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Ten Tenets of Innovation

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An Innovative Environment

An environment conducive to high levels of innovation will occasionally spring up by accident, driven by a few key individual contributors, and without a great deal of forethought by the managers involved. But more typically, our choices as managers will determine the level of innovation our people display. An innovative environment requires more than just hiring the right creative people and hoping that they will bring forth brilliant products, services, and processes. It also demands the sponsorship of leaders in the organization, and the recognition of the value of creative thought. Our procedures, our statements, our attitudes, and our reward and penalty systems all affect how innovative our people will be.

However, we may not always understand and consider the impact of our actions as managers on the innovative environment. People either modify their behaviors to fit what their leaders seem to demand, or they opt-out of the organization. What do we demand by our actions, attitudes, and reward systems? Do we support well-reasoned risk-taking? Or do we

manage solely by holding people accountable for what they said could be the best-case result?

The connection is clear: fear drives out risk-taking, which drives out innovation.

I propose ten tenets that are essential to building an environment of breakthrough innovation. These ten tenets represent a starting point rather than a complete flight plan.

1. Plan on failure; be delighted with success.
2. Fail often; fail early.
3. Recognize that trust is a prerequisite for innovation.
4. Accept that hierarchy and position are irrelevant, and may be the enemy.
5. Realize that innovation is not always customer driven.
6. Hire a diverse workforce and watch for opportunities at the intersections.
7. Understand that ideas come from everywhere.
8. Create a "yes, if" environment rather than a "no" environment.
9. Give your people the time and resources they need.
10. Recognize that innovation can be managed.

Tenet #1: Plan on failure; be delighted with success.

Innovation is never without risk. In fact, it has become almost a basic premise of research and development that increased risk is a prerequisite to increased innovation. This principle is at work in your personal financial investment portfolio just as it is in your product development portfolio. To create an innovative environment, we as business leaders must come to grips with the fact that risk and the big rewards that innovation can bring go hand in hand. The way in which we react to failure sends a strong message to the organization. Our level of tolerance of failure will determine our employees' willingness to take well-judged risks. The more willing we are to expect failure but be delighted with success, the more risk our employees will be willing to take. If we truly want an innovative environment, we need to expect—in fact aim for—some measure of failure.

In The Principles of Product Development Flow: Second Generation Lean Product Development, Donald Reinertsen reminds us that the major output of the product development process is information. This is in contrast with manufacturing, where the main output is product. Reinertsen tells us that one achieves the maximum information content from an experiment with a 50% failure rate. If we experience too few failures, we learn little that we didn't already know. Suffer too many failures and we won't generate sufficient direction for future experimentation.

In reality, of course, our industry and our particular business strategy will determine the level of risk we can take and the level of innovative output we must generate. Many methods are available for determining if a given risk distribution in your portfolio is financially appropriate for our business. But this tenet reminds us of the strong correlation between our willingness to

accept failure and the innovative environment we will create.

Tenet #2: Fail often; fail early.

Innovation is discovery, in both our market and technology understanding. Failing often implies willingness and tolerance for this sometimes-painful discovery process. But we wish to do this quickly, with rapid iterations, so we can make better decisions going forward. The more rapid is our learning cycle, the faster we can refine our approach and hit the sweet spot of the market needs with our technology capabilities. In fact, a rapid learning cycle has become a basic principle in many philosophies of product development, such as Agile, Lean, and Flow.

Although we can view frequent failure as an illuminating and refining process, we would like the most significant decisions to occur when the amount invested is low. Pulling up the greatest risks to the early stages of a project will allow for rapid, and cheap, iterations. In order to create an environment of tolerance of failure and to produce a business that can afford a high degree of innovation, we should reduce the cost of failure through rapid learning loops, and encourage early rather than delayed risk-taking.

Tenet #3: Realize that trust is a prerequisite for innovation.

It is self-evident that fear kills risk-taking while trust releases it. The less our people can predict how we will react, the more likely they are to keep their heads down and take fewer risks. Individual contributors and even our supervisory staff must have trust in us as their leaders, and we must place trust in their plans and actions in order for innovation to blossom. Interestingly, unspoken, implied rules or unpredictable responses to results create the greatest fear. Clear rules create boundaries within which innovation can flourish. Unclear boundaries, especially in a setting with

a history of erratic responses to breaching these boundaries, can kill an innovative environment.

A person is most creative and most effective in producing innovation when he or she is not forced to worry if failure means the loss of a job, or a diminished bonus, or the downgraded respect of his leaders. According to studies, a big stick or a significant carrot may motivate people to action in some situations (usually rule-based or algorithmic tasks), but it does little to make someone more creative (thinking "out of the box") and may even hamper judgment. Reward good judgment and allow for mistakes. Innovation is driven by how we react to failure. As leaders, we need to show trust in our employees and must work to have that trust returned. Only then will we see the burgeoning of innovation in our organization.

Tenet #4: Accept that hierarchy and position are irrelevant and may be the enemy.

In an innovative environment, leaders must come to grips with the fact that their ideas are not necessarily better than those from people reporting to him or her, Not only should we guard against weighing our ideas more heavily, but we should realize that the greatest ideas may come from the most unlikely places. To encourage a highly innovative environment, leaders must let go of ego and let the creative process happen, often apart from them. The best leaders take pride in the environment that they have created. They will not only welcome ideas from all levels in the organization, but those ideas will be given the same consideration no matter where they come from.

Conversely, leaders hoping to create a highly innovative environment must recognize that opinions from those in power positions can kill an idea— even the entire innovative process. Unfortunately, it is all too common that, once the leader offers an opinion,

others involved in the conversation become more reluctant to offer opposing views. The discussion is over: the leader has spoken. Hierarchy is not only irrelevant in producing greater creativity; it may actually be the enemy. The message to leaders is clear: if we want an innovative environment, recognize our position power and use it sparingly.

Tenet #5: Realize that innovation is not always customer driven.

Some of the most spectacular innovations were not the result of carefully studied "voice of the customer" processes. Of course, for any business, it's essential to keep listening to customers and understand their needs, both spoken and unspoken, as well as to understand their applications, both current and future. But investing all of our resources in products within the vision of our current customers is likely to result in incremental gains rather than breakthroughs. As Clayton M. Christensen demonstrates wonderfully in The Innovator's Dilemma, while we are loyally following the instructions of our customers in our new product development, some young company with little to lose can take a larger risk (one that we would consider outside our charter of serving our customers' needs) and create a disruptive (or game-changing) innovation.

So what is the solution? In short, we can't always assume that our most significant innovations will be customer driven. Wise product development leaders always devote a portion of their investment to areas not directly tied to the demands of current customers, and the currently served and narrowly defined market segments. Allow our product development teams some level of creative play (apart from our customer-driven roadmaps), and we might be surprised by a breakthrough innovation.

Tenet #6: Hire a diverse workforce and watch for opportunities at the intersections.

We have all had the experience of walking into a new job and finding that our backgrounds allowed us to see long-standing problems from a different perspective than those who had been working on them for years. We have brought a new set of eyes to the problem, perhaps applying skills from other businesses or technology disciplines, bridging the gap between our past experiences and these new challenges. It may be counter-intuitive, but our ability to create innovative solutions may have more to do with our divergent backgrounds than with our brilliance.

Yes, we need experienced people from our industry to move our company forward, but creative solutions will frequently come from hiring someone from a completely different industry. Innovation requires looking at the problem with new eyes. We should hire a diverse workforce, and create an environment where this diversity can flourish—an environment of trust and tolerance of well-reasoned risk-taking. Hiring a diverse workforce will increase the chances that we will create out-of-the-box innovations, allowing us to deliver the most creative solutions in our chosen market segments.

It is easy and very common for leaders to become myopic about their industries and technology disciplines. That's why the most fertile ground for innovation often lies in the intersections among industries, technologies, products, disciplines and many other sub-divisions. Often unexplored and untapped, these intersections have great potential for creating value. We should make it a point to hire people and create a process to understand our current boundaries and assumptions then challenge these assumptions and actively watch these intersections. Finally, we must be careful not to box-in our employees with artificial boundaries. Our competitors have no reason to respect these boundaries.

Tenet #7: Understand that ideas come from everywhere.

Often, we turn to a few top individual contributors to act as our innovation generators, and these innovators usually have a well-deserved reputation for creative ideas. But sources of innovation for our business and technologies could be waiting for us in the most unlikely places. If we take the time to listen, and sometimes just observe with eyes un-obscured by current assumptions, we may find great ideas all around us. They rest with our customers (and especially with those who are not now and may never have been our customers), our vendors, and even our competition. We may find great ideas outside of defined functional areas - innovative product ideas from our manufacturing product testers or manufacturing process ideas from our product designers.

Most breakthrough innovation happens at, or outside of boundaries. Interestingly, the more we know about a given business or technology, the less likely we are to think outside of that box and come up with truly innovative solutions. At times, it takes someone who's not weighed down by a lot of assumptions to create the greatest new ideas, to re-ask the questions that everyone thought were answered long ago. Let's not assume that great product innovations must come from those in product design or that dramatic business model innovations must come from the business development team or executive leadership. We need to create processes and an environment that encourages the generation, capture, and evaluation of ideas from all sources. As Nobel Prize-winning chemist Linus Pauling said, "The best way to have a good idea is to have a lot of ideas." So we should learn how to gather ideas from everywhere, and then create a great filtering process.

Tenet #8: Create a "yes, if" environment rather than a "no" environment.

The typical product development environment has five types of contributors : The Creator, The Advancer, The Refiner, The Executor, and The Flexor. According to this model, the Creator tends to create ideas, whereas the Advancer promotes ideas. The Refiner challenges ideas and the Executor implements ideas. Finally, the Flexor steps in to fill gaps. This is a great model to understand the dynamics of the product development environment and how to create and maintain an effective balance within it. Of course, as we have discussed, innovations can come from anywhere. Similarly, few people take on the same role all the time.

To help an idea take flight and succeed, the product development leader must bond a Creator to an Advancer and a Refiner. Too many Creators may mean nothing ever reaches the commercialization stage; too many Executors may result in insufficient innovation and lackluster product releases. And too many Refiners—or too much credence given to Refiners—may lead to the development of a "no" environment in which innovative ideas can't find an audience because they are shot down too quickly under the assumption that "no, that's not possible." It takes a skilled product development leader to prevent Refiners from creating a "no" environment.

But if the balance is right, each of the players has the proper respect for the other's strengths, and is encouraged to allow an innovative idea to mature, the result will be a "yes, if" environment. "Yes, if…" means allowing an innovative idea to mature while the team considers what would be required before crystallizing the idea into a plan: "Yes, we could do X, if only we could do Y and Z." This may result in new ways to solve Y and Z. Encouraging a "yes, if" environment

will also give more people the courage to voice their innovative thoughts. Creating a "yes, if" environment generates more and better ideas and gives them the evaluation they are due.

Tenet #9: Give your people the time and resources they need.

In 1967, Charles Hummel wrote the classic essay, "Tyranny of the Urgent," which spoke to the hearts and minds of many of us caught-up in the rush of the modern world. Far from creating the 1950s ideal of a life freed from trivial tasks, technology has simply caused us to pick up the pace. The pressures of increased global competition and the demands of Wall Street have done the same to every manager in every industry. Our engineering managers are now expected to reduce cycle-times, deliver higher output with the same or fewer product development resources, make accurate predictions, and create breakthrough inventions, all at the same time. Faced with this seemingly intractable problem, engineering managers naturally pass this pressure on to the individual contributors, which fosters the assumption that we only have time to work on sure things, and increasing the probability that our new products will make only incremental improvements over current offerings.

To get a high degree of innovation, it is essential for us to allow for risk and to give our people the time and resources to take those risks. Dan Pink, author of Drive: The Surprising Truth About What Motivates Us, describes various companies, including Google, that allocate 20 percent of their staff members' time to work on projects of their own choosing. Pink demonstrates that this creative flexibility can produce a surprising return for the firm. This concept can be difficult to justify for some companies, given the pressures under which engineering managers operate. A more practical approach might be to scale this effort by the percentage of revenue to be devoted to new products. Such an investment level is a reasonable proxy for the level of innovation our industry demands. For example, if our firm devotes 10 percent of revenue to new product development, we can start by allocating 5 percent of our product development resources to work on longer-range, "non-roadmap" projects—that is, on projects that are not yet part of our agreed-upon standard commercialization process. These "off-roadmap" projects will frequently be for development of technology blocks for future needs. In addition, all resources should have some percentage of their time given to off-roadmap projects. We can begin by allocating 5 percent of the time for all professionals to be applied to off-roadmap items of their own choosing. To constrain this and get the greatest benefit for the firm, we could consider setting aside a few hours per week for all staffers to work in self-selected teams and produce a report of their work for the management team.

The tenets of creating an innovative environment discussed in this paper will have much greater impact if management allocates the time and resources necessary, providing some separation from the significant pressures of rapid commercialization.

Tenet #10: Recognize that innovation can be managed

Creating breakthrough commercial products requires generating information and moving from high risk and uncertainty toward very low risk and great predictability. By the time the products and services are in production, our expectations are for high quality, satisfactory performance and at a reasonable cost. Nonetheless, we know that risk is inherent to the innovative process.

To mitigate this risk in the most efficient way, we can design the project to take risks early in the process and reduce that risk-taking as we near production. In the case of the greatest levels of innovation, a two-stage process may be needed; one stage for technology investigation or invention followed by a second stage of commercialization. Companies often have two completely different processes and metrics for these two stages. The "technology invention stage" may require a set of measures designed to encourage well-judged risk-taking, and to provide rewards that are tied more to effort than outcome. Over time, we can learn expectations for success rates during this first phase which can guide our subsequent financial decision-making. However, the "commercialization stage" may be more quantitatively measured, and the people can ne rewarded based on outcome metrics like product performance and production costs, and project schedules, and project costs. The point is - by recognizing the need to transition from high risk to low risk and from high innovation to implementation - an organization can build and improve processes, reward systems, planning systems, and resource profiles to accommodate and account for these different needs throughout the product lifecycle. In other words, innovation can be managed.

Conclusion

Creating an environment conducive to breakthrough innovation typically requires a conscious effort on the part of the product development leader. Unless were are careful, it's all too easy for us to send the wrong message to our organization, causing creative people to become more risk-averse and our products to improve only incrementally. The astute product development leader will monitor the environment and his or her actions daily to ensure they are reinforcing the level of innovation that matches the business need.