

Why things go wrong...

...and why they stay that way

By David O. Dunford

Years ago, we were studying hyperbolic functions in Mr. Smith's algebra class when he related a story about the application of *limit theory*. The story explains that if a boy and a girl are facing each other 100 feet apart and then move toward each other in a sequence of steps, each step being one-half the remaining separation, that they will never actually touch but will be close enough for "all practical purposes."

In public safety communications, it seems that system construction and project management often suffer the same fate. Our work product may not be complete, but it usually gets "close enough" for all practical purposes. There are a variety of unseen effects and uncontrollable (or at least *unexplainable*) external forces that seem to affect this process of incremental system improvements, which we call a "project," and I hereby offer several observations for the non-public safety reader, hoping to provide insight into our collective plight.

First, we're part of *government*. That means we're accountable for our actions and every dollar spent. To exceed the budget is an unpardonable sin. (Many years ago, civic volunteers in a neighboring city held a pancake breakfast, the profits from which were used to purchase two PTT foot pedals, one for each of their department's two new radio consoles. Discretionary budget funds available? I don't *think* so.)

Another story, which should also be near to Radioman's heart, involves a community whose police chief had a flawed understanding of radio equipment: He earnestly believed that "solid state" actually meant "never needs replacement"—and the HT-200's hadn't been. In all cases, the users must live with the effects, good or bad, of this

governmental process.

Suppose that we actually get a project budget moving and a groundswell of support behind the effort—what next? (Note: a *groundswell* is a city council member hearing from one constituent.) The first thing on the agenda is usually a "needs assessment," which is the name given to a list of problems everyone has known about for several years. Next comes "system design," which is the name given to a list of improvements



that everyone, except the consultant, has known about for several years. Then comes the real art in public safety communications system projects: accurately estimating a budget figure. As system managers, we must remember that the budget may take some time to get approved and that not everyone likes pancakes for three meals a day.

Being a public safety user in a world of commercial providers can also put us at a disadvantage. Negotiating for rooftop antenna space, or an entire tower site, in an environment driven by free-market forces can quickly deplete a local community's rental budget. A lowband antenna atop an RF-noisy grain elevator isn't always an acceptable al-

ternative, either. Our collective posture as "the good guys" doesn't carry much weight with a sharp-nosed real estate agent or a distant tower rental rep. Also, most agencies don't have the benefit of a Washington attorney to help them wade through licensing snags or FCC paperwork and processing snafus. (Note: The low-frequency hum you hear through the phone when actually speaking with these fellows in the rarefied Potomac atmosphere is really just the meter running.) One effect of this entire "government process" is that siting errors may not be readily corrected. If we initially "guess" wrong about antenna placement or tower siting (engineers call this a "propagation prediction anomaly"), we might be stuck with a five-year lease period during which to contemplate our alternatives.

One option is to contract with an engineering consultant as part of system planning. But the engineer's bent for excruciating detail can create a professional services contract that makes the actual site lease look like an I.O.U. stuffed inside a Coke machine. Two agencies once embarked on a joint, slow-growth 800MHz trunking system that was planned as a single-site system. I discussed with the consultant a known "dead spot" several miles from the site, and his reply was that the problem would

be solved by "creative engineering." The final solution actually required "creative financing." (See budget options, above.)

These are only a few of the pitfalls (and pratfalls) public safety professionals face in shepherding along a project, and we haven't even talked about computer consultants or integrated AVL-CAD systems. I laud each of you for your efforts—but mostly for your persistence. ■

Dunford *MRT's* public safety consultant, is manager of technical services for the Lenexa, KS, police department. He is a member of the Association of Public-Safety Communications Officials-International [You can email him at mrt@intertec.com.]