

## What do I do with old computers, printers and mobile phones?

You have set up a new computer and successfully copied your data across but what do you do with the old one?

Well there are some serious problems to consider and from the report [Waste from Electrical and Electronic Equipment: A South Australian Perspective](#) prepared for Environment Protection Agency Department for Environment and Heritage Government of South Australia by Ö. Göl, C. Heidenreich, and A. Nafalski of University of South Australia in 2000, I found material that needs to be treated to include:

- whitegoods (washing machines, refrigerators, etc)
- browngoods (video recorders, televisions, etc)
- computer equipment and peripherals
- power tools
- toys
- electronic games
- digital video disk (DVD) technology (now known as digital versatile disk)

The hazards from these materials are given in the report (marked <sup>1</sup>) but I added extras from my own observations:

- the accumulation or leaching of hazardous and toxic substances<sup>1</sup>
- trip hazards
- falling hazards
- lifting hazards
- electrocution
- young children and animals choking on small parts
- the loss of non-renewable resources such as scarce and precious metals<sup>1</sup>

The strategy outlined in the report is recycling but what does that really mean in practice for a scientist or builder with several computers in his shed. I have tried to put together a hierarchy of practice that you can follow through. Any specific suggestions from the report by Göl, Heidenreich, and Nafalski are marked <sup>1</sup>. The following sections contain extra bits of the aspects as I have come across them.

Table 5 - Checklist and recycle schema for computers, printers and mobile phones

<b>start of life</b>		
<b>1<sup>st</sup> option</b>	<u><a href="#">Initial Purchase and Use</a></u> <ul style="list-style-type: none"> <li>• <a href="#">Grimoire of Geological Computing</a></li> </ul>	
<b>2<sup>nd</sup> option</b>	<b>Re-Use :</b> <ul style="list-style-type: none"> <li>• <a href="#">business</a></li> <li>• <a href="#">friends/family</a></li> </ul>	<b>Re-Sell</b> <ul style="list-style-type: none"> <li>• <a href="#">Dr Disk</a></li> </ul>
<b>3<sup>rd</sup> option</b>	<u><a href="#">Store Equipment</a></u> You can store equipment that could come in useful with companies like: <ul style="list-style-type: none"> <li>• <a href="#">National Storage</a></li> </ul>	
<b>4<sup>th</sup> option</b>	<b>Donate the Equipment</b> <ul style="list-style-type: none"> <li>• <a href="#">Computer Bank Victoria</a> and <a href="#">Other Computerbank Project Start Ups and Affiliates</a></li> <li>• <a href="#">Computer disposal, donation, and recycling information</a>, (USA)</li> <li>• <a href="#">Aussie Recycling Program</a> &amp; <a href="#">RSPCA</a></li> </ul>	
<b>5<sup>th</sup> option</b>	<b>Take-Back and Trade-In Schemes</b> <ul style="list-style-type: none"> <li>• <a href="#">Commander Communications Limited</a> (telephony)</li> </ul>	
<b>6<sup>th</sup> option</b>	<u><a href="#">Pay to Refurbish</a></u> <ul style="list-style-type: none"> <li>• <a href="#">Computers Reborn</a></li> <li>• <a href="#">Logi-Tech Pty Ltd</a></li> <li>• <a href="#">The Recycled Office Shop</a></li> <li>• <a href="#">Second Byte Computers</a></li> </ul>	
<b>final option</b>	<u><a href="#">Throwing It Out, into the rubbish</a></u> <ul style="list-style-type: none"> <li>• kerb-side pickups</li> <li>• hard rubbish days</li> </ul>	
<b>end of life</b>		

### initial purchase and use

Know, buy for and use the equipment to the maximum of the depreciation periods. For instance telephone systems depreciate over 7 years not 5 years like computers.

Printers in practice can be used twice as long as computers, perhaps this is due to the cartridges including a replacement printhead. These cartridges can now be recycled at every Officeworks store at the bin by the door.

### Re-use by the business

Depreciated equipment generally has to be disposed of completely, but there are situations where you may consider re-using equipment that has been given back to you for disposal:

- Reloading Linux onto the PC to make it into a standalone GRASS server ( the free Geographic and Remote Sensing Analysis System software).
- Setting the computer up as a print server attached to a common printer.
- The cathode ray tube screen are better than TFT/LCD screens at potraying any kind of quick motion on the screen. Therefore, CRT screens may make better monitors for some real time applications and can be simply connected to the standard VGA port on laptops.
- Old computers can be used as rasteriser servers if you are doing any three-dimensional modelling. It can chug away for days why you have the speed and capacity of the new machine for you to run Microsoft Office for your reports.
- Dot-matrix printers are very tough and can be thrown around in dirty environments. They were built with a heavy chassis to stop them chattering off the table and this adds to their strength. Also they are cheap to run, can be connected to any computer and Officeworks stocks a range of ribbons for the old formats.

Things I have tried but wasn't so keen on:

- Setting the PC as fax server I found to be less than satisfactory compared to a proper fax machine because you have to leave it on all day, it gets hot, the fan and the disk whine and it doesn't recover well from power failures, when you are out of the office.

### re-use by family or friends

Passing depreciated computers to family and friends has been my favoured method for years because it has the extra advantage of:

- It builds up a credit of goodwill: other friends and family will be glad to hand over to you their cast-off equipment such as mobile phones, ideal if you are regularly losing them in bush or having them crushed on site.
- Dot-matrix computers are particularly treasured by family researchers. The print tapes are exceptionally reliable and don't dry up in between infrequent printing and cost a few dollars compared to inkjet cartridges. The dot-matrix printers also often have rollers which can print full family trees on perforated paper. The same paper can also be used for banners at family assemblies. The Epson and HP dot-matrix printers are exceptionally well handled by the standard drivers that come bundled with Microsoft Windows 95 and later.

- Saving you time and making it easier for you to support your parent's or girlfriend's computer because it was once your own and you know how it was setup and the bugs in software they are using.
- Underwriting the technical education of your local community. In this way you know your nieces and nephews will eventually know more than you and will be able to fix your gear for nothing when it breaks down. It also reduces the reliance that the other family members have on you to do their fixing and computer debugging.
- With regard to the last point, even if you are seen as the person who bludges jobs off them, and can't get a proper job anyhow (i.e. all geologists) you will be thought of well as you are contributing something to the family.
- With regard to the last point, it increases the chance that one of you will actually come up with some software or service so successful that the rest of the family can bludge jobs.
- It minimises the amount of time (or risk) that your relatives will spend in gaol (or get sacked), when they steal someone else's computer or buy a stolen one in the pub, because they can't justify the full cost of a new one.
- Following on the previous point, it maximises the number of people with the necessary equipment and without a criminal record who can take on the secretary and treasurer's role in the different associations you belong to and get you off the hook for those jobs.
- If nothing else it will give you something in common to talk about at those family shows which seem never to end and help you build some kind of normalcy in your relationships.

The weaknesses of this approach are:

- Eventually your nieces, nephews and friends spend more money on computers than you do, get impatient for the next model, buy their own and don't want your old machines which still keep working because you lavishly hand configured them and taught everyone how to clean them so you could pass them on.
- Not only do you get your old machines back in disgust, but also their old ones as well because you have become 'the man in the family who hands out the old computers'.
- It wouldn't be so bad if you actually got the computers that are better than yours back, but your friends and nephews work out that they can pass on the latest computers onto other friends and get a bit of their own credos.
- Your machines are being held for so long that they become worthless as resale.

Mind you this cycle takes about 15 years or so, so your original purchases do go a long way. If you do decide to go down this approach do the following:

- Buy new software licences of Microsoft Office each time so that you can pass the old (depreciated) copy onto your family, don't go for an upgrade option
- For your professional software like Golden Software Surfer and MapViewer and ISI Thompson EndNote, do go for the upgrade option, because the family won't be using it and it will give you another reason to take it off the old computer and double check that you haven't left your client's files behind.

- Charge the family/friend a small price for the computer (< \$100) as this makes the depreciation accounting easier. As of 2002 in the states and territories of Australia, if you give it away you have to take the value as an estimated market value, and write that off against the depreciated value and this may lead to a capital gain.
- The previous point is not necessarily a disadvantage as there will always be something missing from your friend or relative's computer wish list, a joystick, a faster modem or a USB port card, that would be normally too extravagant for a birthday or Christmas present, but when set aside against the money they paid you, you can give them as a present at the next suitable occasion. Assuage your conscience for charging a pensioner, and save you having to hurt your brain thinking up a real present.
- Do not upgrade the operating system, but keep it as you had it as this is the slimmest in terms of disk capacity and you have ironed out the bugs.

### Store the equipment

You can store equipment that could come in useful with companies like:

- [National Storage](#)

Then use it later such as

- make an AT keyboard work with a laptop using a 'Belkin AT to PS/2 connector' from Adelaide Computer Superstore
- keyboards can be cleaned with 'CRC Contact Cleaner and Lubricant' from Dick Smith Electronics

### pay to refurbish

Companies like [Logi-Tech Pty Ltd](#) who have very experienced technicians and good workshop facilities can restore equipment to working order and then allow you to re-sell it privately. However, you are looking at about twice the cost of a new machine and you would only do this where you have to recover the data first and continue to use that.

There are specialist recycling firms but these tend to be interested in batch lots from businesses. Examples I have found on the Internet are:

- [NovaIT \(Sydney\)](#)
- [I.T Recyclers](#)(Sydney only, >1 item, [conditions](#))
- [Other computer recycling in Australia](#)
- [Computer recycling Overseas](#)

On an individual basis, the second hand dealers do a reasonable amount of this work with the report of Gol, Heidenreich, and Nafalski giving:

...

Second-hand dealers in this survey indicated that they paid some compensation for the equipment that they received if there was a potential profit from its resale. Approximately half the equipment collected by second-hand dealers was at no cost because such equipment was of little or no resale value

Usually, some work had to be carried out on the second-hand equipment before it could be resold. Sixty-seven per cent of the second-hand dealers surveyed indicated that the equipment collected required a simple clean-up prior to resale, while 50% of companies indicated that some of this equipment required the replacing of specific components. Complete upgrades of equipment were undertaken by 17% of the second-hand dealers surveyed, and 33% indicated that they dismantled some equipment for spare parts and materials.

...

the basis of this list of second-hand dealers involved with computers was from the Appendix C4 of Göl, Heidenreich, and Nafalski:

- AAA Unley Road Pawnbrokers and Second-hand Dealers
- Power Disposals Pty Ltd
- [Computers Reborn](#)
- [The Recycled Office Shop](#)
- Cash Converters
- Cash X Change Pty Ltd
- [Second Byte Computers](#)

take back and trade-in schemes

From the report of Göl, Heidenreich, and Nafalski:

...Compaq Australia is reported as currently undertaking a computer take-back and cathode ray tube (CRT) monitor recycling pilot project in cooperation with the New South Wales Government. The aim is to demonstrate a model recycling program that may be implemented on a nation-wide basis. Similarly, the Australian Mobile Telecommunications Association (AMTA), again in collaboration with the New South Wales Government, has undertaken a Nickel-Cadmium (Ni-Cd) battery recycling scheme with participation from retail outlets in Sydney, Newcastle, and Wollongong as collection centres for disposed Ni-Cd batteries. This scheme is reported to have recycled over 100 000 mobile phone batteries in a six-month period and is now being expanded to an Australia-wide scheme, with take-back schemes currently under way in Adelaide.

*Nickel-Cadmium (Ni-Cd) battery recycling scheme*

From the report of Göl, Heidenreich, and Nafalski:

Ni-Cd batteries are often an important part of many EEPs, including mobile phones and laptop computers, but the disposal of Ni-Cad batteries to landfill is banned in Australia (Environment Protection Act 1993, Schedule of Listed Wastes). In November 1999, the Australian Mobile Telecommunications Association (AMTA) launched a nation-wide program for the take-back and recycling of mobile phone handsets, Ni-Cd batteries, and related accessories. This program follows on from a trial program conducted jointly by AMTA and the New South Wales Government, which saw over 100 000 mobile phone batteries recycled in a six-month period. The program is funded via a \$1 levy placed on the sale of new mobile phone handsets by participating companies, including ...

- Alcatel
- Brightpoint

- Ericsson
- Mitsubishi
- Motorola
- NEC
- Nokia
- Panasonic
- Philips
- RF Industries
- Samsung

The retail stores around Australia that are collecting the phone batteries are:

- Telstra T-Shops
- Optus World
- Orange
- Strathfield Car Radios
- Vodafone

Göl, Heidenreich, and Nafalski explain further:

The batteries are processed by Australian recycler MRI, which works with Ausmelt Ltd to undertake the recycling. The recycling process involves closed-loop bath smelting, which has been developed in Australia by Ausmelt. The process melts the batteries at 1200C and produces three saleable products: a nickel-containing product (35% nickel), a cadmium fume (63% cadmium), as well as a low-value slag that is suitable for use in roadfill. It is hoped that more battery manufacturers will join the program as it is implemented nationally; discussions with laptop computer manufacturers and computer suppliers are also underway (Australian Mobile Telecommunications Association, 1999).

[throwing it out into the rubbish](#)

For private individuals there is the hard rubbish collections provided by local councils. Associated with this is the informal recycling situation of people taking kerb side material for their own use. I have colleagues who live in inner Melbourne who swear by this as the best way, but in Adelaide I find some of the material becomes playthings for youths and gets distributed along the road leading to the damage of cars and houses.