Can innovation be learned or are only the "creative"

people among us capable of it? And how important is innovation in the business world?

As you'll see below, process innovation is critically important if we're to maintain our competitive position or increase our competitive edge... and the good news is that there are resources we can draw upon, guidelines we can follow, and methodologies we can implement.

Mary Jane Conway-King

Process Innovation

by: Sheila Julien, Senior Associate

The competitive environment never, *ever* gets easier. Just to stay as competitive as last year, you need to execute better this year. Continuous Improvement seems necessary just to stay in the game in many industries today. To pull significantly ahead, an organization must make process innovations in addition to continuous improvements.

A process innovation is one that significantly changes the speed, the cost, and/or an aspect of the quality of the process or service and has the potential to change the competitive landscape. For example, an insurance company overwhelmed the competition by shortening the time between claim filing and payment from weeks to hours. A small bank picked up market share through a process innovation reducing the number of days to approval by 80%. Dell Computer went from upstart to market leader with a process innovation that dramatically shortened the time from start-of-build to ready-to-ship — enabling them to build-to-order and dramatically reduce manufacturing costs. Many businesses have learned how to do a single minute change-over.

Each of these process innovations challenged and overcame powerful assumptions. Every business operates under the constraints of operating assumptions. We may not even think of them as assumptions, but rather as facts-of-life, because they are so ingrained in our organization's paradigm. But to achieve a significant breakthrough, we have to identify and overcome a significant operating assumption and rewrite the rules of the game.

Easier said than done, of course. We all want to achieve a process innovation that will remake the competitive landscape in our favor. And yet, it is hard enough to get our teams to accomplish continuous improvements when they are running hard just keeping up with the usual deliverables. Consequently, game changing innovations are rare. If your organization is going to identify and execute process innovation, you have to have created both the right human conditions and the best methods to successfully identify, challenge, and reverse the constraining assumptions that are keeping you and your competition trapped in the status quo.

Necessity Is The Mother of Invention

To achieve a breakthrough, a leader must make a powerful case that a breakthrough is truly necessary. And then the leader must follow that up with performance targets that are impossible to reach by conventional methods. People almost always stop looking for an idea once they already have one. Even a flawed or inadequate idea can look good when it is the only one you've come up with. Rationalizations as to why it is still 'better than the alternative' come easily.

Furthermore, all the natural incentives in most organizations work against making a big innovative change. Big ideas are harder to think of; they are harder to sell, and they are risky or scary to implement. Process innovations simply do not happen unless the situation or an influential leader demands an innovation that is

significantly and measurably better. This establishment of highly ambitious goals is cited as a necessary element to breakthroughs at DARPA (Defense Advanced Research Projects Agency):

> *"The problems must be sufficiently challenging that they cannot be solved without pushing or catalyzing the science. The presence of an urgent need for an application creates focus and inspires greater genius."* (Dugan & Gabriel. "Special Forces" Innovation: How DARPA Attacks Problems. Harvard Business Review, October 2013)

But we do not like to set our teams or ourselves a goal that could lead to failure, so we ask for goals we think can be met. Managers are taught to develop SMART goals, and 'achievable' and 'realistic' are at the heart of SMART goals. Yet, achievable and realistic goals never lead to innovation. If the target is less than 20% improvement, most of the time people will tend to try to get there by doing the same things faster and harder or skipping steps without completely eliminating the need for those steps. These 'stretch goals' lead to disappointment or unintended consequences far more often than true innovation. To inspire innovation, the goal must be out of reach via conventional thinking. Goals must be "SMIT" (specific, measurable, impossible, and timely) to spur innovation.

Innovation follows the necessity to invent, so a critical ingredient to process innovation is a leader with the courage, conviction, insight, and imagination to persuasively communicate the necessity for a game changing breakthrough.

But There Are No Virgin Births

Necessity may be the mother of invention, but it is not enough to produce a breakthrough process innovation. We also need methods that can identify and challenge the 'constraining assumptions' that maintain the status quo. Brainstorming is frequently used in Continuous Improvement efforts. But brainstorming is limited by the intuition and experiences that the participants bring to the meeting. Hundreds and thousands of possible solutions will be missed simply because they are not within the frame of reference of the individuals involved. Often a more systematic approach to inventive problem solving is required.

Inventive Problem-Solving

In the 1950's a Russian innovator believed that innovation processes could be improved by studying patterns in problems and solutions. G.S. Altshuller and others working with him analyzed millions of patents to identify patterns, and they deduced from this data a small number of principles that can be applied to make the creative process more predictably effective. They called this research the Theory of Inventive Problem-Solving or TRIZ, (pronounced "trees"). TRIZ is an acronym for Russian words that translate as "the theory of inventive problem solving."

The idea is that there is nothing new under the sun. Whatever your challenge, if you understand it both in its specific and general form and you do the research, you will find that someone somewhere has solved it. Then if you focus your creativity on adapting the general solution to your particular challenge, you will achieve your breakthrough faster and more predictably. TRIZ *accelerates* breakthroughs by guiding the human intellect along paths most likely to be fruitful. And speed of innovation is essential because most people and groups abandon an audacious goal fairly quickly and settle for a compromise. Slow innovation = no innovation.

The developers and practitioners of TRIZ observe that problems emerge from contradictions, and that most solutions aim at compromising with the contradictions instead of overcoming them. Here are some of the contradictions that may appear in the workplace:

- it takes time to do something the right way, but the thing must be done quickly,
- a task requires precision, but it must be done without precise tools;
- a product must have dozens of features, but it must be simple to use.

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547 Amherst Street, Suite 106, Nashua, NH 03063 USA   Tel: 603-889-1130 www.conwaymgmt.com

Each problem is a *specific* example of a *general* contradiction. TRIZ research has paired every general contradiction with a small number of general solutions. So a practitioner of TRIZ focuses her effort and intellect on translating the *specific* problem into one of several dozen *general* problems. The next step is to look up in the TRIZ resources the general solutions that have been applied to that general problem in the past. Then one focuses one's creativity on identifying and testing specific solutions that could apply the general solution to the problem at hand. TRIZ research and practice has been expanded into a rich tool kit for innovation, but probably the simplest approach is to use the '40 Principles.' A list of these can be found at http://www.triz-journal.com/archives/1997/07/b/index.html

Operational Innovation

While TRIZ is rich and powerful, sometimes you can achieve innovation simply by systematically challenging a few key aspects of your process. In 2004, Michael Hammer wrote an article for the Harvard Business Review titled *Deep Change: How Operational Innovation Can Transform Your Company*. In this article he described several approaches to "Reimagining Processes" by challenging basic underlying assumptions that prevent your organization from achieving a big breakthrough. Following are a few of the ways he suggested challenging the work:

1. **Challenge The Sequence** — what steps happen in what order. A bank recently changed the fundamental sequence of work in a loan department to shorten approval times by 80%. Not only did this innovation achieve unprecedented customer service, it reduced some rework and, by closing faster, reduced risk from floating interest rates. What would happen to your process if you rearranged the steps? What other changes would be required to enable this to work?

2. **Challenge The Roles** — who must do what. Empowering individuals doing the work to also complete routine maintenance can greatly increases efficiencies and reduce wait time. An organization that empowered people close to the work to install routine software patches rather than calling for IT could greatly reduce the number of PCs with unpatched software and increase capacity of the IT department. A call center provided training and tools to the customer service reps so they could handle the whole job instead of transferring the call. What work could be transferred to the people closest to the work when the need arises? How would this accelerate the service?

3. **Challenge The Steps** — With its breakthrough cross-docking approach, Wal-Mart challenged the assumption that products must be stored in the distribution center before they are shipped. They overcame the near universally held assumption that it was impossible to plan and execute a process where a supplier's shipment could be loaded directly onto the distribution trucks. What steps in your process are held there by assumptions that we could never be good enough, precise enough, fast enough or accurate enough to eliminate the step?

4. **Challenge The Location** — A gerontologist decided that instead of maintaining a full office, his business could and should primarily be house calls. What if a key component of your work were executed in a completely different place? How could you increase value for your customers or increase your own efficiencies?

5. **Challenge The Source of The Information The Process Acts On** — Hammer described a manufacturer reducing inventory by basing production on actual orders than forecasts. Where are you using approximations or forecasts when you could use information closer to the source?

Accomplishing Breakthroughs

From TRIZ through DARPA, it is clear that an organization needs four key ingredients in place in order to achieve breakthrough innovations that could change the competitive landscape:

- We must have an audacious goal — one that cannot be achieved through standard procedures no matter how smart and hard we work
- We must clearly and convincingly make the case for achieving this audacious goal
- The goal must be measurable and timely, clearly laying out the degree of improvement and the deadline: "from x to y by when"
- The people involved must be trained in methods for achieving breakthroughs and given the leeway (the 'sandbox') to challenge the status quo and to test outrageous ideas that just might work.