

# MULTIMEDIA TRAINING KIT

## INTRODUCTION TO OPEN SOURCE HANDOUT

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### *About this document*

These materials are part of the Multimedia Training Kit (MMTK). The MMTK provides an integrated set of multimedia training materials and resources to support community media, community multimedia centres, telecentres, and other initiatives using information and communications technologies (ICTs) to empower communities and support development work.

### *Copyright information*

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### *What is this guide?*

Open source software holds a great deal of potential for civil society organizations (CSOs). The most obvious benefit of open source software is that it is free to use, something that is attractive to organizations on a tight budget. However, it also offers much more – better security, increased flexibility and the ability to adapt software to meet local and organizational needs. And, open source software is based on the kind of collaborative and cooperative principles that many civil society organizations embrace.

**This document helps to unlock the potential of open source for civil society.** It provides an introduction to the topic, tackling questions like "what is open source?" and "how will it benefit my organization?"

Who is this document for? CSO managers responsible for the implementation of information technology (IT) systems – whether they are IT specialists or not. This document is not a detailed technical manual, but rather an organizational learning tool for providing insight on the potential of open source for CSOs.

## What is open source?

The term "open source" refers to software that can be freely redistributed, analysed and modified by anyone. Key characteristics of open source software include:

- **Free:** The software doesn't cost anything to obtain – although there are costs involved in configuring and maintaining it, just like with other software;
- **Open:** Because the software code is open and readable by anyone, it also means that the software can be modified by anyone with programming skills ... allowing for the translation of software into local languages or the addition of features needed by a particular group;
- **Collaborative:** Open source software draws its strength from the fact that people who improve, modify or customise programs must give it back to the open source community so others can benefit from their work.

How does a piece of software become open source? The people who created it decided to release it under a license such as the General Public License (GPL) that meets the criteria of the "open source definition" outlined above. It is often said that open source licensing is "viral" because people who modify a piece of software **must** release their modifications under the same open, free and collaborative conditions of the original software.<sup>i</sup>

### ***Open source: the electronic equivalent of generic drugs***

*Like the generic drugs that have transformed health care provision in the South, open source software is royalty and license free, and is therefore substantially cheaper to acquire than branded alternatives. The reason for this is that open source software is developed by volunteer collectives who are not seeking to profit from its sale.*

*In addition, just as the recipe for generic drugs is made public, so the source code or inner workings of open source software is accessible to the user. Any qualified person can see exactly how the software works and can easily make changes to the functionality.*

*- IICD Open Source in Africa Brief<sup>ii</sup>*

## Who's using open source?

More and more organizations in business and government are turning to open source. Large computer companies like IBM, Sun and Apple have embraced open source as a part of their software strategy. Governments have turned to open source both as a way to share software they create and as a way to lower costs, with the City of Munich switching all 14,000 of its computers to Linux, an open source operating system. And, of course, the large majority of computers used to run the Internet run open source tools, with 65% of web servers currently running the Apache web server.

The same trend is beginning to happen within civil society, especially in relation to server software and web applications. Civil society examples include:

- An estimated 90% of **Greenpeace** servers worldwide run Linux. Also, Greenpeace's global virtual private network is built on top of open source tools.<sup>iii</sup>
- **SchoolNet Namibia** uses all open source operating systems, e-mail clients and office applications tools to provide Internet access and training to the nation's schools.
- Human rights organizations around the world have begun to adopt the **Martus** software, an open source package that allows users to document incidents of abuse by creating bulletins, uploading them at the earliest opportunity, and storing them on servers located around the world.

- The **Association for Progressive Communications** uses open source for a wide variety of applications including its global network of web mirrors that are used to fight corporate and government censorship around the world.
- Heritage seed bank **Seeds of Diversity** uses open source database tools to store and management of horticultural data.<sup>iv</sup>
- **OneWorld.net** has adopted open source content management and online community systems to run its global network of portals.

These examples are only the tip of the iceberg. This is because the open source revolution is in some ways a quiet one. Most organizations just download open source and use it, not taking the time or effort to tell anyone about it. Yet, certainly, the numbers are growing.

## ***Why use open source?***

There has been a great deal of discussion of the benefits of open source for civil society of late. There have been workshops, papers, speeches and even manifestos expounding on the virtues of the open source / civil society connection. Amidst all of this, it may seem that open source is being presented as some sort of cure all. Certainly, it is not. Yet, used with an understanding of its limitations and challenges, open source software does present some clear benefits to civil society organizations:

- **Lower information technology costs:** Open source eliminates the need to pay for software licenses. Of course, this does not mean that you can eliminate information technology costs altogether – there is still a need for staff and equipment to make it all work. But open source can definitely lower overall costs, especially for organizations which need advanced servers, databases and web applications.
- **Flexible software solutions:** The fact that the code is "open" means that software can be modified to respond to needs not addressed by the original developer. The most obvious benefit of this responsiveness is the ability to translate software into local languages. However, it is also useful for web applications where it may be desirable to add on new features that accommodate the unique needs of civil society organizations.
- **Better security:** Mature open source applications – Linux, Apache, SendMail, OpenOffice.org – tend to be more secure than their proprietary counterparts. This is partly due to the fact that the code is open, allowing system administrators and others concerned with security to quickly identify problems and propose solutions to the lead software developers. Also, open source applications tend not to be targeted by people who make viruses. This kind of improved security is vital for civil society organizations who want keep unwanted "snoopers" out of their network and who cannot afford the downtime that comes with virus attacks.
- **Collaborative, cooperative values:** Open source is based on a set of collaborative and cooperative values. It assumes that we can create more useful tools by working together than we can by competing. Using open source is not only a way to support these values, but it can also provide a way to learn from them. The open source community presents a very practical and adaptable example of how organizations can work collaboratively.

It is interesting to note that civil society organizations are starting to turn to open source methods for more than just software. The "free, open, collaborative" model provides a useful approach for developing written content, multimedia, analytical and evaluation frameworks and many other "knowledge products". For example, this guide has been released under a Creative Commons open content license that encourages others to modify it as long as they release their modifications for free.

## **Terminology**

There are many debates in the computer world about whether to use the term "open source" or "free software", and currently a variety of terms and acronyms are being used to describe the concept discussed here: open source, free software, FOSS (free and open source software), FLOSS (free/libre and open source software). While many people feel strongly about which term is used, the core concepts being described are the same. "Open source", "FOSS" and "FLOSS" all refer to the idea of free, open and collaborative software. For the sake of simplicity we have just used the term "open source" in this guide'.

*Other related software license terms are defined in the Glossary component of this unit.*

## **The open source landscape**

When they hear the term "open source", many people immediately think of Linux – the free open source operating system that has become popular as a server platform over the past 10 years. However, there is much more to open source than just Linux. In fact, there are at least three distinct open source software "types" – server software, desktop applications and web applications. In order to understand the open source options for your organization, it is important to first understand these different categories of software.

### **Server software**

A server is a central computer that is used to store data and house applications that are shared by many different people. Typical uses of a server within a civil society organization include storing documents that need to be shared, hosting web pages and other online tools, providing e-mail gateways and housing information repositories and directories. Common server software components include: a network operating system, a database system, e-mail and web servers and programming tools.

It is in this area of server software tools that open source is both best known and most mature. In fact, the open source web server Apache is by far the most popular web server on the Internet, far surpassing similar software provided by Microsoft and others. The open source e-mail server SendMail is also leader in its field. Almost any software tool that you would want to run a server is available as open source, and most are packaged automatically with Linux distributions.

If setting up their own servers, civil society organizations should seriously consider open source software. The features and choices available are equal or better than commercial options – and the software is free. In contrast, commercial server software tends to be very expensive, much more so than commercial desktop software. Also, open source server software is often more secure than commercial equivalents.

#### ***Open source servers support Namibia's schools ...***

SchoolNet Namibia is non-profit provider of internet services, hardware and training to the nation's schools. It uses open source server tools to provide inexpensive LANs and ISP services. Examples include the Squirrel Mail web mail system and SuSe Linux operating system. Using these tools, 200 Namibian schools and institutions are connected with full feature internet services at around 60% cost savings from Microsoft alternatives.

### **Desktop applications**

When most people hear the word "software" they think of the e-mail and word processing applications on their own individual computer. These applications fall into the category of "desktop applications". Common desktop applications include e-mail clients, web browsers, accounting software, spreadsheets, and presentation tools.

The availability of open source options is much more patchy in the area of desktop applications than it is in the realm of server software. In certain areas – e-mail clients, web

browsers, instant messaging clients – there are good open source options that work on all operating systems including Windows, Macintosh and Linux. In other areas such as word processing and spreadsheets, good open source options such as OpenOffice.org are emerging. However, the fact that so many people are already using proprietary tools like Microsoft Office makes it difficult for many organizations to adopt these tools. And, there are some areas – graphic design tools and accounting software, for example – where good open source options exist only for Linux or not at all. It should be noted, however, that the area of desktop applications is changing and improving quickly, with major companies like IBM and Dell committed to making desktop Linux a reality.

Deciding whether or not an organization should adopt open source desktop software requires systematic needs analysis and the use of decision-support tools such as those included in the MMTK unit on "Choosing Open Source Software". However, there are some general rules and guidelines which can help you start thinking about open source. If starting from scratch or only deciding on software for a small group of users, open source tools are probably a good bet in many categories. However, if an organization already has an installed base of proprietary software, more caution should be used. The costs of switching from proprietary to open source on the desktop are not only technical – users must be trained and allowed time to adapt to changes. This is a major cost that people often overlook.

#### ***Greenpeace Manila switches to the open source desktop***

As a general rule, Greenpeace has decided to move to open source to save on license fees and avoid potential law suits that would be incurred from pirating proprietary software. The Greenpeace Manila office has taken this commitment all the way to the desktop, with almost all of their computers now running Red Hat Linux and OpenOffice.org. These computers are mainly used for word processing, e-mail, web browsing, spreadsheets and presentations. According to an article in *Linux Journal*, Greenpeace South East Asia says free software has saved the office "a lot of money" that naturally "is better spent on winning campaigns than paying for very expensive licenses".<sup>vi</sup>

## **Web applications**

The final type of software to consider is "web applications" – the kind of programs that are used to make a web site and other online platforms interactive. At the generic level, this includes tools such as web discussion forums, online surveys, database-driven content management systems, groupware and online collaboration tools, and mailing lists. In a civil society context, it might also include online campaign tools, petitions, volunteer recruitment systems and other software designed specifically for the kind of work that civil society organizations do.

As with server software, there are many mature and well-established open source web applications to pick from. In areas such as mailing lists the "best" options are fairly well established and making a decision is reasonably easy. However, in many areas – content management, e-newsletters, online campaigning – leading options have yet to emerge. So, while good options exist, it is sometimes difficult to know which option to choose. Our decision making framework below is designed to help with this.

In many ways, it is in the area of web applications where the idea of open source is most compelling for civil society organizations. Why? Because web sites need to be designed to reflect the "organizational logic" and strategic goals of the people who set them up. As a result, it is often desirable to modify or add a feature to a web application to match a particular organizational need. For example, an advocacy organization might want to add an online petition feature into its content management system. The open aspect of open source not only makes this possible ... but it also ensures that any changes made will always be open and changeable so that they can grow with an organization's needs.

### ***Canadian environmental groups create network of web sites with open source***

The Canadian Partnership for Children's Health and the Environment (CPCHE) – a coalition of 12 leading environmental groups – has used open source tools to create an interconnected network of NGO web sites. Using APC's open source ActionApps content management system, CPCHE has created a major portal site and upgraded six partner web sites so that content is easily managed by non-technical staff and automatically shared with the portal. Using open source tools meant that CPCHE did not have to buy expensive licenses for all of its partner sites. More importantly, the organization was able to use a small part of its budget to add new features to the ActionApps software such as the automatic distribution of articles by e-mail. With this approach, CPCHE got the software it needed and the whole ActionApps community received new features and upgrades.

## ***The benefits and challenges of open source***

As outlined below, the choice of which software to use for a particular application really should be driven by your specific needs and circumstances. However, there are a number of broad benefits and challenges that are common across the whole realm of open source. Understanding these principles will give you a general idea about whether or not open source is right for your organization.

### **Benefits of open source**

There are many good reasons to consider open source software for your organization. Some of these reasons include:

- Software and updates can be obtained at low or no cost. No royalties or license fees.
- Software can be customized to suit specific user needs (e.g. creating Linux interfaces for more than 10 different Indian languages at [indlinux.org](http://indlinux.org)<sup>vii</sup>).
- Upgrade development can be completed at a pace set by the users who pay for it.
- Much less likely to be dependent on a single software provider or trapped into long term software support contracts (no "lock in").
- Using open source makes you a part of a larger community that generally shares cooperative values.
- Software and documentation upgrade expenses can be distributed among groups.
- Creates an opportunity to hire small, local developers to improve the software rather than big foreign software publishers.
- Better security. Open source model allows more programmers to participate in the debugging of code. Specifically Linux and applications running on Linux have proven to be more reliable and secure than Windows equivalents. Also, less likely to have virus problems.<sup>viii</sup>
- Hardware flexibility. With some smart coding, Linux can be scaled to run on almost any kind of hardware. This is especially important for organizations who aim to use older computers.
- Bugs tend to get fixed more quickly.
- More likely to find and attract technical volunteers to work with open source applications.

- Usually use open standards that are gaining in adoption and most likely to be supported even more in the future (e.g. XML).
- Software creation is needs driven as opposed to commercially driven.
- Free and widely available support for popular applications (if you know where to look).

## **Common open source challenges**

There are, however, some challenges that one may face using open source. Some of these challenges include:

- Open source desktop applications are less common in some application categories. Many categories of software needs are yet to be supported by mature open source applications.
- Some open source software packages do not have the same level of documentation, training and support resources as their common equivalents.
- Making an organization-wide switch from proprietary software can be costly. Sometimes the costs outweigh the benefits.
- Many open source tools are "designed for programmers" – they are not user friendly and therefore have a heavy learning curve.
- There are still real costs with open source, specifically around configuration and support. Many people get caught thinking that using open source will be totally without costs.
- Sharing files with proprietary applications can be difficult. This is a serious problem in the area of desktop applications such as word processing ... although this is changing.

It is important to realize that as open source applications mature and the user community grows, many of these challenges may be overcome.

## ***Open source questions and answers***

The following is a collection of questions and answers about open source software. These questions are asked quite commonly when an organization is new to open source.

**Are any serious organizations using open source?** As outlined above, an increasing number of civil society organizations are adopting open source, especially for server and web applications. Also, the majority of the internet servers are running open source web and e-mail servers. Major companies like IBM, Sun, Apple, Netscape, HP and Oracle have adopted an open source model for at least part of their business.

**Will open source really save money for my organization?** Generally, yes. The elimination of license fees is a significant cost saving. However, it is important to consider all costs including training and support. Open source tools can sometimes be more expensive in these areas.

**Is open source software hard to use?** While many open source applications are designed by programmers for programmers, there are an increasing number of packages that are easy to use and have been designed with users in mind. This said, a review of usability should be included in the assessment of open source software options – just as it should with commercial software. If an application is hard to use, it may not be the right choice.

**Is open source software "buggy"?** The bugginess and stability of any released software (i.e. version 1.0 or above) is dependent on the quality of the programming and interface design. Both proprietary and open source applications have bugs, but only FLOSS software lets you and your community fix the bugs yourself. Also, open source projects tend to make it easier for users to report and discuss bugs with developers than commercial software companies do. For example, most open source projects include a mailing list where users and developers can exchange ideas.

**What are the support resources like for open source? Who do I call when something doesn't work?** Support resources vary in quality depending on the software package in question. "Mainstream" applications like operating systems and office suites tend to come with good electronic documentation. Support can usually be obtained for a fee from companies like Red Hat or from one of the many consulting companies that are emerging to support open source tools. When you pay for this kind of support, you should receive the same kind of service and accountability you would expect from a commercial provider. It is also worth noting that most open source projects have free support forums which can be surprisingly useful.

**Is open source sustainable as a business model?** Open source is growing in popularity, quality and innovative business models. Some of these business models are commercial, with consulting companies using open source as a way to lower overall project costs and win more contracts. Other business models are non-profit, with civil society organizations banding together in consortia to create a software application that will benefit the whole group.

**Isn't open source only Linux?** No. While the Linux operating system is the most well known and popular open source software, it is possible to find open source software to meet almost any computer need. This includes e-mail, word processing, spreadsheet and web browsers.

**Does open source software run on Windows?** Many people assume that you need to be running Linux to use open source tools. This is not the case. Many open source tools have been written to run on Windows, Macintosh and other platforms. This includes everything from the Apache web server, to the PHP scripting language, to OpenOffice.org.

**How many open source options are there? Is there open source software for my needs?** There are full and growing suites of quality open source applications covering a wide range of user needs on a full assortment of operating systems. Open source software is available for all popular operating systems, including Mac, Windows, Palm, and most prominently Linux, which itself is open source.

**Where do I find open source software?** Popular Linux distributions with bundled software suites are available on CD-ROM at better computer stores. Online you can find hundreds of applications at Freshmeat.net, SourceForge.net and OSdir.com.

**Does taking advantage of open source mean I have to work with people who speak in acronyms (a.k.a. "geeks")?** There are many information technology professionals and technical consultants that can help implement open source solutions while communicating in common everyday friendly language.

**Don't open source projects often get abandoned?** Just as many software businesses go out of business, so may some open source developers decide to leave a project. But unlike commercial software, open source code is always available for other groups to pick up and continue, as was the case for GIMP<sup>x</sup> and Apache<sup>x</sup>.

**Is open source software available on CD-ROM? Can I only download it off the internet?** Linux distributions (which include one or more suites of popular desktop applications) are available on CD. Outreach programs are distributing CD-Roms of open source applications. Both proprietary and open source software benefit from regular patches and updates downloaded off the internet. Linux and other open source operating systems can be completely downloaded from the internet.

**Are open source desktop applications compatible with common proprietary applications?** In some cases. StarOffice and OpenOffice.org generally do support MS Office formats; for example, you can open an MS Word document in OpenOffice.org Writer (though not vice versa). However, there may be discrepancies on advanced features and formatting. In practice, this means that simple documents are easily exchanged by MS Office and OpenOffice.org, but the exchange of more documents using advanced formatting and layout can be a problem.

## Endnotes

<sup>i</sup>There are actually many different licenses that can be used to create open source software. All that is required is that a license meet the criteria of the "open source definition" (see: [http://www.opensource.org/docs/definition\\_plain.php](http://www.opensource.org/docs/definition_plain.php)). A list of licenses meeting these criteria can be found online (see: <http://www.opensource.org/licenses/>).

<sup>ii</sup>Bruggink, Martin "Open Source in Africa: Towards Informed Decision-Making" International Institute for Communication and Development (IICD). (August 2003).

<http://www.ftpiicd.org/files/research/briefs/Brief7.pdf> (Nov 29, 2003)

<sup>iii</sup>Noronha, Fred. "Greenpeace Southeast Asia Moves to Free Software" *Linux Journal*.

<http://www.linuxjournal.com/article.php?sid=6598> (Nov 27, 2003)

<sup>iv</sup>"Open Source and the Voluntary Sector" Openflows, Networks Ltd.

<http://www.openflows.org/article.pl?sid=03/05/29/1349220> (Nov 27, 2003)

<sup>v</sup>See endnote I.

<sup>vi</sup>Noronha, Fred. "Greenpeace Southeast Asia Moves to Free Software" *Linux Journal*.

<http://www.linuxjournal.com/article.php?sid=6598> (Nov 27, 2003)

<sup>vii</sup>"Indian Linux Project – Language Teams." <http://www.indlinux.org/lang/> (Dec 1, 2003)

<sup>viii</sup>Wheeler, David A. "Why Open Source Software / Free Software (OSS/FS)? Look at the Numbers!" September 8, 2003. [http://www.dwheeler.com/oss\\_fs\\_why.html#reliability](http://www.dwheeler.com/oss_fs_why.html#reliability) (Dec 1, 2003)

<sup>ix</sup>"A Brief History of GIMP" <http://www.gimp.org/~sjburges/gimp-history.html> (Dec 1, 2003)

<sup>x</sup>Bowen, Rich. "Introduction to the Apache Server"

[http://apache.rcbowen.com/ApacheServer.html#Introduction\\_What\\_is\\_Apache](http://apache.rcbowen.com/ApacheServer.html#Introduction_What_is_Apache) (Dec 1, 2003)