Disaster relief and free software

Commercial software distribution and development in perspective

Aaron E. Klemm

Technical needs in the immediate aftermath of the South Asian tsunami disaster of 2004 put software development and distribution methods into sharp focus for relief groups. When volunteers were immediately available to help coordinate relief efforts, access to software slowed them down. It was evident that traditional commercial software distribution had broken down. It was untenable.

The free software distribution model, on the other hand, requires absolutely no modification to make tools available when people need them. Free software tools such as available in a typical GNU/Linux distribution do not have to suspend their normal distribution and development methodologies to help volunteers who need software immediately.

In Sri Lanka after the tsunami, one blogger in particular, along with volunteers from several government agencies and software advocacy groups, worked through creating a new project to coordinate relief efforts. Along the way, a series of lessons for free software proponents became obvious. Not obvious in their novelty, but obvious because of the immediacy of such a disaster. Standard business procedure was made to look silly in the face of the simple need for a software tool to organize relief requests and resources.

Lessons and roadblocks

The blogger was Sanjiva Weerawarana who took the lead just days after the tsunami to bring together software developers in coordination with Sri Lankan government groups to create Sahana, a software package designed to provide a comprehensive and extensible disaster relief system released under the GNU General Public License (GPL).

The 2004 tsunami. Photo by Sofwathulla Mohamed

The Center for National Operations in Sri Lanka was set up to coordinate relief efforts for the country. They were immediately overwhelmed with relief requests and did not have even a simple system to organize the information coming in.

Weerawarana, a free software advocate in Sri Lanka and a recently elected member of the Open Source Initiative's board of directors, was in a unique position to help launch a disaster relief software effort that could become a global

Free software

resource for similar future disasters. Sahana's primary function is to coordinate relief needs with relief resources across the many organizations providing aid to tsunami victims.

The implied lessons in the tsunami stories below are both philosophical and practical. To begin with, Richard Stallman's moralistic idea that free software "respects the freedom of the person using it" is easier to understand in this case than it ever can be inside the IT department of an average business. The moralistic side of the argument may never take hold in business, but in disaster relief it is obvious and can be the starting point for pragmatically opening people to the ideals of free software.

A practical lesson is that building a coordinated disaster relief software system requires cooperation between both businesses and governments in order to be truly helpful to disaster victims. Free software has been instrumental in forcing businesses to adhere to standards. Think of HTTP and the Apache web server as a prime example. Free software may be able to do something similar to encourage governments to share software development resources and disaster data.

In a specific incident of trying to acquire Microsoft Windows licenses to use on donated computers, Weerawarana and his colleagues learned that user's unfamiliarity with some free software products is still a severe impediment to its uptake. In this case, even in a time a crisis, the volunteer's comfort with Windows trumped the sanity of simply downloading a fully-functional GNU/Linux distribution.

> "Unfortunately in the meantime [a] couple of other folks contacted the local [Microsoft] people and convinced them that they had a PR disaster in their hand if these licenses were not given," Weerawarana wrote.

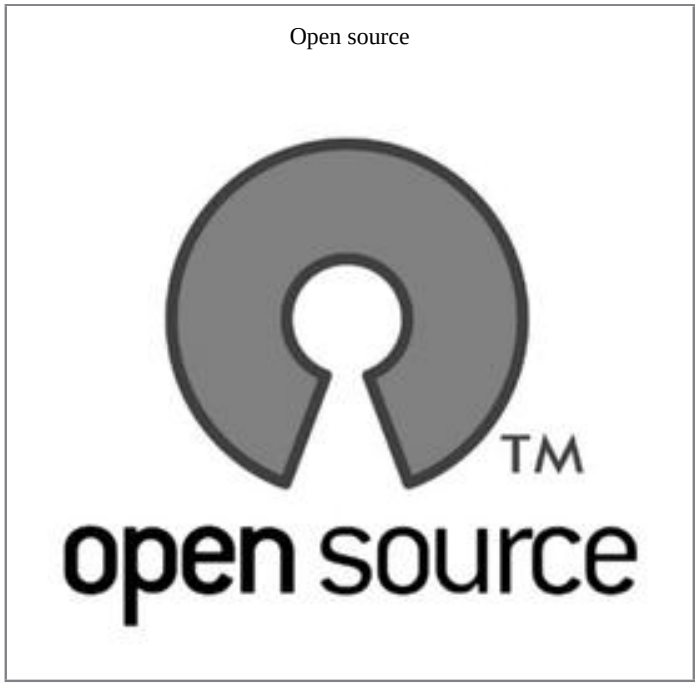
Finally, if Sahana is a demonstrable success, it shows a clear path for volunteers to propagate free software deployments in disaster relief functions. The Sahana story shows how free software is good for society and provides governments an efficient path to acquire useful disaster relief software. If all of this is true, the benefits easily translate to commercial software distribution.

A licensing debacle

Weerawarana blogged in detail about his software efforts following the 2004 tsunami. One of the first conflicts he encountered was obtaining licenses for donated hardware.

According to Weerawarana, IBM donated 15 laptops to LSF, but Microsoft failed to provide free licenses for Windows XP. The hardware showed up with PC-DOS installed

Open source



instead which was not going to be terribly useful to the volunteers who were ready to use the equipment.

The laptops were used for gathering data for Sahana. Volunteers took the laptops into affected areas to gather data about affected people, damage reports, and relief resources.

> "Well they again refused a few days ago and I had just sent a note to the local LUG guys to come and install a Linux distro which we can give to normal people (maybe with a bit of help)."

Anyone who has struggled with licensing rights on their home computer with Windows XP and contrasted it with the ease and encouragement GNU/Linux distributions offer—to simply download, install, and go without worry—will shake their head at this story.

Exposure makes the philosophy apparent

In the end, free software did not win the day on these donated laptops. Microsoft relented and the LSF used Windows XP because the users were more immediately familiar with it. It is difficult to imagine this would have been the case if Apple computers, for example, had been donated. As GNU/Linux desktops gain exposure, this type of situation will be less likely.

Imagine if these fifteen laptops were handed to GNU/Linux users. They would have immediately downloaded their preferred distribution and began working without any thought of securing a license—that concept is not part of using free software. No time would have been lost to bureaucracy, legal issues, and public relations.

Now imagine the volunteers were just as comfortable with GNU/Linux desktops as any other—a situation we can expect in the future—they may have paused for a moment to consider how ridiculous it is to wait for a software license before starting their critical work.

When their lives returned to normal and they were back at their day jobs, perhaps the inefficiency of waiting for a license at work would be more apparent as well. In a time of emergency, software users see that commercial distribution is a contrived process designed to protect the "owners" of code.

Weerawarana is a founding member of the Lanka Software Foundation (http://www.opensource.lk)

Get free software in the door

A common story about the usage of free software in businesses is that it simply finds its way onto desktops and servers. IT staff need quick fixes and they know nothing is quicker than grabbing free software solutions. Users may find that Firefox treats them better at home so they install it at work and so on.

While it would be nice to see more top-down decisions being made in favor of free software, this under-the-door phenomenon has been working well enough. In fact, once free software is discovered to be working so well it will be hard to justify removing it. It proves itself in action.

The same thing can happen in disaster relief. Programmers looking for useful areas to donate their time can focus at the community level. Solving problems that affect people's lives will catch the eye of community and emergency response organizations.

Each time a group can solve civic problems like the Sahana volunteers have done, they will have demonstrated the viability of free software and slipped it in the door just as happens in IT departments.

The difference, of course, is that solving a civic problem has a greater impact than simply solving a technical problem in a server room. Leveraging these opportunities could be a boon for free software.

Facilitating cooperation

In the most abstract sense, Sahana is designed to collect and manage data. Commercial data management systems often come crippled with a proprietary storage mechanism (or even license agreements that restrict how convenient the product is) so that while the software manages the data well, the vendor manages to determine how the data can be accessed.

The result is that such systems are sold with the expectation that an entire group of people (a company) will use

the same server (Microsoft Exchange, for example) and the same client (Outlook, for example). When a company decides to use a hegemonic system like this, they know (one would hope) that they are committing to it exclusively.

Unfortunately, the requirement that entire groups of people adhere to one server and one client fails when cooperation is needed across several businesses, governments, and relief agencies that are trying to coordinate relief efforts.

Sahana provides an open way to input and retrieve victim data. It's open because the source code is available. Commercial companies could not open up their product to allow multiple client access even if it would help relief efforts. They are selling a crippled data model that only works inside a single business and offers no technical advantages.

Sahana is a web-based system for entering and retrieving the relief effort data. As information is entered into the system by Sri Lankan volunteers about Sri Lankan issues, that information can be available on the web. Neighboring countries are able to access, cross-reference, and add pertinent data for overlapping efforts.

A simple government demand can ensure business resources

The Sahana story showed how free software can be immediately useful. The fact that any volunteer with the right skill can jump in and start working on a project makes the free software process nimble enough to be the most efficient method.

If Sahana increases government interest in free software and programmers continue to aim their efforts at these critical areas, governments can be encouraged to demand open development of disaster relief software.

Rather than take what a business offers—say a proprietary information management system—and work as best as they can with it, governments will have an easier option. They will be able to ask businesses for time and expertise rather than restrictive software tools whose usefulness is questionable at best.

Businesses that truly want to help a technology effort following a disaster can assign programmers to open development tasks. Rather than give a resource that is partially useful, businesses have an opportunity to provide 100% useful resources to those in need.

Weerawarana contacted UN workers

Conclusion

When computer users discover free software, it is rarely under such dire circumstances as a tsunami. Even so, the software demonstrates the principles under which it is developed, by being stable, useful, and configurable. In crisis situations, the argument for free software is self-evident. The Sahana story is one of better aid response for victims and opportunities for free software advocates to demonstrate a better way to distribute and develop software.

Resources

Sanjiva Weerawarana's blog (http://www.bloglines.com/blog/sanjiva)

Sahana project page (http://sahana.sourceforge.net/)

Copyright information

About the author

Aaron E. Klemm is a free software advocate and the co-founder of Mathforge.net. He lives and works in Seattle.