The Spark of Innovation

By Robert Delwood

The other day I got thinking about innovations while parking my car. Thinking specifically about managing innovations, and is that even possible? It doesn't seem that innovation itself can be managed since it's an end result and not a process. You can help people with their creativity. For example, the more relaxed they are, and the more empowered they feel, the more creative they tend to be. But even encouraging creativity still isn't managing innovation. So really what drives it?

An obvious answer is in respond to a need. Necessity-as-the-mother-of-invention kind of thing. Yet, tracing the history of scientific innovation shows this isn't as direct as it seems. The automobile wasn't created out of need; in fact, many scoffed at the new idea. Nor was the airplane. That was born more out of a millennia-long desire to soar with the birds. Even Gutenberg and his press wasn't a need. He just saw a chance to earn a lot of money. So, if that's not enough, then the next is a technological breakthrough. These moments are far and few between although the payoffs far reaching. The silicon transistor changed the electronics scene in the late 1940s, even though the concept had been patented in 1925. A good publicist may also be part of the equation; this isn't a glib comment and more about this later.

It's these last two categories that are worth looking at more closely, however. One more way is through inspiration. Here, an existing idea is taken in a whole new light, in ways that no one had considered before. Science, arts and letters are full of these stories. This is linked to some of the greatest minds such as Archimedes, Hawking, Picasso, Otto Rohwedder. Otto Rohwedder? He's the guy who invented sliced bread. Actually, he invented the bread slicing machine. There was bread before him, there were knives before him, there was even sliced bread before him. He just invented a machine for bread producers to slice it before it got to the customer. The idea even coined a cliché: The greatest thing since sliced bread. That marriage was an inspiration to be sure but neither the idea nor the machine sold itself. It was eight years after the patent of the machine and the first real adoption by Wonder Bread in 1927. So apparently even at the time, sliced bread wasn't the end all we see it as today. It required some aggressive marketing and a good publicist as well. Nevertheless, all these points merit discussion.

What was driving me was my car. As I was parking I thought that the parking lot was almost unchanged since the automobile's inception. A large flat surface with spaces marked for each car. Sure the hitching post idea may have come from the horse days but horses just needed a single long row to be hitched to while cars require much more space. Did the construction engineer in 1895 know he created the perfect design that would stand the test of time when he marked off a 10'x10' square? This raises the question: Is anything we're using today identical to what is was more than 100 years ago? As a generational matter, we think not. Some of us may remember the computer revolution, say, starting with the original PC and the Macintosh through today seeing our computers doing almost everything. Going back further, the lowly telephone started out with one task and the simplest of controls. Now the telephone is the most complex and most versatile of appliances that communicates, watches TV, surfs the Web, and gives up driving instructions, games, and so on. Anyone from the last 100 years would recognize a parking lot, few would recognize today's phones.

Whatever forced the differences between those two (the virtually nonexistent change of the parking lot and the evolution of the mobile phone) is, we need to identify it. We need a new mind set. For example, I once overheard a series of conversations between a client and a software programmer. The scope was the client wanted automation to help him record technical minutes of a meeting but in real time and collaboratively. It is a good 21st century question. The paradigm he was using was his current way of doing things: Using a form, filling blanks, entering that into a computer, only to get it marked up, revised, and so on. That's a bad 1930s answer. The programmer was trying to accommodate that method though. The problem, as it struck me, was that we were simply using a 1930's solution with 21st century tools. The question was right, the answer was not.*

This is true in my documentation world. So many of the changes are driven by attempting to adapt current practices to electronic word processing. Some of these practices go back to 1997, already antiquity by computer-age standards, but some are rooted in 1950s methods. We could have asked back then if we created processes so perfect that they would not change in more than 15 years. Of course not!

Therefore, if the system isn't perfect, what can we change? That's hard to say but where to start is easier to answer. It almost has to be along several approaches at the same time.

**Challenge requirements**

Understand what the end product is used for and question if current processes are really needed. If the original requirements changed or, better yet, even went away, then obviously our methods can change. For example, I suspect many of the end clients access our documents solely through the Internet, the Web, even as a document on their computer but never as paper document. If so, maybe a book publishing approach designed for paper publications is also outdated. Links, Web pages, inline databases queries and hyper-documents could be a better solution. In short, periodically ask if a requirement is still needed.

**Know technology**

Let me be clear: I am not advocating technology for technology's sake. Far from it. I am advocating knowing technology, understanding its trends, and using proven technology in a responsible manner. Team members who aren't aware of technology should be viewed skeptically. They may be good at maintaining the status quo but the status quo isn't going to work in the future. Managers who actively resist technology should be admonished. If the requirements are one side of the equation, technology is the other. It's only through knowing both sides of the equation can the two be matched up. Technology is not the sole domain of the technologist. This applies to new practices and methods for each discipline.

**Manage Technology**

Implementing change is risky. No manager has ever been fired for not making a decision, they only get fired for making the wrong decision. And therein lies the risk. Therein lies the solution, too. I had the opportunity to speak with UH professor John Leinhard, best known for this work with the radio program *Engines of our Ingenuity*, and asked him this very question about managing innovation. His answer was 'hedonism.' People like to invent and it makes them feel good. So give them the room to invent. This includes the ability to make mistakes, have breakable toys, and try new ideas. Google, for examples, gives team members Fridays off of their normal work just to try new ideas. Given a sandbox, the solutions will come. For me, it comes down to a creditability issue. I advocate making small, safe changes, at least at first. I say this for several reasons. It does build up credibility, but also gains experience managing technology, and doesn't overstep bounds. Many great projects have been launched by overselling an idea and not having the programmatic or architect experience to pull it off. As a result many more have been disappointed. But leaving it a small steps may be enough. There are plenty of free, already available applicable technology around us. Office 2007 has services no one uses. I'd like to meet any one who uses more than even 10 features of Word, let along the database connectivity feature, or Excel's Web page scraping feature.

**Inspiration**

The irony is that invention is a team effort. We credit Edison with the light bulb, Fulton with the steamboat, or the Wrights for the airplane but overlook Telsa, Rumsey, and Santos-Dumont, among others. That myopic vision ignores the presence of priority, or the work of everyone before them. The Wrights didn't invent the airplane; they were no few than 86 reasonable claims with 50 years before them. They were the first ones to be credited with solving some of the problems. But even at

that, their claim has to be qualified. To be more specific they were the first ones with powered, heavier than air, controlled, unlaunched flight. No credited inventor likes to recognize competition, but in many cases, it was the very competition providing the motivation. It's what happens when innovation and motivation meet. To make that more than a saying, solving these problems isn't a singular event. The team has to do it.

This comes back to the original question of can innovation be managed. No, the spark of ingenuity can't be mandated. It can be encouraged.

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* Such is our nature. Look at Gutenberg and his movable press. He didn't do it to change the world, he invented mostly to get out of debt. But his invention did change the world. Within 62 years, the Reformation occurred, followed by the ages of the Renaissance, Enlightenment, Exploration, Industrial, Computers, to space and beyond. The expression may be grandiose but the spread of knowledge by books caused all this.

And books did spread. Within 25 years of his press, there was an estimated eight to 24 million books. At a time when scholars would walk 20 miles to libraries containing only a dozen handwritten books, could they now go to ones that had hundreds. But what was the state of the revolution 10, 25, or 50 years after it started? What were all those books? It is surprising but in those first 40 years the books were limited almost exclusively to religious and classical books in the exact same paradigm as manuscripts by monks had produced before that. By no coincidence was Gutenberg's most famous success was a bible. It wasn't until literally the second generation of printers did that change. In 1485, or 30 years after Gutenberg's Bible did the first scientific publications come about. Even then, the spread was slow since it was the church that controlled many of the presses. The drive of learning is so strong that it overcomes those forces and within ten or twenty years after that did the power of the press change human history.