An Educational Community for Engineers

By Barry Blesser ©2007
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As I was driving back to my office after having lunch with our editor, Michael LeClair, I suddenly realized that one of his anecdotal stories happened to contain some very important ideas. Always keep your ears open, because you never know what kind of hidden gold is there to be discovered.

Michael told me about a listener who complained that his high-end radio in his high-end automobile randomly stop receiving WBUR as he was driving through a particular suburb of Boston. Was there something wrong with the audio chain? Was there something wrong with RF propagation in this region of Boston? Was there something wrong with the listener's radio? Was the listener some kind of nut case? With so little data, it is easy to generate many hypotheses that are consistent with the problem.

To an engineer, these questions present a wonderful challenge; and engineers love to demonstrate their problem solving skills by rising to such challenges. What was the explanation for the listener's complaint? How should a broadcast engineer find the answer? And most importantly, were there bigger implications to approaching the task?

But before I answer these questions, I need to digress to a completely unrelated topic: e-mail lists. To participate in such lists, individuals who share a common interest provide their e-mail addresses to some central computer that administers the list for everyone in the group. E-mail messages on a particular topic are sent to everyone on the list.

I first came across these lists while publicizing my new book, *Spaces Speak*. They provided an efficient way to send information about it to selected individuals. Before I researched the world of e-mail lists, I had not realized that there are literally thousands and thousands of them floating around the Internet.

Lists vary in size from a few individuals who are interested in a narrow topic, such as how to create icons for computer interfaces, to large numbers of people interested in a broad topic, such as religion. In all likelihood, you can find a list on any topic that interests you. Michael posted information about his problem to a list targeted to broadcast engineers.

Very shortly he received the complete explanation for the problem. The listener was driving a one-year old Lexus with an upgraded sound package installed by the dealer. WBUR had just begun broadcasting RDS in order to take advantage of the nearly universal availability of RDS in new automobile receivers.

As unlikely at it might have initially appeared, listener's problem was directly related. This particular radio had a latent design flaw that would only manifest itself when receiving an RDS enabled broadcast.

The problem was already known to a small group of broadcast engineers who were more than happy to share their knowledge with their colleagues. A problem that could have been intractable took only an hour to solve. More likely, with so little data and the inability to reproduce the failure, an engineer may never have solved the problem. As time went on, there would have been more complaints from other listeners with the same radio. It might have taken months, and hundreds of hours, before the pattern would have been recognized.

Except for the one broadcast engineer who did the hard work of collecting and analyzing field data, and who then created and tested multiple hypotheses, nobody else required any technical knowledge to solve the problem. For everyone else, finding an efficient solution only required knowledge of the social dynamics of the Internet.

The solution was already known and the task was to find the person with the answer. Before the Internet, it would have been nearly impossible to find that person, and hundreds of broadcast engineers would have had to solve it the hard way.

Automated e-mail lists are proliferating because the social and technical tools are readily available. A company, L-Soft, makes a software package that fully automates the handling of e-mail lists, and a large number of organizations have installed it on their servers. One package can handle hundreds of lists. This company also provides a list of lists for those that want to search for one of interest.

To make lists even more accessible, Yahoo, which calls their e-mail lists "groups," provides an open resource for anyone that wants to either join or create a new e-mail list. Visit them at http://groups.yahoo.com.

Like all communities, lists and groups require some kind of governance. A list can be fully public with no moderator managing membership or content. These sometimes, but not always, have a large amount of spam and other junk. Lists can also require permission of the moderator to join, which raises the likelihood that unwanted individuals would not clutter your mailbox with unrelated junk. Moderators in more restricted lists will check each posting for relevance and focus. And finally, some lists are completely closed; only the owner can post messages.

Internet e-mail lists and terrestrial radio are two manifestations of broadcasting using different technology and different rules for messages. They do, however, share the common goal of providing social connections. Broadcasting now becomes a generic word: sending out data to multiple recipients. The Internet technology that now challenges terrestrial radio with streaming programming also provides new services to the same industry that it threatens.

Michael's story unifies many themes that I have discussed in many of my Last Word Columns. The principles can all be applied, directly and indirectly, to this story.

"The Psychology of Technical Quality" (October 27, 2004) explains that we need to frame our questions carefully: how to make contact with engineers who might have a solution was a better question than what is wrong with the listener's radio.

"The Deadly Psychology of Schedules and Deadlines" (February 23, 2005) examines the difficulty in allocating a fixed amount of time to solving problems with big unknowns: the time to find a solution for the listener's problem could have varied from one hour to never.

"The Paradox of Learning" (October 19, 2005) presents efficient ways of learning from others: the engineer who had the answer was a perfect person to learn from. Also, fragment of a social lunch turned into an article and a learning lesson.

"Tools for Analyzing Your Future" (December 14, 2005) discusses how our careers depend on how new technologies change the nature of business. The Internet is very important for your career in ways that are hard to predict.

"Chaos Theory and Radio's Possibilities" (February 22, 2006) emphasizes the need to take advantage of the randomness of technical branches, in this case the Internet providing focused e-mail lists.

"Broadcasters Depend on Open Gates" (April 5, 2006) shows that individuals will not close their gates when they want to receive selected messages from colleagues.

"CDs Prove Secondary Features Matter" (August 23, 2006) shows that we must always be on the lookout for derivative properties of the Internet.

The implications of this story are still broader. Many listeners voluntarily subscribe to lists managed by radio stations, which posts messages about upcoming programs and events. E-mail broadcasting and terrestrial broadcasting fuse into meta-broadcasting. WBUR is such a broadcaster that uses e-mail lists to maintain contacts with listeners, providing information about upcoming show topics as an example.

But most importantly of all, "New Audio Villages Challenge Radio" (October 18, 2006) emphasizes that we actually live in small virtual communities that are connected by the Internet. For Michael to have received the help of his colleagues, he had to have been an accepted member of the village of broadcast engineers, both contributing and profiting from membership. You help me today, and I will help you tomorrow. We are socially and emotionally dependent on our friends in the villages we create.

Being asked to do more and more with less and less, it is comforting to know your colleagues are out there, willing to help you today. In the "good old days" you might have met a colleague at a trade show who knew the answer to your problem, but that

depended on luck. In "bad new days" the process of finding the right person can be very, very efficient if you know how to use these tools. But that is also a learned skill that takes time. Add e-mail lists to your toolbox.