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Making Advanced Technology Work for Community-Serving Organizations: The Potential Impact of OSS and ASPs

This document is a *joint statement* resulting from a Workshop held in Ann Arbor, Michigan on May 12-13, 2000. The thirty participants represented a wide variety of backgrounds, including nonprofit operations and technology use, Open Source Software development, Application Service Providing, social investing, and research on information technology and on nonprofit organizations.

Our discussions have deepened our conviction that two new developments in the information technology sector, Open Source Software and Application Service Provision, offer enormous potential benefits to community-serving organizations. Open Source Software could allow organizations with similar needs to share their limited software development resources and provide opportunities for contributions by skilled programmers. Application Service Provision could allow for more reliable and lower cost information technology infrastructures through economies of scale, identification and aggregation of common needs, and effective outsourcing of development, maintenance and support. Each has the potential to increase the effectiveness of community-serving organizations. Together they also offer important synergies.

For this potential to be realized, prompt social investment by foundations, corporations, and skilled volunteers is required. In the remainder of this statement we lay out our views on:

- why these developments are especially promising for the nonprofit sector to which we are deeply committed;
- the potential for dramatic restructuring of information technology use, especially in smaller, community-serving organizations;
- the barriers that must be overcome if that potential is to be achieved; and
- the most promising activities and experiments that should now be undertaken.

Our joint statement is a call to action. Many of those who attended the meeting are already mobilizing their own resources to make a start on experiments involving nonprofits and ASPs or open source software. Some of their efforts are detailed in an appendix to this document. But their efforts will not suffice. We are therefore distributing this joint statement as widely as possible in order to attract the energy and additional ideas of a crucial group of citizens: those who are intent

on harnessing the information revolution to the benefit of our communities by bringing more effective technology to the organizations that serve and build those communities.

THE PROMISE OF APPLICATION SERVICE PROVISION AND OPEN SOURCE SOFTWARE

As the ASP and OSS concepts may not be familiar to all, we give very brief introductions here. Much greater detail is available via our Workshop website, <http://www.communitytechnology.org/asp-oss>.

Application Service Providers (ASPs) are a new class of Internet organizations that deliver application hosting services to their customers. This means that software and data reside with the providers, and hence off of the customers' premises. They are accessed via network connections. Software applications are treated as a service and are typically paid for on a subscription or per use basis.

The great advantage offered by ASPs is that smaller organizations that cannot afford the costs of a sophisticated technology platform can have access to high-quality applications that were previously out of reach. Specialized databases, advanced tools for the support of group projects, state of the art visualization programs, and other such applications can be used by organizations that could not by themselves afford the hardware, software, and systems staff such applications now require. The pooling together of many small customers at the ASP achieves the necessary scale.

The ASP sector is growing rapidly because this arrangement can economically meet the needs of many small businesses -- and in some cases larger businesses that wish to outsource portions of their computing infrastructure that are not central to their mission. Since many small nonprofits resemble small businesses to some degree, we can foresee that newly emerging ASPs will be able to meet some needs of community-serving organizations. The participants at our Workshop were heartened by the implication that the private market will offer many such services without further intervention being required.

However, our discussions made clear that many needs particular to the nonprofit world are unlikely to be fully met by the private market. For example, the central missions of community-serving agencies involve activities such as client management, advocacy mobilization, and donor relationship management. There are distinctive record keeping and reporting requirements associated with nonprofit status and with specialized categorical program funding.

ASPs offering these kinds of specialized applications are unlikely to appear solely due to the pull of a latent private market niche. The potential customers are dispersed, lack collective articulation of their software needs, and are generally under-funded. Appropriate software is either expensive or nonexistent. These barriers, and others detailed below, will have to be overcome if the benefits of

Application Service Providing are to extend into the missions of community-serving organizations. In an ASP marketplace organized completely around the needs of small businesses, the central needs of community-serving organizations may never be fully met.

Open Source Software development has become widely known by virtue of the success of the Linux operating system. However, this approach to software development has much broader implications. For example, many other utilities that keep the Internet humming, such as sendmail and the Apache Web Server have also been produced and maintained with the open source approach. Although these projects involve very large numbers of volunteer collaborators, the resulting software in these cases is of unusually high quality and reliability.

The essence of the approach is an agreement by those creating a computer program to make available without charge the human-readable version of its instructions (the "source code"). There are many forms of licensing agreement that guarantee this in slightly varying ways, but they all have the effect of making it easy and inexpensive for others to use and to modify the program. Other programmers, who may be employees of distant organizations using the program, or even unpaid volunteers, can easily find defects, or identify possible new functions. They can create and test them, and can contribute them to a shared base of code that grows rapidly in scope and reliability.

The open source community has a distinctive culture that is quite congenial to the purposes of community-serving organizations. By its nature, open source development is a process of contributing and sharing. The program being developed belongs to its community of users, not to individual programmers, and there is a strong belief in the rightness of this arrangement.

However, the open source community recognizes that even "free" software projects die without a continuing flow of resources, and so it approves of the active cultivation of resource flows around the software. For example, expert programmers make their livings working for companies that rely on the open source programs; and companies sell their expertise in supporting or integrating such programs.

The OSS culture resonates with that of many advocacy, arts, and service delivery organizations that are strongly motivated to serve the welfare of their communities but also actively cultivate resources that will allow them to make their activities as widely accessible as possible.

It is thus natural, on both technical and cultural grounds, to ask whether open source collaboration could be used to develop software that meets the distinctive needs of nonprofit organizations. We believe this is an exciting and viable possibility. As with ASPs, however, the full potential will not emerge without some well-focused interventions. We discuss a number of issues that require attention below, but one should be mentioned here. Our review of successful Open Source Software projects indicates that most have been collaborations of developers who were also users of the program being developed. This tight linkage between detecting problems and generating

solutions has been a major asset of open source work. It will not generally be present in nonprofit organizations, where it will be rare that end users of a program will contribute improvements to its code.

An important advance occurred in the thinking of our Workshop as we realized that ASPs specifically serving nonprofits *could* be highly skilled participants in open source development. Using the knowledge they gained from directly serving nonprofits, they could articulate needs of nonprofits in open source development processes and contribute code helping to meet those needs. They could also provide representation of nonprofit needs in technical standards discussions (such as data-interchange standards), and in aggregation of purchasing power for specialized resources and technology.

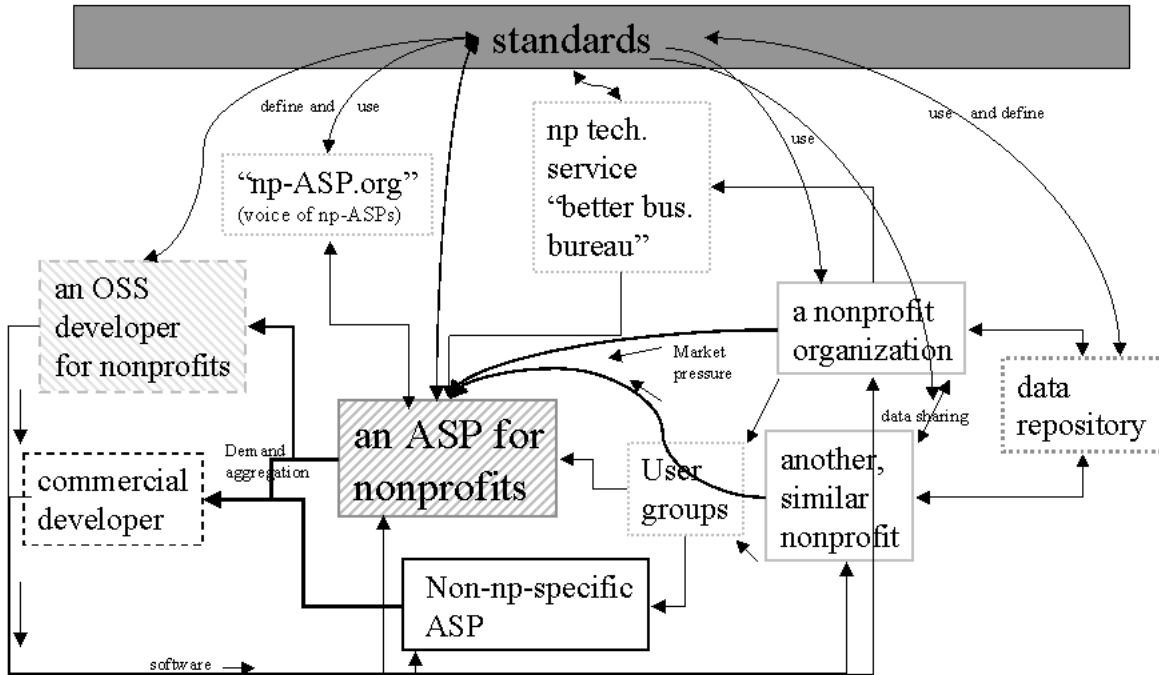
Following this line of reasoning led the Workshop to envision a possible "organizational architecture" for nonprofit information technology. Our discussions of particular ASP business models or OSS project possibilities expanded to encompass a broader conception of the array of organizations and activities that collectively create the information technology environment of nonprofit action. We asked ourselves how that picture could be changed by skillful development of the possibilities presented by ASPs and OSS. We believe that there is a promising opportunity for dramatic change in the nonprofit information technology environment.

THE POTENTIAL FOR RESTRUCTURING NONPROFIT INFORMATION TECHNOLOGY DEVELOPMENT AND USE

Together ASPs and OSS may offer a productive new approach to overcoming the inherent small scale of most community-focused organizations. ASPs allow many organizations to band together to share technology infrastructure that none can individually afford. Open source development allows many organizations to share in the development of quality software that advances their missions and meets their common needs.

If information technology flowing to nonprofit organizations is to be more specialized than shrink-wrapped office tools, then a complex network of supporting organizations, resources, and activities must come into being. As the attached Figure indicates, the system requires an intricate interplay among technology users in community-serving organizations and a host of other actors: software developers (commercial, nonprofit, and volunteer), intermediaries (consultants, user groups, standards bodies), and infrastructure providers (telecommunications providers, ASPs, hardware and software vendors, technology support firms). Our Figure is not offered as a complete picture of the future landscape but rather as a scenario indicating the considerable complexity and also highlighting some of the most important interactions.

ACT Workshop Figure: Possible elements of future nonprofit technology environment



The keystone of this possible system is the ASP specifically focused on nonprofits. That is the novel type of organization that will have the incentive and the capability to serve and articulate nonprofit needs not being met by the regular market. If such entities become established in the nonprofit technology world, they can produce numerous important benefits.

An ASP delivering case-management database services to homeless agencies, for example, might have hundreds of customer agencies. The ASP's experience through customization contracts and in meeting help requests from its member agencies would allow it to articulate generic needs for software improvements and participate in open source development of the applications it provides to its customers. It would also be able to represent the requirements of homeless agencies in issues such as data-sharing standards (e.g., the community-wide "continuum of care" reporting required by the Department of Housing and Urban Development). Where customer agencies give appropriate consent, the data holdings of such an ASP could support far more sophisticated studies of the homeless problem than have so far been possible.

ASPs working with specific types of nonprofits that use open source software can also play a vital role in unleashing the energies of the information professionals. There are many skilled people in the information world who share a concern with the mission of particular agencies, who are passionate, e.g., about an environmental issue, about teaching literacy, combating homelessness, or

increasing voter participation. Whatever their interests in their communities, ASPs supporting open source development for the organizations they care about can provide information professionals with a channel for contributing their expertise.

As our Figure indicates, a variety of activities and organizational types must come into being for this promising scenario to become real. In full function there would be users groups, and multiple Open Source Software developers alongside the commercial developers and business-oriented ASPs that we take as a given. There would be standards bodies engaged with determining the best ways to represent shareable data and perhaps also best practices. There should be organizations designed to help rate the performance of ASPs and other technology sources (what we have called "technology better business bureaus" that could also deploy sophisticated collaborative filtering technologies analogous to those used for book and music ratings at Amazon.com). There might be an umbrella organization of the nonprofit-oriented ASPs, collecting and articulating their concerns and initiatives.

These elements are roughly parallel to the rapid elaboration of organizational infrastructure in for-profit sectors that make serious use of information technology. Each of them adds to the power that advanced information technology can bring to a sector by shaping the technology's growth over an extended period of time. The key to this happening among community-serving organizations is the development of a successful model (or, more likely, models) of the nonprofit-focused Application Service Provider. Such an organization can meet and focus the needs of community nonprofits that are highly valuable, but lack the capacities needed to develop on their own the requisite vision, resources and expertise.

BARRIERS THAT MUST BE OVERCOME

If something resembling our scenario is to unfold, there are numerous problems to be confronted and resolved. To this point we have focused our statement primarily on the promise of ASPs and OSS, but our Workshop brought many concerns to light. A conversation of several days among thirty people cannot be rendered briefly, but we can provide an illustrative list of examples.

- Most community-serving organizations lack awareness of either ASPs or OSS, and hence have no vision as yet of the possibilities they present.
- The needs of practitioners that should be reflected in mission-relevant software are often difficult to articulate. Repeated cycles of development and testing are required to bring software into alignment with actual practice.
- In the nonprofit world, as mentioned earlier, end-users of software will rarely be equipped to program improvements themselves. A tight relationship will have to exist between end-users and others with the technical skills required to author improvements.
- Many agencies have deep fears about the security of vital data located off their premises. In some cases these are even legal restrictions, but more commonly they are worries about the delegation of control and responsibility to another organization.

- Many nonprofits also fear being "stranded" if the ASP fails.
- The ASP model requires affordable high bandwidth to connect customer organizations to service providers. Such high-speed networking (e.g., via digital subscriber telephone lines or cable modems) is not yet available in many regions, especially outside major cities, and is complex, unreliable or high-priced in some regions where it is available.
- Standards are absent for beneficial sharing of data and the great potential value of such standards is under-appreciated by many community-serving organizations.
- An attractive business model for many ASPs is a for-profit structure in which total income from service fees significantly exceeds costs. Some nonprofit organizations may be reluctant to contract with such for-profit providers, even if the software being provided is open source.
- Open source projects have no corporate single entity that can be held responsible for an application. Some organizations may fear that this will mean an increased probability of being left without future upgrades or help services.
- Much open source software has been produced with an assumption of technically adept users, but nonprofits need applications that are nearly "transparent" in use as training costs are an enormous and frequently recurring burden.
- The incentives for sharing solutions among nonprofit organizations have traditionally been weak, and the diffusion of innovations in the sector is poorly understood; these conditions make the job of appropriate social investment harder.

The list of barriers, like the Figure, provide ample evidence of the complexity of the situation. Yet we are optimistic. Many of the barriers will be the object of serious attack by the private market. Low-cost high speed connectivity, for example, will be widely promoted by various cable and telephone companies.

Fears of data insecurity may yield to experience as have fears of Internet credit card use. (This may be assisted by institutional developments such as certificate authorities, encryption key repositories, clear codes of service provider ethics, and reliable processes of professional certification.) There is growing awareness that many open source projects live as long as, or longer than, companies, and that many generate quick and high quality help -- often for free.

Many of the problems that involve awareness can be addressed with dissemination of relevant information and with results from targeted research. Other problems require more extensive efforts to implement and evaluate promising options. We turn now to a list of projects that we hope will soon begin.

ACTIVITIES AND EXPERIMENTS THAT SHOULD NOW BE UNDERTAKEN

1. Our argument has been that nonprofit-focused ASPs can be the key to unleashing more productive use of advanced technology to further the missions of community-serving organizations. The natural dynamics of the private market will provide only weak forces for the creation of ASPs dealing centrally with nonprofit needs. We, therefore, strongly recommend that foundations, public-spirited corporations, and interested private individuals begin investing in projects intended to demonstrate the feasibility of such providers. We believe that visible, well-measured demonstrations will suffice to jump-start the proliferation of nonprofit-focused ASPs. We believe this will be much harder to do once many nonprofits have moved to outsourcing their computing to ASPs oriented to small businesses.

2. As we have mentioned, the crucial barrier to open source development for nonprofit needs seems to us to be the disjunction of user experience from programmer skills. We believe the nonprofit-focused ASP can solve that problem by aggregating the demands of its customers. And we see numerous areas where open source development could aid the effectiveness of community-serving organizations. Therefore, it is imperative that experiments begin now with the combination of open source development of software targeted on nonprofit needs and delivery of that software via nonprofit-focused ASPs.

3. We expect that a number of ASP and OSS projects will be funded as various social investors make analyses and receive funding requests along the lines of the scenario we report above. A consortium of interested social investors could improve the yield on these investments by disseminating information about other experiments, about technical issues that may arise in proposals, and about evaluation methods and performance metrics that might be employed to document the actual effects of the projects. Some funders -- or a consortium -- might even establish metrics for the performance of projects and require that they be made available to others.

4. It also seems important that some organization take on the responsibility for monitoring the experiments that do occur in order to accumulate lessons learned. An array of methods seems relevant here: carefully instrumenting some projects in order to determine their impacts on the missions of the community-serving organizations that use them; surveying service deliverers, developers, and users; convening gatherings of such groups; maintaining a website repository of relevant reports and discussions; collecting and sponsoring related research on information flows and diffusion of innovations in the nonprofit sector...

5. Our Workshop discussions returned repeatedly to the key role of standards in the development of a new nonprofit information environment. More and better standards - especially for the description of data and procedures - will provide clear targets for open source development, bases for guaranteeing interoperability of multiple applications, and possibilities for valuable data-sharing and lower cost research. We see particular opportunities to exploit the widespread deployment of eXtensible Markup Language (XML) along these lines, but there are many other possibilities as well. Investment is required both in standards development processes, and in demonstration projects that make visible the value that standards can supply.

We do not present our joint statement in the belief that it solves all the problems. Quite the contrary, the wonderful range of possibilities opening before us will clearly involve many issues that we have not anticipated or that we have noticed but cannot now resolve. Should ASPs for nonprofits themselves be nonprofit or for-profit? Can open source development be made to work for database applications as well as it has worked for systems software? Can a useful body be created to facilitate social learning about ASP and OSS in the nonprofit world?

Our hope that many new ideas and experiments will be stimulated by the outlines we have sketched for a new structure of nonprofit information technology development and execution. In particular, we believe that these trends provide an excellent opportunity for collaboration among many kinds of social investors: traditional foundations with experience in program design, new philanthropists with new ideas about forms of social investment and metrics for success, as well as skilled volunteers from information technology industries. To influence the unfolding of the trends there need to be deft and swift interventions. But the costs appear manageable, and the potential benefit is enormous.

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APPENDIX

Activities announced during or following the Ann Arbor Workshop to further the vision of the Joint Statement:

Workshop Website: <http://communitytechnology.org/asp-oss/>

Planned program of presentations to representatives of foundations not at Workshop by members of Kellogg, Mott, and Omidyar Foundations

Planned workshop sponsored by Red Hat Center for US Senators and senior staff on educational applications of open source. An international conference on open source in 2001.

TechSoup (a nonprofit tech portal developed by CompuMentor that includes ASP & OSS issues)

Business plan information for a nonprofit ASP for nonprofits:

- "ChangeFrame" (under development by NPower.org, Seattle, Washington)

Sites for Experimentation and Research:

- Npower.org
- SocialEcology.com
- communityaccess.net.
- Nonprofit Tech

Open Source Software development tools and project consulting on OSS for nonprofits:

- Collab.net

Nonprofit Open Source Software assets:

- PowerContacts (open source, available by request, full release schedule 1 Sept 00)
- PowerContacts Pro (open source, available by request, full release schedule 1 Sept 00)
- smallGRANTS (open source, available by request, full release schedule 1 Sept 00)
- ebase version 3.0 (www.ebase.org) will be developed as an OS application deployable on any number of ASPs that serve the nonprofit market. Priority is on developing relationships with ASP partners to position ebase as relationship management software for member- and volunteer-based social cause organizations, so that it can be integrated with other ASP service offerings. Preference will be given to working with OSS applications serving this market.
- AWARDS, a Web-based, enterprise level application that performs all organizational functions from client tracking to Email to property management.

Potential nonprofit XML DTD repository:

- gilbert.org
- tech-library.org