

# Opportunities for Open Source Software Among Non-profit Organizations *Case Study: Philadelphia*

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*There are financial, operational and value incentives for non-profit organizations to adopt open-source software. Most non-profits, however, have failed to adopt or even consider the benefits of open-source solutions. These unrealized opportunities are due to knowledge gaps among strategic and technology decision makers. Education, however, is not enough. Non-profits require an infrastructure of support that includes education, emphasis on strategic planning, and technical support. In Philadelphia the non-profit technology assistance provider community is a solid gateway to begin building the awareness and technical knowledge.*

## **Introduction**

The non-profit sector is well behind the corporate world in its technology investments and infrastructure.<sup>1</sup> Non-profit organizations (NPOs) prioritize delivery of services, not technology implementation for its own sake. A strategic approach to technology deployment reveals that some small investments in technology can dramatically increase the delivery of services and improve the administrative capacity of an organization. This paper investigates strategic technology options that coincide with actual nonprofit needs: affordability, flexibility and effectiveness. In some cases open-source software (OSS) meets these needs, and even exceeds them. So why aren't more non-profits using open-source technologies? We can attribute the sluggish adoption of OSS among NPOs to information asymmetries in the software market. Since most non-profit workers have backgrounds in social services, organizational administration, policy, etc., the quiet nature of open source has not been heard through the well-financed marketing of proprietary software developers. Here we look for strategic opportunities to reduce the information gaps in this market. Building this market will provide non-profits with a more complete set of choices and empower them through technological self-determination.

## **Background on Open-Source And Proprietary Software**

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<sup>1</sup> "E-Commerce Report: Nonprofit groups are slowly learning the benefits – to services and fund-raising – of being wired." New York Times, May 26, 2003.

Open-source software refers to software whose source code is available to the public, or “open.” OSS is typically developed by an online community of programmers from anywhere in the world.<sup>2</sup> OSS differs from proprietary software in that it is not owned by anyone, does not require a fee to use, and may be altered and redistributed by anyone as long as they redistribute it under the same terms.<sup>3</sup> Apache, an open-source web server, holds 63% of the market across the top servers across all domains,<sup>4</sup> while Linux, an open-source operating system, only holds about 4% of the desktop market, according to one survey.<sup>5</sup> There are an estimated 18 million Linux users world-wide.<sup>6</sup>

Proprietary software refers to code that is privately owned and controlled. Microsoft Windows, for example, is developed privately by Microsoft employees, and is licensed to end users at a fee. While the open source community is often critical of Windows because of its closed standards, appearance rather than functional emphasis, and restrictive licensing arrangements, it does account for about 97% of the desktop market, according to another survey.<sup>7</sup> For this reason it is easy to find technical support and specialized applications. In these cases, a proprietary operating system is the logical choice for an NPO. Adoption of open source software does in some cases require initial knowledge investments, and some organizations cannot afford to make these transitions. We therefore encourage a long-term approach to technology budgeting and strategy that incorporates analysis of total cost of ownership and consumer freedom.

### **The Advantages of Open Source Software**

There are four simple reasons why a non-profit organization would use OSS: 1) Lower cost; 2) Licensing that permits freedom; 3) Community based technical support and development; 4) Alignment with mission and values.

While the initial costs of “free software” are obviously of benefit, the long term costs of maintaining an open-source network infrastructure are considerably less than that for proprietary solutions.<sup>8</sup> While migration and setup costs may seem initial barriers, the stability of Linux machines results in substantially lower support costs, which tend to be the largest area of technology outlays.

The licensing arrangement of OSS also permits full freedom to make strategic technology decisions that are independent of a corporate agenda or schedule. OSS is always available for download somewhere, and as long as an application is still useful, there is undoubtedly a user community to support it.

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2 See the Open Source Initiative, <http://www.opensource.org/>

3 See the GNU Project, <http://www.gnu.org/>

4 Netcraft Web Survey <http://news.netcraft.com/>

5 “Linux Faithful Still Envision OS on Desktop” <http://www.pcworld.com/news/article/0,aid,69126,00.asp>

6 See Linux International, <http://counter.li.org/>

7 [http://www.onestat.com/html/aboutus\\_pressbox10.html](http://www.onestat.com/html/aboutus_pressbox10.html)

8 IBM's Linux TCO Study for web servers: <http://www-1.ibm.com/linux/RFG-LinuxTCO-vFINAL-Jul2002.pdf> ; Case study in a non-profit: <http://www.lincproject.org/toolkit/linux>

This is in stark contrast to proprietary licensing arrangements such as those of Microsoft. Microsoft announced this year that it would not release a patch for a security hole in Windows NT<sup>9</sup>, raising questions about their commitment to support the server. In this case, an application with a significant user base must be abandoned by any user wanting an up-to-date and secure system. This is a decision made not by the user (who doesn't even have the option to pay someone for an update), or the user community (which does not have access to the source code and therefore cannot support the system itself), but by Microsoft.

Even special non-profit licensing arrangements are subject to stringent regulations. On the DiscounTech<sup>10</sup> website, for example, an agency may only make one purchase of Microsoft products every two years, and can request only 6 titles, some of which are limited in number. If an agency chooses Microsoft products, its leadership must decide on every piece of software to be used for the next two years. Since many Microsoft OS upgrades also require hardware upgrades, all of this money must be spent all at once and all without possibility of changing one's mind for two years. The question for non-profit decision makers: how much control do you want over your own technology strategy?

Technical support for OSS is often a community endeavor. Most open-source products have mailing lists with subscribers who range from first-time users to the application developers themselves. The culture of these lists is friendly and helpful to users and developers. There is also a precedent for local area Linux User Groups (LUGs)<sup>11</sup> supporting educational and non-profit open-source endeavors.<sup>12</sup> This model could also provide a powerful synergy for developers of NPO specific applications.

Finally, OSS products are themselves in accord with the values of many mission and value driven organizations. The Free Software Foundation (FSF), the progenitor of what is now the open-source community, is a self-described social movement.<sup>13</sup> The mission of "free software" is to provide information to anyone who wants it while fostering a sense of cooperation among users. The roots of OSS are in empowerment and egalitarianism. NPOs should ask themselves how this and proprietary philosophies compare to their own.

### **Obstacles to Adoption**

The first barrier to entry is that people just don't know OSS exists. Most NPOs can't afford full-time technical staff. Consequently, they have no exposure to the network of

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9 See <http://www.nwfusion.com/news/2003/0328msfailu.html>

10 See DiscounTech, <http://www.techsoup.org/DiscounTech/default.asp>

11 In Philadelphia see <http://www.phillylinux.org/> and <http://www.princessleia.com/phillychix/>

12 See K12Linux Project, <http://k12tsp.org/> and Portland Linux/Unix Group, <http://www.pdxlinux.org/>

13 FSF's Philosophy, <http://www.gnu.org/philosophy/free-software-for-freedom.html>

open-source users. Second, most non-profits don't think strategically about technology to begin with. Much needed discussions of total cost of ownership, licensing and upgrade freedom, etc., never occur in the planning room. Third, some open source products like Linux really do require some learning and education about something new, and the transition can be bumpy. Most of the available online material is geared toward a technical audience, and currently there are no local training opportunities.

### **National Opportunities**

We encourage three basic strategies for supporting OSS adoption among NPOs. The first is general education about OSS, free software, and GNU. Once administrators are aware of the existence of such products, understand the philosophy behind their creation and the importance of technological freedom, OSS will spread on its own merits. The second method is to encourage strategic technology planning among NPOs. One reason for the high market share of proprietary systems among NPOs is that decision makers do not think strategically about their technology options. The merits of OSS carry weight only when they are considered. Buying only what is in front of you has no strategic merit. The third strategy is to provide training and support facilities. That is, a technical knowledge infrastructure is required to support a technical infrastructure. To this end we advise a computer lab, training classes, online discussion and support (mailing list, references, documentation), and volunteer tech support from LUGs or corporate IT departments. The Non-Profit Open Source Initiative<sup>14</sup> has also provided some national level strategies for supporting OSS.

### **Local Initiatives**

Locally, Teaming for Technology (T4T) engaged in a public awareness and education campaign around OSS. T4T has sponsored two spotlights on OSS at TechXchange coalition meetings, and has begun distributing copies of the OpenCD<sup>15</sup> and the GNUWin<sup>16</sup> CD, both of which provide open-source applications for a Windows desktop and further information about OSS.

The Teaming for Technology Assistance Program<sup>17</sup> provides strategic technology consulting for Philadelphia non-profits. T4T sponsors training classes, strategic seminars and writes strategic technology plans for member agencies. Recently T4T has included open-source solutions in its technology recommendations.

Teaming for Technology in partnership with the Urban Technology Project<sup>18</sup> and Ace Technology Group,<sup>19</sup> is constructing an open-source computer lab with a terminal server,

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14 The Non-Profit Open Source Initiative, <http://www.nosi.net/>

15 The OpenCD Project, <http://www.theopencd.org/>

16 The GNUWin Project, <http://gnuwin.epfl.ch/en/index.html>

17 Teaming for Technology Assistance Program, <http://www.uwsepa.org/team4tech/assistance.htm>

18 The Urban Technology Project, <http://www.delawarevalley.org/urbantech/>

19 Ace Technology Group, <http://www.acetechgroup.com/>

thin clients, and stand-alone desktop machines. The lab will host training sessions for administrators and technology workers, emphasizing both the flexibility and cost merits of open-source software. The lab will be a first introduction to OSS for some, and a chance to build solid technical skills among NTAPS in order to implement and support OSS solutions among NPOs.

### **Early/Specific Technological Opportunities for Adoption**

A complete implementation of open source software looks like Linux on every desktop running all open source applications. In most cases, this is not a feasible deployment of technology. Linux on the desktop is impractical for some novice users, not all of the software needed by non-profits are available on Linux, and some people don't have the in-house technical knowledge to support an open source infrastructure. We do believe however, that there are points of entry which are both feasible and cost effective in the short term. Implementation of these projects will increase awareness of OSS and lay the groundwork for a more informed non-profit technology community in addition to supporting smarter technology choices.

- *File server* – Sharing files, forms, calendars and databases is daily practice in the NPO's office. Rather than discard an old Pentium II machine, an NPO might install Linux and use it as a file server. The SAMBA and Netatalk packages allows seamless file sharing among Linux, Windows and Macintosh environments. Such a server might be difficult to setup at first with no knowledge of Linux networking, but would require very little maintenance in the long run.
- *Internet application server* – Web based intranet, collaboration/content management system, internal database are all common features of the modern, technically equipped office. Again, an older hardware configuration could easily support an Apache web server, a MySQL or PostgreSQL database server, and any number of OSS content management or collaboration portals.
- *Terminal server and thin clients* – Many community organizations run a computer lab for after school programs, job trainings, or classroom activities. When funding is limited, brand new machines with the latest software packages are scarce. A terminal server provides an affordable solution in terms of hardware and maintenance. One powerful server can run a lab of 486/P1 client machines. The configuration requires updates only to the server, and broken (due chocolate milk, paint, theft, etc.) clients are easily replaced.
- *Internet Appliances* – NPOs run LANs just like any other office and will from time to time need a firewall, a router, or a virtual private network (VPN). All of these are available from proprietary hardware manufacturers, but their function is served by a Pentium I/II in the corner running Mandrake's Single Network Firewall, the iptables firewall package, or the PopTop VPN server.

Each of these are realistic and practicable open-source solutions for NPOs. They are effective cost-saving alternatives to proprietary options, and will set a good example in

the community for the benefits of OSS. Educating NTAPs about these solutions will provide an entryway to future awareness.

### **A Strategic Approach**

While there are numerous technological needs that could be filled by open source solutions, the infrastructure to implement and maintain them are not yet in place. Most non-profit organizations, for example, do not have the in-house knowledge or skills to set up and maintain a Linux file server, let alone recognize one even if they saw it. For this reason we have approached the thriving non-profit technology assistance provider (NTAP) community in Philadelphia. This is a group of tech savvy non-profits and individuals who provide technical assistance to the larger non-profit community. The NTAPs are in a position to make suggestions regarding best technology practices, implement new technology projects, and support and maintain ongoing programs. They are the logical choice for the beginnings of open source adoption.

Most NTAPs are familiar with the concept of open source, but technical skills and understanding are below adequate for actual implementation and support. We are focusing our first efforts, therefore, on educating the NTAP community, the hubs of non-profit technology, through whom a distributed open source movement will percolate. This effort is comprised of 1) General education regarding open source, GNU and Linux; 2) Technical familiarity and eventual competency with open source tools; and 3) Resources for support and further education.

### **Conclusion and Future Work**

In summary, there exists an array of incentives for non-profit organizations to adopt open source technologies. This adoption has been slower than anticipated, however, because of knowledge gaps among both the strategic and technical decision makers. Philadelphia is in a unique position to support open source adoption because of its burgeoning and well organized NTAP community. An educated NTAP community can provide the strategic and technical infrastructure to promote the successful adoption and use of open source technologies among NPOs. To this end we suggest first educating the NTAP community and empowering it to support other non-profits in OSS projects.

Future work will benefit from:

- technical assistance and training from the LUG and corporate IT communities;
- support and education among NTAPs for OSS and strategic technology planning;
- documented local case studies and TCO analyses;
- facilities for demonstration and training;
- step-by-step documentation for above mentioned technology projects with new users as the intended audience;
- educational and strategic seminars to understand the importance of technological freedom.