



NCTI 2010 Technology Innovators Conference

The Important Role of Open Source Technologies for Education

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(Moderator)

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Summary: The panel discussed pros and cons of various models of open source.

Discussion

Annuska Perkins

- Open source—users have access to code/source materials provided. Various models of open source. Panel will delve into pros and cons of different styles. Whether or not running assistive tech device, same communication needs to be happening. UIA specification available. Microsoft created a model where the recipe is made public. Interoperability between devices and systems. Connected devices that are accessible; delivered through the [cloud](#).
- Open source challenges: everything isn't available as open source. Sustainability of product—once something is on the market, developers needed to keep product up to date. How do you create incentives for the development community to make products sustainable? Developers want the ability to add features and make it their own. Microsoft provides infrastructure and allows developers to add on features. Not just what one company puts on the market but what the developer ecosystem can produce.

Jim Fruchterman

- Open doesn't mean free. Costs are not in the license, but in training and other uses. Open = a sense of freedom. Freedom to redistribute. Freedom to reuse/repurpose. Freedom to revise. Freedom to remix. Altogether approach to open source is opposite of approaching something as proprietary. Open source is a big issue in visual impairment—most e-Book folks are worried about piracy, but accessibility suffers.
- Open source provides the freedom to revise software. We can grab it, tweak it, and make it our own. Ethic in open source community: you give back benefits. Make a change for the better; give back to the project.
- Silicon Valley has learned to make money from open source. Google built on top of open source builders. Allows us to build online library. If developers need



something to be slightly different, they can tweak it. Give things away for free, but do things on the side to make profits.

- **Open standards.** Reduces friction, cost to accomplish things. Internet = standard. Everyone reaps benefits of the Internet because it's an open standard. [National Instructional Materials Accessibility Standard \(NIMAS\)](#). Digital textbooks in K-12 have to be contributed to NIMAS. NIMAS standard is built on top of [DAISY standard](#)—libraries for the blind. E-pub standard is standard for everyone making electronic books. All standards are converging, making lives easier.
- **Open content.** Equivalent of open source. Rights to intellectual property. Most people don't make money from creating content. Open content movement in education going on right now. California is adopting open textbooks. Makes accessibility easy; doesn't require cracking the lock on proprietary e-books. Users can take an image and add a description to it; when it's open content, we don't have to ask permissions to make that happen. Empowers the community of developers, content developers; pushes the power out to them to make changes.
- [Bookshare](#) is built on top of open share tools. Open source platform. Drives cost of producing accessible books way down. Costs less than 100 dollars to make an accessible book. Added 13,000 books to Bookshare. Open source allows things to happen faster. Next need to work on making images accessible.
- Open source = spending money effectively; accessibility; allows redistribution of funds to solve problems and go on to fixing the next problem.

Gregg Vanderheiden

- Combining open source and proprietary materials provides new capabilities. Large numbers of students can't effectively use resources on the Internet due to disability, literacy level, aging. Information is sometimes buried under interfaces. Penetration from 3-20% on serving students with assistive technology. Accessibility should be built into devices. Must reach people with cognitive and language-learning disabilities much better.
- We need to grow the commercial side before trying to fill in with philanthropic and other types. Create an infrastructure that would allow developers to more easily create solutions and get them to markets. Make it easier to find solutions. Make it simpler to set up and use. Make it simpler so accessibility just happens. Infrastructure: create inclusion, make it easier for everyone to use, and facilitate commercialization.
- [NPII](#): uses cloud to support accessibility. Users start with a wizard to discover how they want userface to look. User profile goes into the cloud. Accessibility developers will create apps to address needs, taking into consideration device information and features. When a user needs an accessibility feature, NPII will take right user profile and features, check the device and guide device in using own features to meet users' needs so the interface will work the right way.

(leading to wider participation in education, employment, commerce, and communities). Easy way for accessibility companies to reach customers. Every user will get interface they are already familiar with. Employers will be able to accommodate new employees. Promote and relocate employees without having to reconfigure new places. NPII gives mainstream tech companies an easy way to match accessibility features to products as they are being designed. Gives counselors, therapists, and educators more options. New way of providing accessibility when, where, and how it's needed. Just getting started building it. Working closely with consumer advocates. Need help of policymakers and leaders.

- Canada, U.S., Europe coming together to build infrastructure to try to build this. It's going to be and needs to be able to support full range of innovation. Open source so all countries can share. Many different types of content and solutions. Some will be open source, some proprietary.
- Make technology automatically and instantly adapt to people. Tech can go back to facilitating all of us instead of just those who are technologically inclined.

Sidney Burrus

- Book is technologically mature and becoming stagnant. Redefine the problem. When visionaries try to implement work, they stumble because they don't deal with the first phase. Those who are successful deal with both phases and identify them as two separate movements.
- Open educational resource (OER) movement. Example: Wikipedia. MIT offers open courseware (open to look at, but not to add to). Connexion is open in widest sense of the word. Connexion = repository of information, organized in modules, and available online. One assembles education/coursework from those modules (like college). Set of tools for authoring, using, maintaining, and distribution. Attribution online. Creative commons copyright. Do not use noncommercial copyright or nonderivative; this way we can move knowledge forward. Make impact, not money, for writing books.
- Can download PDF files, rather than carry around a 10-lb book, carry a device that weighs only as much as 10 pages. Interactive material available. Putting material directly in Spanish; U.S. is better served by improving workforce preparation in Mexico and Latin America rather than building fences. English, Spanish, Portuguese, French. XML.
- Issues: choose tech strategically, not expediently. Choose tech first for the learner, *then* for the parent, teacher, author, etc. Develop a learning ecosystem.

Thornton Staples

- Higher Ed, digital library world in late 90's couldn't buy software, so they had to build it and figure out how to sustain it. DuraSpace, Inc. = core of community to

sustain software products. Open-source software = human readable version of the code. Doesn't mean it's free. Collaborative.

- Community organized in many open source projects. Initial funding from HP and Harvard. Spun repository into private foundation. Community groups own software and responsibility for keeping software up. Vote on changes to the software. DuraSpace provides one programmer who is the coordinator of community group. Others can contribute software, but committee decides whether it goes in. Create home for these products. DuraSpace = catalyst.
- Sponsorship program. Registered service provider program. Looks like DuraSpace is a sustainable process. Software around world, growing fast.

Discussion and Q&A

Comment (Steve Jacobs, Ideal Group): Hopeful that members of the panel will make their presentations available. Panelists alluded to different kinds of open source that are not necessarily compatible with each other.

- **Gregg Vanderheiden:** There are many types of open source. Some require open source in product; others, the entire product must be open source. Other products, if you make changes to software, you have to give back to everybody all the way down to content. Problems come in from two points: 1. Everybody is talking about them like they're the same. 2. If you're building something open source at lower level, you can't use open source at higher level because it pulls all your code up to higher level. Try to recommend that you do things in such a fashion that your open source be open and not locked up.
- **Thornton Staples:** Open source doesn't mean we don't have to worry about standards. Hopefully, open source process—and real collaboration happening around open source—encourages folks to put their own money on the table and get their own folks involved. We need to be more pragmatic about standards. If you have software that will work with other software, it will be because people agreed to standards. Cloud allows people to run things where standards are beneath.
- **Sidney Burrus:** Platform = open source. Content = creative commons attribution only.

Comment (Fraser Shein, Quillsoft Ltd): Public's perception is always focused on getting something for free. Not sure the field has presented the reality of open source and proprietary software. All of us use both types of software in what we do. Always fighting perception of something that is free, particularly in special needs and disabilities arena—no one can conceive that you should get paid to work in this field. Constant issue you have to fight against. If this is to be funded, it must be recognized as something worth funding.



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- **Thornton Staples:** In our community, many are complaining about how much work development is and how expensive it is to them. Committing money to open source process is much cheaper and still results in getting what they wanted.
- **Jim Fruchterman:** Don't underestimate power of free to change the world. One laptop per child. Microsoft suddenly decided to make laptops much cheaper; change PC into what people envisioned. Pressure. People can make money, but also do social good.