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Technology Column: Making high-tech accessible

BOSTON (Wired) - How can we make computers more accessible for the disabled? One approach is to build special-purpose gizmos, Web sites, and software for people with different kinds of problems.

But a far better approach is to rethink our technology to make it more accessible for everybody. It not only makes good sense philosophically, it also broadens the software market for most developers and ensures that our own future disabilities will not completely disrupt our lives.

I've been thinking about disabilities a lot lately, thanks to an old typing injury that has revisited my arms and fingers with a vengeance. Three years ago, when I had my first taste of repetitive stress injury, my only recourse was to stop typing. It was hard then; today it would be even harder, as I have more reasons to type than ever before. Between e-mail, my computerized address book, my online banking, and my digital camera, it seems that I have enveloped myself in a world where typing is a necessity.

I've realized something: Just as technology develops to fill our needs, we come to depend upon those technologies. When we lose access, we lose much of our control over our lives.

My salvation has been a high-speed multimedia laptop that runs two programs from Dragon Systems: DragonDictate and Dragon NaturallySpeaking. With this setup, I'm able to give my hands the rest they need and still get my job done.

What's possibly more amazing is the dramatic change that the software from Dragon Systems has witnessed in the past year.

Last summer, Dragon's DragonDictate speech recognition system had a 60,000-word dictionary, could recognize only a single word at a time, and cost between 1,500 and 2,000. But as

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the price of Dragon software has dropped over the past year, it has also gained more and better features, including a dramatic increase in ease-of-use.

Today Dragon's top-of-the-line program is Dragon NaturallySpeaking. It offers continuous speech recognition (so you need not speak just one word at a time with a pause between words as you do with so-called "discrete" systems), a 230,000-word dictionary, and a sticker price of less than 200. DragonDictate, meanwhile, now costs just 99 for the 30,000-word system, and roughly 300 for the 60,000-word version.

Better software for less money? It's not coincidental: The increase in usability and the decrease in price are synergistic phenomena.

In the past, discrete voice systems were extremely difficult to use, so only the most motivated users -- people who had no other choice -- used the products, according to Roger Matus, Dragon's vice president of marketing.

"With the advent of NaturallySpeaking, we now have a product that is not only of use to (the highly motivated), but is also of use to the much larger community.... We have sold more copies of NaturallySpeaking since it started shipping in June than we sold of DragonDictate from 1990 to 1997."

What Dragon Systems has learned is that it is much cheaper and more profitable to build accessibility into mainstream products than to build special-purpose accessibility systems for people with special needs. Even people who don't have special needs can benefit from improved usability. Within a few years, speech recognition will likely become standard on every computer sold. That will be a boon not only for disabled people, but for everybody.

Unfortunately, many other businesses and organizations are slow in realizing this fact. And nowhere is this more apparent than on the Web.

If you happen to be blind, then the Web is one of

the best things that has ever happened. For years, blind people have been able to read electronic text with the help of text-to-speech devices, Braille printers, and electronic Braille displays. With the Web, blind people can put all of this technology to work: reading the daily newspaper, reading utility bills that are delivered by email, and even accessing dictionaries, encyclopedias, and other reference books that are available online.

But recent innovations on the Web are challenging this progress. Web developers are moving away from simple electronic text in the quest for flashier, higher-production-value sites that leave the blind quite literally in the dark.

For example, a growing number of Web designers are using JavaScript, Java, and text embedded with graphic images and motion. The result is Web pages that are visually compelling, but utterly inaccessible to people without vision.

Most screen readers are confused by text that is arranged in columns or tables, but they're absolutely helpless when Web designers embed text in images (like the Synapse logo on the frontdoor of this section) and then don't provide the same information in plain text (Synapse does!) elsewhere on the screen.

"I would say, unofficially, that 98 percent of Web sites" have some kind of accessibility problem, says Geoff Freed, project manager of the Web Access Project at the CPB/WGBH National Center for Accessible Media in Boston. "That's not because (designers) are lazy and stupid. It's because they are unaware of what they can do."

In fact, organizations can do several things to ensure that their Web sites are accessible to all. The simplest is to provide alternative text (via alt text in Web markup language) to information that is embedded in graphics. Another approach is to create alternate text-only Web sites.

These approaches don't just help the blind, they also help people who simply have impaired

