TECHNOLOGY

Van Horn's Rules

BY ROYAL VAN HORN

WARREN Buffett's first rule is "Never lose money." His second rule is "Never break rule 1." Years ago, Isaac Asimov issued three rules for the robots in his book *I, Robot*. His first rule was "Never harm a human being." If these people can have rules, so can I. Here then are the rules regarding technology that I have developed over the years.

Rule 1. *Technology should be designed from the user to the network center, not the other way around.* This rule is so important, I may want to borrow Buffet's rule 2. Over the last 20 years, I have done consulting work in school districts and universities across the country. Almost without fail, I have had to remind Information Technology (IT) personnel of rule 1. All too often, IT people spend most of their time and energy thinking about servers, networks, switching gear, bandwidth, district databases, and other things in the network operations center that are well removed from the typical user.

I find that school district IT people commonly spend most of their time and energies on administrative computing at the expense of teachers and students. Since superintendents and their staffs sign the IT people's checks, this may be a natural phenomenon. I visited one district with 50,000 students that had a dozen or so people devoted to administrative computing and just two people devoted to instructional computing. When I visited the district's schools, the situation was bleak.

Specifically, technology systems should be designed in the following order: user → output/input device → software → interface (operating system) → hardware → local area network → wide area network → operations center (servers and mass storage) → extranet. All too often, people start thinking about hardware, not the user.

My university recently changed the online program that lets faculty members enter final course grades. The

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old application had "radio buttons" for each possible grade. All you had to do to enter a final grade was to push the right button next to a student's name. The new application requires you to pull down a menu next to each student's name and scroll down to the grade you want to enter. Four hundred faculty members teaching about 1,200 courses now have to take more time entering final grades than before. I guess someone cared more about ease of programming an application than about the program's user interface.

Rule 2. *Not all users are alike in what they need or will use; match the technology to the user.* Here are a few examples of the importance of rule 2.

My eyesight is not what it used to be, so I have some trouble when I write on the computer — which I do a lot. Every few years, the university updates its computers to keep the faculty current. The last update was two years ago, and I was to receive an iMac with a 17-inch screen. I scrambled around and persuaded my department chairperson to pay the difference in price so I could get a 20-inch screen. The larger iMac screen is a blessing and allows me to write comfortably with my aging eyes. Someone needs to remember to ask users what they need.

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A prime example of designing technology to fit the user is allowing teachers to have a say in the kind of technology that is placed in their classrooms. Many teachers, if given the choice, would choose to have a document camera and a data/video projector instead of new classroom computers.

The point here is that users are different and they have different needs. Several years ago, when I was in charge of my college's program to update technology, I classified users into three categories: power users, regular users, and occasional users (i.e., computer haters). Power users taught our high-tech courses like Instructional Design for Multimedia, and they needed workstation-class computers with very fast drives. Some regular users needed desktop computers; others needed laptops. The occasional user/computer hater was more likely to have an older, but still functioning computer that was fine as it was. Now, we have more or less morphed this process of updating technology into a one-size-fits-all approach.

Rule 3. *Get out more.* You will never know how users are doing unless you visit them. A handy technique is

to do a modified version of what sociologists call a "windshield survey." If you do a windshield survey of a school, you drive around the perimeter of the school and observe. Then continue driving around the school in larger and larger concentric circles or rectangles. I always do this when I have an intern at a particular school. You would be surprised at how much you learn. At the school level, a windshield survey involves simply walking past, or peeking into, every classroom to see what technology is in use and how it is being used. Obviously, if no one is using the school's technology, you have learned something. You do have to be careful and do the survey at various times of the day before you draw conclusions. My experience suggests that in elementary schools, just before lunch and just before dismissal are the peak usage times.

Whenever I consult in schools, I take a day or two and simply wander around the building, interviewing and observing teachers, principals, and students. In the worst cases, I find that a school's technology works so poorly that it has acquired a bad name. I hear a lot of "It only works sometimes." In some schools, I see very few people using the school computers. Even in the best cases, I often hear comments that begin "I wish that. . . ." Unbelievably, I have visited large, wealthy school districts that did not even have a help desk or any other means for teachers to get assistance with broken or dysfunctional equipment.

Rule 4. *Size it right.* Years ago, one of the topics in beginning media classes for teachers was "transparencies." I remember distinctly that the minimum letter size suggested for overhead transparencies was ⅜ of an inch and the maximum number of lines of text was eight. Yet how often have you been in a presentation where the text was so small that even if you were sitting in the front row it was nearly impossible to read the screen? Not only do PowerPoint presentations and overhead transparencies need to be large enough to be readable, so do the television and video/data projector screens that we place in school rooms. It strikes me as ridiculous to have 30 or more students in a classroom trying to watch the morning announcements on a 27-inch television set. I have even seen school auditoriums seating over a hundred students with a measly two television monitors on either side of the stage.

Rule 5. *If you can't support it, don't buy it or implement it.* Nothing gives educational technology a bad name faster than equipment that doesn't work reliably, doesn't get fixed or replaced when broken, doesn't get updated as needed, or lacks the supplies necessary to keep it operating. In the business world, it is common to have one full-time technician for every 25-50 computers. In education the number is often one technician for hundreds of machines. As the old saying goes, "It's not the mountain ahead of you that wears you out, it's the rock in your shoe." The nice color printer may not give you problems, but buying ink cartridges to run it may.

Rule 6. *Back up everything, including the people who do mission-critical work.* This rule applies mostly to administrative applications, such as maintaining the student database. If your district, for example, has a single database programmer, and you lose this person, you will have a crisis on your hands. Never violate this rule. I recently read that a university on the East Coast had formed a partnership with one on the West Coast to mirror each other's entire computer operations. These universities obviously take the threat of hurricanes and other catastrophes seriously.

Rule 7. *Don't try to do what others are better at doing.* The prime example of this is telephones. Many school districts are trying to become their own phone companies by purchasing their own phone switches or by implementing VOIP (voice over the Internet protocol) networks. Now, if the school computer network goes down, so do the phones that you might need to, say, call the fire department. Let the phone company handle your phones. Incidentally, good telephone companies, such as Bell South or AT&T, have a goal of no more than two minutes of downtime a year!

If you have your own "rules" like the ones above, I would like to hear from you.

TECH NOTE

The August 15 edition of Larry Magid's CBS News Online article, titled "Storing Data 'In a Cloud,'" discussed backing up your files to a distant Internet server. For Mac users, the sensible way to do this is to subscribe to .Mac, which costs about $50 a year and offers all kinds of nifty features and entitles you to 50 gigabytes of online storage. Since .Mac works seamlessly with Mac software — it's built into the operating system — using it is a no-brainer. If you use a Mac, I encourage you to take advantage of Apple's free, two-month trial period.

Magid's article listed five companies that provide online storage for a fee. I investigated all five, and I believe Carbonite.com has the most to offer. Carbonite offers an unlimited amount of storage and back-up software for PCs for $50 a month. If you overuse the "unlimited storage" arrangement, I'm betting you will be notified. According to the company website, a Mac version of the software is in the works. ⨅

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