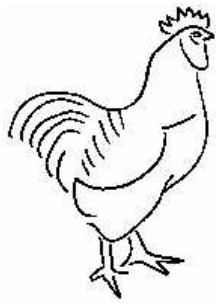
CLTC Documentation Sheet 0/A:

Developing the Community-Linux Training Centre



Developed by The 'Free Range' Community-Linux Training Centre Project -
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"*there's no need to confuse me with long words - short ones will do*"
'Eccles' from *The Goon Show*

This first section provides an introduction to four differing views of the project - the history of the design, the objective of a 'community' Linux project, the financial aspects, and the potential uses of the CLTC system.

A short history of the project

In 1997, the concept of a mobile computer information and communications technology (ICT) training centre was developed. It was designed along similar lines to the computer/ICT workshops developed by community education departments in the UK. But unlike other schemes or courses that are currently available, the emphasis within the design was tailored to the needs of community groups and grassroots activists. It was originally developed by Paul Mobbs, but refined and perfected with other members of the Free Range Network.

However, the project went nowhere. This was for two reasons.

- Firstly, (and mainly) *funding*. The original concept was based upon the Windows operating system. Buying laptop computers, and the licensed software to run on them, was very costly. For this reasons applications were made to funding bodies and award schemes for the funds to develop the system. But the money was never offered.
- Secondly, *networking*. The original concept was that two or more computers would share one phone line, in turns, to practice use of the Internet. Of course, this would have created additional costs. It also limited the mobility of the system because a phone line was required. If there was no phone line, networking skills training could not be provided.

From 1997 to 2000, a number of applications for funding were made – without success. Then, in 2001, the concept was redesigned. Windows was abandoned because it was too restrictive and expensive. Instead Gnu/Linux was adopted as the operating system. This presented various benefits:

- One laptop could act as a server to the others, enabling network services without an Internet connection.
- It was far easier to develop and maintain a local network.
- Most significantly, it sliced four-fifths off the cost of the project.

The dramatic drop in costs was not only because of the savings on software costs – because of the open license that Linux systems are released under. It also meant that lower specification, '*2nd user*' computers could be used, saving further costs. Hence, the '*Community-Linux Training Centre*' (CLTC) came into being.

Further applications for funding were made with the new design. But this hit further problems:

- Firstly, some grant bodies don't like to give smaller grants because it costs

proportionately more to administer them. So it's actually more difficult to apply for less money.

- Secondly, Linux is still a relatively unknown operating system, which led some to doubt over its capabilities, and whether it was a 'real' operating system at all.
- Thirdly, and perversely, was that under the new concept it was theoretically possible to do pretty much anything possible with a networked computer. Office skills, network use, email, developing web sites, etc. This led to reluctance to fund the project because it had no 'limits' to its potential use. As we would provide no undertaking to limit the use of the equipment this led to some problems categorising its use as a project. Also, a problem for UK funding bodies with charitable status as any involvement in funding overtly political/protest action is prohibited.

In early 2002, following yet further failed funding applications, the decision was taken to abandon attempts to get grant funding. Instead, in April 2002, a 'project proposal' was circulated online. This led to some offers of assistance. Finally, in June 2002, funding was found, and the equipment ordered.

In late June 2002, the equipment arrived, and work started on developing the CLTC. This took a little over a week, and involved experimenting with different types of system configuration until a suitable set of services was found. However, development continued for some months as we investigated different options for using the system. What helped in this process was taking the system to different user groups and studying their use and expectations of the equipment. This 'beta testing' informed the final development version of the system in January 2003.

The first public use of the system was on July 12th, at a meeting of environmental organisations from across the Amman Valley in south Wales. The following day, it was also used as a platform for teaching computer and information security techniques to environmental and animal rights activists at a Free Range Weekend.

Now the project enters a wholly new direction – documenting how the system has been developed and used, and developing learning materials for people to use in conjunction with the CLTC system.

Why 'Community-Linux'?

The primary use of this system will be to teach computer and networking skills to civil society groups. But it is also a valuable demonstration platform for the GNU/Linux operating system within the context of civil society.

For those learning how to use computers for office-based tasks there are few obstacles. But when learning network-based tasks there are a number of barriers. For example, the cost of being online, or the problem of finding people to network with. The CLTC system solves these problems by letting people learn together on a closed, local network.

Since Linux broke out from its original caste of a Unix geeks plaything, Linux has been developed and extended to serve many uses. Like Unix, Linux has become a successful network operating system, running many of the sites on the Internet. In a more specialised niche, its scalability and ability to form high-powered processing 'clustered' has made it successful in the animation industry. But only recently has Linux begun to sprout the type of user-friendly interfaces and applications that make it suitable for desktop computing.

Whilst there have been great efforts to develop Linux in the business community, and some project within education, there have been few proposals to develop Linux as an operating system for grassroots activists and community groups. Community organisations are some of the poorest organisations in society - less well funded than education and other public services. They are also more highly reliant on good networking to carry out their work – far more than other sectors within society. Therefore Linux would be an ideal system to promote within community organisations. But so far, there has been little effort in promoting Linux within community organisations. The Microsoft hegemony remains a powerful and highly restrictive weight on their resources.

This project aims to address this deficiency in the promotion of Gnu/Linux.

Promoting the use of Linux by allowing community groups to use Linux, to sample its features, before the commit to migrating away from Windows. One of the main aims of the Free Range Network is to build the capacity of grassroots activists. Members of the Network adopted Linux in late 1999. By 2002, a number of them were using it for all their everyday computing needs. As activists, and Linux users, we feel that we are well placed to communicate the benefits of Linux over the two main alternatives - the Mackintosh, and the ubiquitous Windows.

Grassroots activists have actually piloted a number of technological innovations in the UK. In the early 1980s, they were the first section of the general public to use video as a media to make their own programmes and so address the needs of their community. In the early 1990s, they were the first section of the general public (outside of industry/academia) to get online, using the power of the Internet as a low cost communications and networking media. In our view, activists and community organisations represent the idea group to introduce Linux into the mainstream of 'public' (as opposed to corporate or academic) computing. In the process, breaking the hold that proprietary systems have over society, and the implications this has for financial resources and freedom of expression.

For this reason the application of our particular system will be exclusively within community situations rather than mainstream education, public administration or business. There are many projects that teach ICT skills. What makes this project unique is that it does not require an Internet connection, and for this reason it is wholly mobile. All it needs is a mains power supply. But even without a main supply, we can power the system for about five to six hours using a battery pack.

We hope that the CLTC system will serve as a model for other similar projects. For this reason we will be making available all of our documentation, and some case studies, as the system is further refined over the coming months.

Costs

In developing the CLTC system great efforts were made to minimise costs - to the lowest practical (as opposed to *possible*) level. It was only in this way that the project would be able to get going. Then, once established, we could improvise its development after that.

Everything used within the pilot system has been obtained as '*2nd user*' equipment. Others may wish to buy new equipment if they replicate the CLTC model. But to us that was not an option. Not only for cost reasons. But because of the aims of the project. We were investigating the limits of the CLTC design (proof of application) – not it's viability (proof of concept). For this reason we wanted to see what the lowest practical specification of system components would be to produce a usable system.

The fact that Linux usually works better on older equipment (because hardware drivers are not immediately available for brand new systems – especially laptops) means that the project could be implemented more simply. But more than that, we were aiming to produce a working example of 'low spec.' community computing. To show that the older equipment many community groups inherit can be put to good use at very low cost.

This last point is quite important. Particularly in the context of new European laws on the reuse or reclamation of electrical equipment like computers. In the past, whilst equipment may have been donated to community groups, either the software was to expensive to buy, or newer software would not work on the older systems. This donated equipment was effectively useless.

Members of the network have had experience where computers have been 'dumped' on community groups; with very little benefit to those groups because they found it difficult to obtain or license the older software those systems required. This is not true of the Linux operating system. Even old hardware can be put to a productive use on one way or another.

By using Linux and second-user equipment this project has been launched at a very low cost:

5 laptop computers (*@ £348*)	£ 1,740
5 network cards (*@ £70*)	£ 350
Network hub and cabling	£ 130
Portable printer	£ 30
Linux software (Red Hat 7.1)	£ 100
Total	**£ 2,350**

The time to set-up and develop the CLTC system is being donated free. However, if you had to buy the skills to set-up the system that would cost an additional £1,000 to £1,500. One of the reasons that we are putting effort into the documentation of the project is to try and reduce the costs of the 'knowledge' required to produce a system similar to CLTC.

Had this system been developed with proprietary software, on a Windows system, the cost would have been far higher. It is not just that 'closed' software costs more – a 'multiple user license' would have to be bought for the programs that are networked to multiple client systems. The technical specification of the computers that the closed software requires is also higher, and so higher quality equipment would need to be purchased.

Depending on the computers used, and the cost of multiple user licenses, the cost of an equivalent 'closed' software system could be:

5 laptop computers (@ £1,350)	£ 6,750
Network hub and cabling	£ 250
Portable printer	£ 100
Windows 2000 Server (8 users)	£ 1,100
Equivalent office/design/network software, 4 clients (min. cost)	£ 3,500
Total	**£ 11,700**

This differential between the costs of closed and open systems illustrates one of the key benefits of the GNU/Linux system to civil society groups. Unlike the business environment, the costs of information systems to civil society groups can be prohibitively high. Civil society therefore works at a disadvantage as compared to the highly networked corporate and corporate communications world.

Of course, if civil society groups wish to develop their own Linux-based alternatives to expensive proprietary systems, just loading a few computers with Linux is not enough. They need help to make the transition from relying on proprietary systems, to using open systems. Part of this is giving them experience of using Linux before they make a commitment to migrate from the Windows or Mackintosh systems that they are currently using. The CLTC system is an ideal opportunity to provide people with the experience of using Linux, and to provide training in the use of Linux applications.

Practical use of, and outputs from, the CLTC project

This project seeks to address a serious lack of 'creative' computer skills education in society. Many of the mainstream models of ICT education place a higher value on the use of computers within the business environment. This is in fact highly restrictive. It also ignores the potential benefits network technology could bring to communities.

To remedy the Microsoft-centric model of dependent computing, and to enable the development of new skills within community groups in England and Wales, we have launched this project. But an important parallel, and symbiotic part of this process is raising the perception of GNU/Linux as a viable desktop operating system for community organisations.

By serving the ICT training needs of the many active community groups across the UK this project should provide five major outputs:

- A documented model for the development of a mobile, Linux-based ICT training facility that can be replicated by other community-based organisations or educational establishments;
- A series of case studies that analyse different problems and benefits from using this particular model for the provision of community-based ICT that will arise from the practical use of the equipment;
- A practical and public demonstration of the use of Linux by 'ordinary' members of society for worthwhile and interesting

purposes (i.e., not geeks who want 'root privilege' on their PC);

- A low-cost mobile ICT training or demonstration facility that can be hired for use in a community centre, at a conference, or even in the middle of a field at a free festival.
- An increase in the knowledge of Linux, and the benefits of open/free software, amongst one of the most politically active section of UK society – a significant factor when considering the challenge that society faces from the increasing level of control sought by the closed software corporations.

During the conceptual development of the project the Free Range Network searched for other similar projects. So far we have not found any projects that contain the same elements of the CLTC. There are various community-based projects that have various elements contained within the CLTC. But they tend to be related to skills training rather than activism. They also tend to be fixed in one location (although wireless projects do have a limited mobile component). They are also usually based around proprietary systems.

The CLTC project provides an opportunity to do something wholly new and pioneering using open systems, 2nd user equipment, and a wholly mobile configuration. In fact, the problem in describing what can be taught with the CLTC system is making a concise list. In many ways the CLTC system is an ICT training solution in search of people's training needs.

As a rough guide, the CLTC system is capable of giving practical experience and tuition of:

- Basic computer use – turning on, and using a graphical interface;
- Office-based tasks, such as word processing, spreadsheets and databases;
- Computer-based graphic design;
- Using email and the Internet for communications, networking and research;
- Computer and information security, including protecting data, secure communications, backing-up data and maintaining computers;
- Basic computer programming, especially the use if scripting languages to simplify and enhance people's use of computers;
- Developing and maintaining web sites to assist communications and campaigns;
- Setting up and using computer networks to assist the work of a small offices;
- Practising online networking and campaigning using various services such as email, newsgroups, the web and chat servers;
- More complex server configuration and maintenance for those wanting to provide community-based Internet services;
- Installing and use of Linux systems/networks;
- The development of computers and computer facilities to solve community needs.

In fact, the only current deficiency with the software available for the Linux operating system are applications that utilise proprietary standards, such as digital video (but, in any case, the laptops we use are too low powered for sensible video editing). Recently the holders of these standards have sought to harass/prosecute anyone trying to develop and open source equivalent of their systems in order to protect their monopoly control over their particular digital technology. However, the use of Linux should in the context of the IT industry as a whole, and the potential impact open source software could have on the way that industry dictates the market in its own interests.

One part of the IT industry, centred on Microsoft, are seeking to increase the proprietary control. This extends the wider move within corporations in general towards reinforcing monopoly control over the market through intellectual property rights. This process will restrict what has traditionally been achievable on general purpose computers.

The another part of the IT industry, including such companies as IBM, Sun and Hewlett Packard, is backing the development of Linux (although, some argue, this is really a tactic to fight the power of Microsoft). For example, Linux now runs many of the server computers connected to the Internet. From this perspective, backing Linux within the civil society sector is a positive contribution to

opening up and lowering the costs of access to information/communications technology.

With the exception of proprietary systems where the owners are fighting open alternatives, such as digital video, Linux and the hundreds of programs available for use with Linux are as good or, due to recent digital rights management restrictions, better than their Windows equivalents. The CLTC system can therefore be used to teach a wide range of computer skills.

The main issue that needs to be addressed as part of any training proposal is the cost of providing a tutor. Now that it's commissioning is complete, the Community-Linux Training Centre system is available for training workshops in computing/ICT. The CLTC system can only be supplied if it is accompanied by a Network-approved tutor. This is because those providing training will need to be familiar with the use of Linux client-server networks and the CLTC system – so that they can handle any problems that might arise during the use of the system. The CLTC system is also specifically configured – many of the server's security restrictions have been removed so that more in-depth teaching of network use and configuration can take place. Tutors therefore need to be aware of the configuration issues before embarking on work with the system.

How the project is maintained in the future has the largest influence on the costs charged for use of the equipment. The objective is to provide access to equipment and training, but cost is a barrier to access. This leads to two different outcomes in terms of equipment replacement:

If the assumption is that, after seeing the performance of the system, we try and obtain funding for a new system, then there is no certainty the project will continue. Our experience is that this type of project is problematic to fund.

If the assumption is that the replacement of the equipment is to be self-financing, providing the use of the equipment would be very expensive. With an operational life of 18 months, and a minimum anticipated availability of 40 days per year, the charge for use of the equipment would be around £40 per day. On top of this would be the running costs, costs of transport and the provision of a trainer for the use of the equipment. This could easily add £100 to £150 to the costs of a days hire – probably making the total cost in excess of £140 to £190 per day.

If we assume, as we hope, that donations to the maintenance of the training centre – both of new equipment as well as money – are used to keep the system running then costs are far more realistic. Perhaps £10 per day for the hire of the equipment – or between £110 and and £160 per day when including the provision of a trainer.

With the current four user terminals, which can accommodate two or three people at each terminal. The costs of an individual attending a four to six hour training workshop will be around £15 to £25 (plus any local costs). That cost is low compared to the services offered by other agencies – even local education establishments/evening courses. But unlike commercial training, the services offered by the Free Range Network will concentrate on community and campaign-related computer skills rather than business-related skills.