The Multifunction Device Quandary

Single-Function Devices Offer Simplicity, But How Many Do You Want?

During the recent Embedded Processor Forum, one theme that kept cropping up was the conflict between simple dedicated devices and more capable multifunction devices. This tension is being played out in the marketplace in a variety of ways.

Today, many wired businesspeople carry three electronic devices with them most of the time: a cell phone, a pager, and an organizer. Does it therefore make sense to combine all these into one unit? Although on the surface this approach seems compelling, the tradeoffs are complex.

The benefits of combining the units are clear. First and foremost, there is only one device to buy, carry, and keep charged. There are functional benefits as well: a name can be selected from the organizer's address book and automatically dialed, and the phone can provide wireless network connectivity for the organizer. If the organizer is used for e-mail access, pager and e-mail messages can be integrated into one user interface.

The few integrated phone/organizer devices that have appeared so far vividly illustrate one of the prime disadvantages: they tend to be big and clunky. Even the latest such device—Qualcomm's pdQ—suffers somewhat from this problem: it weighs 10 oz, versus 3.6 oz for the latest Motorola StarTAC phone and 4 oz for a Palm V.

Inevitably, when devices are combined, compromises are made. The pdQ is much bulkier than a Palm III, not to mention a Palm V, and it is clumsy as a cell phone. When using the pdQ as a phone, you're holding three times the weight of the Motorola phone, and the size—dictated by the display—makes it harder to hold as well.

If you buy an organizer and a phone, you can choose from many styles of each, and you have the option of getting best-of-class devices. Combination devices rarely will be best-of-class for any of their functions, and the range of choices will be far more limited. It is unlikely, for example, that very many of the possible combinations of cell phone types (analog or digital, GSM, PCS, etc.) and organizer types (Palm, Windows CE, Psion, etc.) will ever be offered.

Integrating a pager is a slightly different issue. Pager functions can be added to either a cell phone or an organizer with a small increase in size and cost. If you can get a great phone that has a pager function without compromising the phone, the combination is compelling. Even so, a dedicated pager has its advantages: it can be smaller than any phone, and its battery lasts much longer.

Dedicated devices could be much improved, however, if they could communicate with one another. A very short range wireless connection, such as Bluetooth (see MPR 6/1/98, p. 22), could, for example, enable the organizer to tell the cell phone what number to dial without requiring any physical connection, and the incremental size and cost would be very small. This approach makes it possible to optimize each device while still enabling a group of devices to gain the functional benefits of integration.

Curiously, when it comes to nonmobile devices, the situation is the opposite: instead of a plethora of dedicated devices that some companies are trying to combine, the current model is a single multifunction device—the PC—whose functions certain companies are trying to split apart. Internet set-top boxes and screen phones, for example, are dedicated Web and e-mail devices. Start-up Simpliance *(www.simpliance.com)* takes the special-function approach one step further with a dedicated e-mail appliance.

For someone with a PC, it is hard to imagine that a dedicated e-mail appliance, or even a Web-browsing and e-mail appliance, would make sense—unless the user wants it in a different room, or just needs an additional access device for other family members. The display is actually the most precious resource, and it will be years before most people can afford to have multiple large displays. This simple fact will make it compelling to continue to perform many functions on the PC. But when the desired location is different, another device can win. A Web-browsing (and possibly e-mail) device optimized for the living-room environment (such as WebTV) should become popular as Web access becomes more integrated into people's lives. Some form of kitchen information appliance may also succeed.

Game consoles are the highest-volume example today of a dedicated-function appliance; by optimizing for the game technology and business model, they can outperform the PC at a lower cost. Sony's PlayStation 2000 (see MPR 4/19/99, p. 1) provides a stunning example of this advantage.

No one approach will dominate. Some users will prefer separate devices; others, various combination devices. But I believe dedicated-function products will proliferate. When the needs of size, I/O devices, and physical location all match, it makes sense to combine devices. But in many cases, these factors don't all match, and then having separate devices is often superior. Ⓜ

See www.MDRonline.com/slater/multi *for more on this subject (including links to information on products mentioned). I welcome feedback at* mslater@mdr.cahners.com.