All Access

Designing computers for everyone: maddog considers some computer accessibility issues.

By Jon "maddog" Hall

The most frightening sign I ever saw was in San Francisco at the beginning of the "Web Age." I was driving down Route 101 toward the Golden Gate Bridge when, at the very top of a building, I saw a billboard that said "www.NAME-OF-GIGAN-TIC-BANK.com," with the name of a certain large and powerful bank filled in. The sign displayed no telephone number, no address, no other way of describing this bank besides its URL – and this was at a time when most people could not even spell "URL."

I thought to myself, "This bank has just disenfranchised 99 % of its customers." If you did not have a computer or did not know about the web, clearly this bank did not care about you and certainly did not want your business. Similarly, imagine if a company said "Sorry, I just do not care about people with black hair" or "I do not wish to give you access to a building because you are taller than six foot two inches and such people comprise only five percent of the population." You would be angry.

Yet this is what software developers and hardware designers say every day to users who have physical challenges in using computers if they do not think about accessibility.

Accessibility to computers is nothing new. When I was teaching at Hartford State Technical College in 1977, two students there were almost completely sightless. They could determine some shades of light and dark, but only if the light was very bright. These students used a Braille terminal, which was huge and required very expensive paper, and they also used portable, hand-held units called "Opticons" that would raise pins to duplicate the characters on a printed page or screen. This process did not produce Braille, which the students could read very quickly. Instead, the Opticons allowed the students to read standard printed text but very slowly. The State of Connecticut also provided human readers for these students, who were paid to read the student's screens and printed material to them. Often these readers were other students, which gave the other students both some income along with the chance to really "read" their textbooks.

Later, I experienced this issue when I met the person at Digital in charge of the software terminal emulator for DECWindows – an early implementation of the X Window System for Digital's VMS and Unix operating systems. This person had a very hard time seeing the screen, so Digital had a very large (for the time) screen made. Using that along with the X Window System to zoom in on material, he could see every pixel of each character.

A few years ago I started to make videos, and a friend of mine, Joner Worm, contacted me and asked me if I wanted to do subtitles. Joner explained to me that subtitles were useful not just for people who do not speak English, but also for people who have difficulty hearing and can even be useful in noisy areas such as a bar. It is well known that I spend a considerable amount of time in bars, so I certainly appreciated that observation, and we started supplying subtitles for the videos.

Many people complain about the lack of a physical keyboard on a phone, but since I discovered the voice input on my Android phone I find myself "typing" a lot less, and "typing" a lot faster. SMS messages have taken on new usefulness for me. And, although the use of voice input is also helpful for sightless people, we need to make it even better.

I am happy to say that accessibility received early attention in the Free and Open Source Software space. Whether that was because FOSS people seemed to be a bit more concerned about such matters or whether FOSS allowed physically challenged people to help meet their own needs in software, I don't know. Both the Gnome and KDE projects have people trying to address these issues.

However these techniques and tools I've mentioned are only useful if people design their programs, web pages, and applications from the beginning to accommodate them. Software developers, hardware designers, and everyone else involved in producing computers need to consider accessibility issues from the ground up. For those of you who are still in doubt, just think about what the world of physics would be like today if Stephen Hawking had not been able to communicate. ▪▪▪