



Gamb(o)ling in the gray zone

ENGINEERING IS, among other things, the fine art of reconciling trade-offs to come up with an optimum end result. The word “optimum” is situation-dependent, of course; a designer of a high-end mobile com-

puter operates under far different bill-of-material constraints than the designer of an entry-level notebook PC, for example. And each computer’s target users also have different expectations of that system’s size, weight, battery life, and performance.

A similar “no right answer for all” phenomenon applies to video-compression algorithms. One codec might be designed for a real-time bidirectional videoconference over an error-prone communication link between two computationally deficient systems with low-resolution monochrome displays. Another codec might be designed for non-real-time encoding by a powerful server and subsequent real-time playback by a much less robust (and expensive) processing engine over a high-resolution, rich color display (Reference 1).

“No right answer for all” applies to *everything* my peers and I cover for EDN. A consistent “right answer” that’s optimal in all situations just doesn’t exist. As a result, I try to avoid making definitive conclusions in my articles. Don’t get me wrong: If a product is totally awesome or a total dud, I won’t be shy about saying so. But there are lots of smart product architects working for a lot of competent companies, so very few duds exist. My job is to discuss an application, reveal the strengths and shortcomings of each product and technology targeting that application, give some indication as to how I see each alternative fitting into specific situations, and then leave you to make the final decision.

I like getting feedback on my articles, and I’d prefer even more.

Most times, reader comments make me think. Maybe, for example, I inadvertently overlooked some new technology during my research, or I neglected to mention a strength or shortcoming of a product.

Sometimes, though, reader feedback makes me laugh or shake my head, usually when someone tells me how stupid I am for not wholeheartedly advocating his or her preferred technology and completely dismissing all others. Look, I know how easy it can be, in the midst of a tense product-development cycle,

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to adopt tunnel vision. But that’s a dangerous trait. Very little, if anything, is completely black or completely white. Instead, there’s a whole lot of gray out there. Unless you’re constantly open to re-evaluating issues from time to time, you’re going to be perpetually out of step with the ever-changing world (a fact that applies equally to engineers and to political leaders).

I got an e-mail the other day from a reader who was frustrated that, as I pointed out in a recent article on cell phones, a few applications (PCs, PDAs, and cell phones) consume a disproportionate share of semiconductors sold each year (Reference 2). He is a designer of industrial-automation, -control, and similar equipment and rightfully noted that many semiconductor vendors operate under what I call the “80/20” rule; that is, 20% of the customers use 80% of the chips shipped each year, so they’re the ones on which to focus. The vendors define products with those customers in mind, and they introduce, alter, and discontinue those

products based on those customers’ product cycles.

The reader asked me to tell the vendors not to act in this manner. I responded that I couldn’t hold out any hope that they would change their ways and that I didn’t necessarily disagree with the vendors’ strategies. I also said that his company probably to one degree or another acted the same way toward *its* customers. By “drafting” off the PDA, PC, and cell-phone designs that consumed far higher volumes of products than he did, he was taking advantage of the volume cost efficiencies that they enabled. I encouraged him to design product flexibility into his systems from the very beginning so that, in case of unplanned obsolescence or availability shortfalls, he could respond in a nimble fashion. By stepping

back and seeing the big picture, he might be a little less frustrated with the situation he’s in, too. Basically, I encouraged him to acknowledge and accept the gray zone.

In a Hollywood-created fantasy land, good guys wear white hats and are always good; bad guys wear black hats and are always bad. Nobody wears a gray hat and acts in an unpredictable manner. The real world isn’t so simple. Today’s perfect solution is tomorrow’s deeply flawed option, and vice versa, whether in Afghanistan, Iraq, or the engineering lab. You can fight against this impermanence and suffer even more as a result. Or nimbly go with the flow and revel in the excitement of the unknown. Which choice will you make? I say, go gray. □

REFERENCES

1. Dipert, Brian, “Jaggy Jar Jar,” *EDN*, Sept 19, 2002, pg 25.
2. Dipert, Brian, “All-in-one cell phones: *not* a one-for-all panacea,” *EDN*, Oct 31, 2002, pg 67.

Contact me at bdipert@edn.com.