. It goes from initial design of the applications to the pressing of the final CD-ROM. The sections included are :

- Designing, developing and testing the application
- Packaging design and suggestions
- CD-ROM duplication companies

2. Designing, developing and testing the application

When designing the the applications and resources that will appear on your CD-ROM, there are some points that you will need to abide by to ensure that the application works from the CD-ROM with the least amount of effort. The list below details the points to remember:

• Use the RISC OS 3 Style Guide (available from Developer Support), this ensures that the learning process is easier for new users.

• Do not use !System, !Font or !Scrap directories on the CD-ROM. If you must have some modules or similar to complete a system put these files in a 'SetUp' directory. This minimises the risk of errors arising when the CD-ROM has been dismounted.

• Do not have ! directories (applications) in the root directory of the CD-ROM except for the main application on the disc; put any other applications in a Utilities directory. This will ensure that the CD filing system won't boot all the applications which will reduce the initial delay when running the CD-ROM for the first time. It will also reduce the memory needed for sprites etc. as they will only be booted when necessary.

• Disc names should not exceed twelve characters in length. This will retain compatibility between RISC OS 2 and RISC OS 3 applications.

• Keep the number of files within a directory to less than 40. The number of files allowed in a directory is greater than 40 but keeping it low will improve directory search times and overall performance.

• The lengths of the filenames you should use depends on the machine platform that the CD-ROM will work with. Ten characters will ensure compatibility between RISC OS 2 and RISC OS 3. Eight characters will allow the CD-ROM to be read on MS-DOS machines.

• Do not assume that there is a hard disc present, in most cases there will be but the CD could be shared and the work station may not have a hard disc.

• Replay movies should be located at the beginning of the disc. Use a directory AReplay in the root of the disc to store all movies. This will improve the performance for Full Motion Video applications.

• If your application incorporates Replay movies, follow all instructions in the ProgIf file in the ARMovie directory. This will ensure that your application will benefit from all of the features provided by the target hardware system.

• CDFS buffers should be set to a non-zero value. 16k is a standard value but 32k or 64k may be better for CD-ROMs that require a lot of disc access. This may use up more memory but if your application needs to access the disc a lot, it is worth it for the speed increase. You should experiment with the CDFS buffers size to determine the best compromise setting.

• Don't ever write to a CD-ROM based application, the application may be able to handle such error messages but it can cause embarrassment and the need to re-press the CD-ROM if this was not found while checking.

• Always refer to discs and directories on the CD-ROM by using system variables. A direct reference to a file or application will mean that the CD would have to be re-pressed if there is a bug in a piece of software on the CD. Any minor bugs can be solved by updating the application in question and releasing it on a floppy disc. A system variable would then be used to point to the updated one rather than the one on the CD.

• Consider CD-ROM access/seek times and data transfer rates, especially for applications where high performance is required. Remember that CD-ROMs do not behave like hard discs and it will pay to write applications with this fact in mind.

• Opening a file for write/update is not wise. CDFS will allow this until you try to write to the file but it is better practice if you open files as read-only.

• Make sure that you consider ISO 9660 restrictions on the use of characters in disc, directory and file names. Only upper case alpha and numeric characters plus the underscore (_) and pling (!) can be used as legal characters.

• Keep application specific resources together in a directory named 'Data' at the root level. This eases the use of important materials in other situations such as authoring.

• Trial a Gold disc before going to full pressing and test it on a range of CD-ROM drives, single and double speed. When you run the disc image from a hard disc or MO it does not fully represent the characteristics of a CD-ROM drive - especially the speed. There is a utility available that will simulate a CD-ROM drive from your hard disc. When run, it uses a compiled ISO 9660 image of the CD to simulate the speed, access times and filenames of the final CD. Details of this are at the end of the application note.

• Optimise for higher resolution screen modes. Most systems with CD-ROM drives attached have VGA or Multisync monitors attached.

• All applications and files required for the CD-ROM should be kept on the CD-ROM as much as possible. It's easier to use a CD-ROM if it's self contained. There are exceptions however when an external application may be used. An example of this is when a bug has been found in a CD-ROM based application and you want to update it without re-pressing the CD.

• Check all applications and data for viruses before pressing a CD-ROM.

• Always consider building CD-ROM applications which will run on a 2MB RAM system. This will increase the number of potential customers who will buy the CD-ROM.

• Always try and read in data in big chunks, don't read many little bits sequentially. Each individual read results in seek time delays which can be very slow on CD-ROM.

3. Packaging design and suggestions

The packaging of a CD-ROM based product can have implications on the safety of a CD and also the ease of use. Here is a list of some of the things that would help you when designing the packaging.

• Use graphic artists to improve the look and feel of the application and its packaging. Doing this can improve the ease of use of the CD-ROM and also the interest level.

• Supply CD-ROMs in jewel cases rather than flimsy plastic wallets. This improves the look of the product, ease of storage and also life expectancy.

• The jewel case insert should contain details of how to start up the application. This too improves the ease of use.

• The jewel case inlay should contain details of the CD-ROM title, this can make it easier to recognise a CD-ROM title when it is stored on the shelf.

• Colour separations should be marked with alignment circles and crosses. Ensures correct colour printing of the CD-ROM and its packaging.

• Pantone colours should be checked against background colours. Colours can vary subjectively on different backgrounds e.g. silver, gold, white, black. It's best to check before volume replication of a CD-ROM.

• CD-ROMs containing Replay movies should have the below Replay logo clearly visible. Note you need a licence to ship the ARMovie application. (This is available easily from Developer Support). Displaying the logo helps customers to recognise products containing Full Motion Video clips or capable of using such clips.

Acorn Replay

5. CD-ROM duplication companies

Once you have designed, created, compiled and tested your CD-ROM image, mass duplication is achieved by sending the image on a hard disc, a tape streamer or as a gold disc. The data is then copied off at the duplicators and a master CD is created. This master can be quite expensive and this is why it is vital that the gold disc is tested fully. The duplicated CDs are literally pressed using the master copy. Below is a list of some duplication houses for CD-ROMs :

Sonopress
26-27 Conduit Street
London
W1R 9TA

Tel : 071 4996813

Contact : Jutta Helling

Nimbus Information Systems
Raglan House
Llantarman Park
Cwmbran
NP44 3AB

Tel : 0633 867777

Contact : Paul Bishop

Copysoft Ltd
Victoria House
Wellington Street
Stockport
SK1 3XQ

Tel : 061 4766620

Contact : Howard Sinclair

Acorn are not actually recommending the above companies but are making Developers aware that they offer the services detailed.