

software and hardware, and a well-funded program for rolling out the new product across your company?

Even if a productive relationship with the supplier seems possible, becoming a beta site may not be worthwhile. Frank Dodge, co-founder of McCormack & Dodge, a mainframe software company now owned by Dun & Bradstreet, is besieged by companies that want to become beta sites for the programs he is developing at his present company, the Dodge Group. He advises them to avoid jumping to new software like his unless what they have now is at least five years old and fails to meet their needs. As Dodge implies, the best time to become a beta site is when existing systems have hit the wall—when they no longer keep up with user demand, and when patching them up costs more than junking them. Forced to opt for new systems, you may want to choose some that have yet to reach the market, thus buying a chance to leapfrog current technology.

The most popular argument for becoming a beta site is that getting new technology ahead of others will confer a competitive advantage. Yet basic economics argue that any such advantage will be hard to sustain. Computer systems are a process technology, used mainly to produce and deliver something else, from nails to news. As with any process technology, it pays to develop systems in-house when they are highly specialized and so effective at reducing costs and raising quality that there's no incentive to sell them to competitors. Usually, though, a process technology is worth more when it's sold to every producer (which helps explain the existence of the independent software industry). When a third party owns and sells a process technol-

ogy, the technology is unlikely to give any user a lasting edge.

These economics tarnish the allure of many beta-testing proposals. If the project involves strategic systems—those that can produce a sustainable competitive advantage—then probably the user, not the supplier, should be developing the system. But if the product isn't strategic, why bother incurring the costs and risks of becoming a beta site?

In deciding whether to accept an invitation to the ball, consider the experience of a senior manager who oversees systems development for one of Wall Street's largest and most profitable investment banks. "Suppli-

ers ask us all the time to become a beta site, and we always tell them to go away," he says. "If it's a strategic system, we'll develop it ourselves and keep it proprietary. For back-office systems, we don't want to be on the bleeding edge of technology unless it's an absolute necessity. We have done only one beta test in the past few years, and that was really a co-development project so we could ease operating burdens on our traders as soon as possible. The last thing we expected to get out of it was strategic advantage." **F**

**BRO UTTAL**, a former member of the **FORTUNE** board of editors, is a consultant at McKinsey & Co., where he focuses on problems of technology management.

# THE FUTURE OF TRAVEL

**I**WON'T have to travel this much once videoconferencing catches on." This expectation, uttered to me by a trip-weary executive on a too-long transcontinental flight, has become so common that it even has a label. "Travel substitution" is shorthand for the hope that ever more capable telecommunications technologies—videoconferencing among them—will allow us to substitute electrons and videosccreens for air miles and in-the-flesh meetings.

I didn't have the heart to tell my neighbor that his wish is unlikely to be fulfilled. Videoconferencing is indeed catching on, but the conse-

quence will be more business travel than ever. Relationships are the essence of business life, and people who become acquainted by wire will inevitably want to meet in person.

Even a casual glance at the past century of commerce reveals that advances in telecommunications lead to more travel, while

better transport presages greater demand for telecommunications. The railroads strung the first telegraph wires along their rights of way; direct-dial phone

service spurred commercial aviation by making it inviting and convenient to do business with people who lived far away. When informed that the

E-mail, faxes, and videoconferencing are miracles, right? But you still have to hit the road to make a buck.  
by Paul Saffo

Photograph by Andy Freeberg

Videoconferencing will mean more business travel. People who get acquainted by wire inevitably want to meet in person.

telegraph would soon connect Maine and Texas, Henry David Thoreau wondered whether anyone in Maine would have anything important to communicate to anyone in Texas. Barely a century later, the answer is clear: quite a lot, by phone, fax, voice mail, and E-mail—and in person.

If electronic meetings could deliver the subtlety and richness of a face-to-face encounter, maybe we really could substitute screens for airplanes. This supposition has inspired generations of innovators, but the historical evidence for it is weak. If a desire for interpersonal richness is the driving factor, travel demand should have begun to flatten in response to the astonishing advances in telecommunications quality and choices over the past two decades. A comparison of two fundamental indicators—air miles traveled and the volume of long-distance calls—shows that quite the opposite has happened. Both have risen steadily, and in concert. We now travel and telecommunicate so much that the airlines feel compelled to install phones at each row of seats so we can do both simultaneously.

Of course, this is not the whole story. Instances of travel substitution have been documented over the past decade, from the deployment of videoconferencing rooms within companies to a U.S.-wide drop in business air travel during the Gulf war, accompanied by a substantial increase in videoconference traffic. The hitch with these examples is that their impact diminishes to insignificance when one examines them in a larger context. Business air travel, for instance, went right back to prewar levels once companies removed travel bans.

**T**RAVEL substitution is a phantom, because in fact companies are pursuing goals more sophisticated than plain cost saving: convenience and business effectiveness. That's what determines the tradeoff between communications and transportation. One consequence is dramatically extended spans of collaboration—the distance over which individuals can be dispersed and still

work effectively as a team. This trend is especially marked among Silicon Valley firms: Engineers routinely collaborate with colleagues halfway around the world.

We are confecting ever more complex organizational cocktails from a growing menu of communications and transportation choices. For a global team, voice telephony is perfect for spontaneous two-person conversations, E-mail and fax work well for swapping text and documents, voice mail is a good antidote to time-zone differences, and videoconferencing is just the thing for weekly meetings. These technologies do not replace face-to-face gatherings, but allow team members to keep contact and coordination “hot” between the inevitable trips to one another's locations.

**O**UR GROWING SPANS of collaboration conspire to put us in aircraft traversing ever greater distances. Consider what constitutes a “frequent flier”: Two decades ago, toting up 50,000 air miles in a year was an exceptional event. Today it won't even qualify a traveler for top-level frequent flier programs.

Our air miles are ballooning because instead of pursuing travel substitution, we have become a society of “travel shifters”—sophisticates who use technology to move the inevitable business trips around on the calendar to suit personal and team convenience. An individual can get the job done without traveling on an anniversary or a spouse's birthday; a team can maximize its effectiveness by saving up several issues for a single meeting.

Travel shifting thus implies a measure of short-term travel substitution and also increased long-term travel. Videoconferencing may spare us biweekly trips to our supplier's Singapore plant, but if we hadn't traveled there regularly to begin with, the relationship might never have gotten off the ground. Now that the relationship exists and is sustained by communications links, we are free to arrange *other* transpacific trips.

By making travel more manageable, we

are traveling more than ever. This is a calculus thoroughly understood by the airlines and reflected in everything from flight scheduling to frequent-flier award levels. Aircraft manufacturers are also accommodating our travel-shifting needs by offering ever better ways to communicate while aloft. One configuration of Boeing's 777, a big two-engine jet scheduled for mid-1990s release, includes a fiber-optic network that extends to every seat. Passengers will be able to communicate with colleagues on the ground or in other planes, play electronic games, and listen to CD-quality music. It is just a matter of time before onboard networks also allow fliers to send and receive faxes and E-mail.

Paradoxically, Boeing is home to some of the most interesting business-communications success stories of recent years. Its 777 team made extensive use of videoconferencing for meetings with engine suppliers and key airlines over the course of the design effort, and its engineers routinely ship blueprints in electronic form. Boeing, however, apparently does not believe that these technologies will dent the demand for aircraft: It and other manufacturers have begun thinking about building a “very large commercial transport”—VLCT—capable of holding 600 passengers, nearly 200 more than the biggest 747.

**T**HE PROSPECT of a world where VLCTs make commercial sense is chilling, even for travel shifters. At moments, it seems that the ultimate consequence of our telecommunications-transportation spiral will mean living our entire working lives in business-class seats on huge aircraft. We will not notice that the plane never lands and that we never arrive at our destination—we will be too busy sending faxes and teleconferencing with our travel agent, attempting to travel-shift our next trip so we can be home for our child's birthday. **F**

PAUL SAFFO is a research fellow at the Institute for the Future, a Menlo Park, California, research firm. He flies more than 100,000 miles a year and can't keep up with his voice mail or E-mail.