

Personal Communicators—Almost Here?

By Michael Slater

Shortly after completing last issue's editorial on pocket intelligence, I had the opportunity to attend Dick Shaffer's mobile92 conference—the first event of its kind to focus on the emerging application area of hand-held computers with built-in communications. After listening to a day and a half of presentations and viewing half a dozen demonstrations, a few things are clear:

- Many companies, including not only chip, computer, and software makers but also communication companies and data providers, see an enormous potential business opportunity.
- Many pieces of the technology are coming into place.
- There will be a broad diversity of products.
- No one knows just how long the technology will take to be ready, what the products will cost, and whether customers will really buy them.

The one thing almost everyone seems to agree on is the ultimate fantasy product. It fits in your coat pocket, weighs half a pound, and runs for days on a single battery charge. Most of the surface is covered by an LCD display, and a pen replaces the traditional keyboard. It has a built in radio link; it can send or receive electronic mail and faxes; it can access a variety of databases, including road maps, airline schedules, and telephone directories; and it also serves as a cellular phone. Oh yes—and it costs less than \$500.

Constructing an appealing fantasy isn't difficult, but it's harder to tell how far the fantasy is from reality. Implementing the functions needed isn't fundamentally difficult; it is meeting the size, weight, and battery life desires that will be a challenge.

Cost is another big barrier: systems with all the capabilities described above are likely to be priced well over \$1000 for at least a few years. Prices in this range are probably not a barrier in the executive market, but they will dramatically slow development of the consumer market. As Howard Elias from Tandy commented at the conference, "anything over \$500 is a two-spouse decision."

Today, the products available provide only a small subset of the functions in the fantasy device, and for the most part they cost much more and have much shorter battery life. Very few products have realized the merger of computers and communications envisioned as the cornerstone of this revolution in computer applications.

Today, you can get a variety of pagers with up to several lines of alphanumeric display. You can even

have your electronic mail sent to the pager. While pagers are invaluable for some people, their one-way nature limits them greatly.

There are very few products on the market that combine a computer and a cellular modem in one integrated system design. External cellular modems are available but cost about \$1500. At least two companies provide data-only cellular services, and cellular telephone companies are gearing up to add data services.

Several different pen-based computers are now in production, and many more have been shown in prototype form. Even without any communication capabilities, however, most of these systems are far too heavy, expensive, and power-hungry to serve as the heart of our fantasy device. They may be successful in some vertical applications, and they will provide the learning ground that will lead to smaller, cheaper models which will be combined with communication capabilities. Several companies have shown tablet computers that are about 5" x 7" and weigh 2 to 3 pounds, which is a big step in the right direction.

In addition to the cost of purchasing a personal communicator, the price of communication services could hinder development of a consumer market. Providers of cellular phone and paging services are clearly drooling over the prospect of tens of million of new customers with average monthly bills of \$75 or so (today's average cellular phone bill). While such fees are probably acceptable to many business users, they will be out of the question for most consumers.

Aside from all of these issues, a microprocessor battle is brewing as well, as noted in last issue's editorial. The recent announcements of the AT&T/Go and Intel/VLSI alliances (see p. 4), following close on the heels of Apple's advance promotion of the ARM-based Newton, are the first public signs of this new battle. Intel, for once, is on the defensive, with large, well-funded efforts backed by AT&T and Apple to establish the Hobbit and ARM architectures as the standards in this new computing environment.

While personal communicators and other such devices seem all but certain to represent an enormous new microprocessor market, it may develop more slowly than some advocates expect. Many observers don't expect it to really take off until mid-decade, when cost and size will be down, battery life will be up, and a range of devices and application programs will be available. For the suppliers that are able to follow the technology's twists and turns, find niches that will tolerate the limitations and high cost of early products, and patiently await the emergence of the mass market, the rewards should be tremendous. ♦