

21ST

CENTURY TECH

CHAPTER
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How the Internet Will Work

There is one prediction about the Internet that's safe to make: It will never be fast enough.

Speed is subjective. Have you ever been driving a car at, oh say, 90 miles an hour and then slowed down to 60? It seems as if you're creeping along, that you could get out of the car and walk faster. Fast is only fast compared to what we're used to. My first modem pushed 300 bits through the phone line every second. I could read faster than my computer could display the words coming in. It didn't bother me because I didn't know any better. But as my online connections have sped up to the point I am today using

a Roadrunner Internet connection supplied by my local cable TV company, so has the need for more speed.

Luckily for Internet addicts, more speed is on its way from several directions. The one we'll take most notice of in the next decade, at least in the home, is cable modems. Businesses are going to be drawn to DSL. Most businesses don't have cable TV connections, but they all have phone lines, which digital subscriber lines can use. If you have not been on the Internet through a DSL or cable connection, you have not yet seen a glimpse of what the Internet can become. When you can have instant access to the information on the Internet without having to dial a phone and without waiting for pictures and sound to struggle through older connections, then you find new ways to use it. The Net soon becomes indispensable.

The other major way in which the Internet is going to get faster is Internet2. I2 is not a replacement for what we have already, but an extension, an area for technological and commercial innovation. Not yet open to the public, the nascent I2 provides unthinkable speed of 662Mbps, fast enough to send 322 copies of a 300-page book every seven seconds. When I2 gets into broad use, those of us who can't yet use it will still benefit by the load it will take off the current network.

But I said that the Internet would never be fast enough. That's because of a basic law: The use of the Internet will always swell to fill its capacity. We haven't begun to experience all the kinds of data the Internet can provide. Currently, the Net is used mostly as a link between a person and some information stored on a computer somewhere. Despite pleasant comedies about email, the fact is that most of us aren't on email. When the Internet connection is a given, we'll have no need for much of the postal mail we receive. Currently few of us use the Internet for voice and video communications because the quality is low and the ability to connect to a

specific person is chancy. When that changes, why have a separate phone? Why have a separate television cable? Why not have a house full of contraptions so that you have instant access to all types of communications no matter what room you're in.

We will have entered the age of *tele-immersion*. A tele-immersion system lets individuals at different locations share a single virtual environment and have the same access to the wonders of the Internet anywhere they go. Using CAVE (Computer Automatic Virtual Environment) technology, tele-immersion combines advanced, high-speed telecommunications systems to support collaborative applications. CAVE will recognize the presence and movement of individuals within a particular space, track the movements and update the screens of others working in the same virtual environment.

The more we become dependent on the Internet the more we're likely to complain about its failings. The major flaw next to slowness is that the Internet is really very, very stupid. If you've ever done a Web search, you know that the best search engine will give you 2 percent of what you're looking for and 98 percent of what you're not. HTML, the coding formats that display text, graphics, animations—everything, in fact—on the Web doesn't know the meaning of anything it's displaying. When you search, there is no way to exclude any information that is, say, more than six weeks old. You can search for “prices” but you can't tell the Web to use the concept of prices to find numbers we would recognize instantly as price tags, but which to the HTML are simply characters to show on a screen.

HTML is being extended in XML (*extensible markup language*). XML will allow Web masters to tag prices, dates, names, and anything else on a Web page with a label so that specific types of information can be found as easily as specific words. It will not only make it easier for people to find information on the Web, XML will make it easier for computers to search and use information unattended.

Speed and intelligence are going to transform not only the Internet but the way we work, live, think, learn, and have fun. Sometime in the next millennium, the Net will become, next to people we love, the largest influence on our lives.

