You're a *what*? Usability engineer

by Olivia Crosby

Meredith Sivick makes software simple. As a usability and design engineer, she eliminates the snags that frustrate computer users. Error messages, confusing menus, and missing links are just some of the bugaboos she fights.

"It's my job to make users' jobs easier and faster. It shouldn't take seven steps to do something that could take two; it should be easy to tell what icons mean," Meredith says, describing two types of problems she prevents.

Usability engineers go beyond making software user-friendly. They improve computer hardware, software, and websites by focusing on how users perceive and manipulate those tools. "We have to understand how people learn and remember, how they sort through data, and what steps they take when building something," says Meredith. "Efficient software is software that doesn't require excess mental energy. It shouldn't make the user remember too many details."

Like all usability engineers, Meredith first analyzes users' needs. "We design for the primary user," she says, "the people who will use the product most." Meredith meets and interviews groups of customers and makes field visits to watch them use

computer products in their offices. She determines the kinds of tasks they do and how frequently they do them. Usability engineers who design for the general public—such as those who design commercial websites—venture into customers' homes and schools to watch people using their products.

Meredith also meets with the software engineers working on the product. Her role is to identify issues that affect customers. Issues range from overall format—such as the layout of screens—to specifics about color and icon style. These questions go beyond aesthetics. Certain screen layouts are less confusing, for example, and certain colors attract the eye.

Perhaps most important to usability is deciding what choices users will have and when they will have them. To make these decisions, Meredith anticipates what people want to accomplish. "We try to predict what users will want to do next so that we can increase their efficiency," she says. "Then, we test to see if our predictions were right."

To test her hypotheses, Meredith creates paper prototypes of the design. She uses graphics software to build a model of what the screens, icons, and menus will look like. With these prototypes, she performs the first usability tests. She shows test subjects the paper "screen" and asks them to perform a typical task. As they point to an item on the paper, she whisks the corresponding menu or graphic into place. "It's a little like paper dolls," she says. "I cut out menus and icons and slap them down when the user selects them." Early versions of the software replace the paper

prototypes during later stages of product development.

In addition to simple observation, Meredith asks people to describe their thoughts as they move through the test. She might time or videotape people as well. Some usability engineers use machines to track users' eye movements during a test.

Meredith studies users' reactions and uncovers the reasons for their difficulties. "Usability engineers need to be very good investigators," she says. "People might say they want to print out a screen, but the solution might not be to add a print command. If you ask them why they want to print, they might say that it's because they want to see how the page will look. If you ask them another question, you might discover that they couldn't see everything they needed on the screen. The solution might be a better display—not another print button."

Even after 10 years of experience, Meredith is often surprised when she watches people use prototypes. "It's fascinating to see how people respond to the software," she says, "especially when they do things you don't expect." Meredith gives the results of her tests to the software engineers, along with recommendations. This starts another round of design and testing.

Advocating changes requires skilled persuasion. "Meetings can sometimes be heated," she says. "People have different ideas about what's easy to use." She supports her recommendations with research from published journals and her own user tests. As the usability expert, she often focuses and moderates the debate.

Resolving issues successfully also

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takes flexibility. "You have to be able to give in when things don't matter," she says. "You can't become too attached to your own ideas." Still, Meredith is sometimes frustrated if one of her recommendations is ignored, especially when users experience problems as a result.

Meredith needs written and oral communication skills, too. She advises, "If you can't communicate ideas well, you'll have difficulty in this job." Like all usability engineers, Meredith writes reports and e-mail. In meetings, she needs to describe abstract concepts clearly. "We resolve most issues by talking," she says.

Sometimes usability engineers draw diagrams or sketches to illustrate their ideas, but they don't need to be artists. Graphic artists create the images customers will see.

But usability engineers do need other kinds of creativity. "You have to find innovative solutions to problems," says Meredith. "You have to think of different ways to give users new information or new options. If a menu doesn't work, you find another way."

Like most other software developers, usability engineers work in a fast-paced environment. "We only have a few weeks to develop a good prototype," says Meredith. If other development tasks take longer than planned, they have even less time.

Although short deadlines can be stressful, Meredith likes the speed of her work. "I'm going 100 miles an hour every day," she says, "so it's never dull or boring."

Even more than the rush, Meredith relishes the chance to make new discoveries about human behavior. "It's fun to see users in the field do something unexpected and to figure out why they did it," she says. And she likes discussing design issues with her coworkers.

According to estimates from the Human Factors and Ergonomics Society, full-time usability engineers earned an average of about $71,000 in 1997. Most worked for software companies; others worked as college professors or independent consultants.

The number of usability engineers is difficult to determine. The Association of Usability Professionals has 1,300 members. But the number of usability engineers could be higher or lower than that. One fact is certain: the occupation is larger than it was several years ago. The surge in electronic commerce has increased the demand for easy-to-use websites, much as the rise of personal computers and computerized appliances has done for usable hardware and software.

In part because the field is new, there are many routes to a usability career. Meredith's path was one of the more typical. She earned a bachelor's degree in psychology and government. Looking for an alternative to counseling, she answered a job advertisement for a human factors engineer—a scientist who designs easy-to-use tools of all types—and found a career. Before taking her present job, Meredith honed her communication skills while working as a tester, technical writer, and trainer.

Today, many usability engineers have master's degrees in cognitive, experimental, or organizational psychology. Other common college majors include computer science, human factors engineering, information science, and human-computer interaction. Meredith continues to take classes in psychology and human-computer interaction.

Meredith chose her career because it combined her interests in people and technology. "It's the perfect marriage of two things I really like," she says. "And I see the work I do make a huge impact on the final product."   ∞Q