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CONCURRENT DESIGN DREAMS

Deep in the grim final phase of the mechanical product design—when the CAD models are nearly complete, the detail drawings bleed red from ECOs and the prototypes are finally starting to behave—the marketing department suddenly calls its meeting...

...it seems that our target market has shifted, and we need a somewhat different product to recapture it. Who are we to balk at extending our contract? Times are tough, we don't know where the next job is coming from. Still, **two-thirds of the way through a marathon is an interesting time to be told that you're going to swim the channel instead, and the clock is still ticking.**

Somewhere in the months that follow, people start to drift away from the program and the company. Deadlines give way to milestones—some met, some not. Interdisciplinary crabbing decays into shouting matches and long periods of deadly silence. The thrill of creation has succumbed to the grind of work. The sex is gone. This program is auguring into the ground.

If all this sounds like someone making excuses for lousy design, consider what happens when the fire that drives any good product developer gets slurry-bombed. As part of the process of determining requirements for design; selecting architectures, components and vendors; and tuning thousands of details in darkened CAD rooms, designers create and shape their vision.

Certainly, they don't do this free from compromise and disagreement, but the baby still carries some of their genes. Now, introduce a decision that upsets the basic understanding of the requirements. Thoroughness and attention to detail are early casualties. What was solid, well-reasoned, well-integrated design becomes a hairball of tweaks, band-aids and kludges—a bag of after-

thoughts. Not the sort of thing anyone feels truly proud of. Few designers in this situation are driven to excellence. Most are driven to completion, to get it over with.

Poor handling by management? A clueless client? A design staff full of prima donnas? Probably not. It's probably just a failure to keep all aspects of the development program—including the technical and the marketing risks—on the front burner.

The Promise of Concurrent Design

With everyone involved right from the beginning, the resulting product should meet everyone's needs. Marketing gets a product they can sell, manufacturing gets a design they can reliably build, engineering gets a system they can support and everyone gets the chance to do something new tomorrow. But this is undermined when somebody fails to work in the trenches alongside the frontline design team. **Adding contradictory input late in the game is a program killer, especially when the input comes seemingly out of the blue.**

Nobody wants to get whacked upside the head by marketing or manufacturing or the industrial designers or the regulatory group while they're juggling a half dozen vendors, struggling to learn the newest release of software and trying to concentrate on getting something done.

Product developers generally just want these nuisances to go away until the design has been completed. Then, other folks can paint it whatever color they want or send it to a focus group or have the parts made overseas or whatever. As a result, the product may end up working perfectly, only to die of obscurity in a market that has no interest or has passed it by.

As a mechanical engineer, I have been the recipient of numerous industrial designs that were impractical from a manufacturing standpoint. Rather than gripe, I returned to school to supplement my engineering degree with one in industrial design. Some people think I've just become part of the problem rather than the solution. **Industrial designers often are categorized as focusing on style over substance. Perhaps we don't do enough to dissuade them.** In fact, industrial designers are trained observers, seeking out what works for people, what appeals to them and what they long for. People. Small people, large people, people who are left-handed, people who can't type on four-inch keyboards, people who drop things, people who are legally blind or have difficulty maneuvering their wheelchairs around our neighborhoods are the end users for a lot of products these days. People want to access information that's important to them without having to jump through hoops or squeeze through bottlenecks. People want products that behave the way they should, with obvious controls and ample feedback. Products should be tools to get things done, not puzzles that hinder us. **To assume that the end user will just have to suffer any inadequacies in your product because it's the only game in town is to paint a brightly colored bull's-eye on your own foot. The first unit will probably sell to some early adopter, but what about the second?**

So what about that concurrent design thing that was a catch-phrase ten years ago? Why isn't it used more? When it is used, why does it fail so often? Concurrent design is supposed to be about getting people involved so that they can make a concerted effort to

help steer things and participate in crucial decision making. However, concurrent design usually takes the form of committees that at their best meet early in a project while the excitement is high, the budget is barely tapped and the real challenges have yet to surface. At their worst, these committees make semi-annual strafing runs and then lie in wait, saving up memos as ammunition for later finger-pointing when things run awry. Somewhere in between is the Tuesday morning meeting where everyone straggles in and mumbles something about the progress made over the past week.

These group meetings needn't be inevitable. **While the idea of getting everyone together to hear presentations sounds good, sitting in darkened rooms while colorful charts and shiny presentations flow by is like skating along on groomed ice, never probing its depths for fatal cracks or shallows.** Nobody wants to get slammed with embarrassing questions in front of a client or peers. Not everyone with responsibility in a project is good at discussing it in front of a crowd. And scheduled progress meetings rarely allow for the free exchange of ideas that drive novel design.

In the Trenches

Individuals with vested interest in a project under development need to pull up chairs to CAD tubes and drawing boards or walk into prototype shops and talk with the designers and engineers ... not once or twice, but

dozens of times. The place to ask the hard questions is in the domain of the designers where, as they say, "the rubber meets the road."

Nothing can give a manager, a manufacturing lead, a client or a marketing specialist a better understanding of a project's constraints and problems than struggling with those issues where they surface. Few things let industrial designers share their insights with marketing better than passing around a simple form-study model. Nothing else is better for giving designers a clearer understanding of why the marketing group feels so passionately about certain aspects of the design. Nothing else exposes problems or concerns while they're still small and can be addressed. And nothing instills the pride of success more than participating in meeting those challenges in the trench where the gritty design work is done.

Great products aren't designed in dozens of weekly formal meetings but in hundreds of informal get-togethers. Why have the team sit in scheduled weekly progress meetings when everyone's already involved, aware of the issues and working on them? Great design comes through the perseverance of individuals, deeply in touch with all of the requirements and confident in their tools, their teammates and their abilities. Help develop with these folks a clear and valid vision, lend the continuously involved support of the whole team, and enjoy the magic. ●