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Do You Have What It Takes to Lead Innovation?

It's Not My Job

I will start with the premise that innovation is a business process, requiring cross-functional participation. It is not something that should be delegated to R&D/Engineering. Innovation works so much better when Sales, Marketing, Finance, Operations, Legal, and R&D all work together in lockstep to bring a product to the market. Wouldn't it be great if Marketing had the vision to look around corners, anticipate customer needs, and direct R&D to pursue specific avenues? Wouldn't it be great if Sales had such great and trusting relationships with *beta-site customers* anxious to test and debug the latest and greatest new stuff? Wouldn't it be great if Operations was quick to interrupt their production schedule to make prototypes, implement new designs and process controls, source new raw materials and parts, identify necessary quality standards and develop advanced tests as needed? Wouldn't it be great if Legal had a strategy and resources for intellectual property protection, and if Finance was quick to invest capital and expense for future growth?

Sadly, the reality is that innovation usually is left to R&D. Recently, one of my consulting clients—a CTO at a Fortune 500 Company—implored his cross-functional colleagues to get together and review their current product portfolio and competitive landscape to ensure that innovation was headed in the right direction. The segment SVP sent a note back to the effect of “Why bother? Just go invent something.”

In most organizations, sadly Marketing focuses on pricing and communications, maybe sales support, but without meaningful strategy or vision.

Sales is happy to bring completed product developments to customers, but lacks the relationships necessary to create partnerships for joint development and beta testing. After all, customers are usually inundated with their own supply and commercial issues to be distracted by your innovation.

Want to get Operation's attention for new stuff? Good luck—they are measured on speed, yield, scrap, energy, material, and throughput. R&D is an interruption and a cost for them—a group that stands in the way of hitting their measurements and who is welcomed only when there is a quality excursion firefight that needs R&D's immediate expertise, and which was probably caused by R&D's half-baked design in the first place.

To Finance, R&D is a cost center, and one whose intrinsic unpredictability makes them extremely uncomfortable. After all, return on R&D investment is impossible to put on a spreadsheet and often doesn't show up for several years and in very different ways than anticipated.

To Legal, protecting IP is important, but contracts and litigation are far more urgent and take precedence.

Most organization talk the talk about innovation, but if you look at the different functions' incentives, there is complete misalignment—a significant reason why so many organizations are disappointed with their product vitality and growth.

Very simply, if the CEO and Board would just mandate that everyone's compensation was say 25% dependent on new product sales vitality, many of the barriers to innovation would go away. Perchance to dream....

The practical reality is that leading innovation is generally the purview of R&D, though I have experienced a handful of General Managers who took more than a passing interest in growth through new products. These are the exceptions.

Centralized or Localized R&D?

Given the reality of how innovation really works, I prefer the model of free-standing R&D organization, led by a VP or CTO reporting directly to the CEO. In this way, all technical resources are potentially fungible and can be directed as needed to opportunities of the greatest impact for the organization. The idea of small technology fiefdoms reporting directly to a business unit and dedicated to discrete and narrow product lines misses the opportunity for synergy and the transfer of knowledge across product lines. It is inefficient and says more about the product line manager's lack of trust and need for control than it does about the effectiveness of the overall company. Still, many organizations function this way.

I often see the pendulum swing back and forth from centralized, to decentralized R&D. Pity the poor VP of R&D/CTO who is restructured by decentralization and is suddenly given an ostensibly influential role in the C-suite, but with neither budget nor staff. This works for a year or two, but inevitably, the divisional VP's or Directors of R&D soon regard the CTO as irrelevant, and Finance sees an opportunity to cut costs by releasing the CTO. Once innovation loses its seat in the C-suite, you might as well send out a memo that new products are no longer important to your organization.

You Need a Track Record to Have Credibility

I strongly believe that anyone under consideration for leading an R&D organization should have delivered considerable successful hands-on innovations with real impact before stepping into a leadership role. One of the prerequisites of innovation leadership is to have the credibility to earn followership, something I discuss in great detail in Chap. 12. All too often I see technology organizations reporting into business leadership, and the results are a disaster. Ostensibly, the desire is for the business general management to have span of authority and accountability over an entire profit and loss center, which is a laudable goal. But it often fails to deliver real innovation, as impatient business managers, in their haste to “make the quarter” cut their investment into the future. Or more simply, they are merely clueless about innovation, science, technology, data, experiments, and yet they don't properly delegate responsibility to a leader with more relevant experience.

Consider the situation where an innovator approaches the leader and says something like, “This project is difficult and risky, and will require eighteen months for me to complete.” An experienced innovation leader might say, “Nuts—I could do the project in ten months,” and a rich discussion of project risks and plans followed by a negotiated timetable and resource plan will ensue. Faced with the same comments, a business guy who never spent a day in the lab might also say the same thing, but will get an entirely different response, because he has never lived the role. Or he might not know when he is being sandbagged by the researcher and buy into the 18 months without question.

An experienced innovator will understand when his employee is struggling with fishing a meaningful signal out of a noisy and less-than-capable analytical procedure, whereas a business guy has never faced this and would have no empathy, or useful advice for the employee.

An experienced innovator will understand the excitement and enthusiasm that his employee feels when a breakthrough has occurred, and will also have the grounding to know that he ought to make certain the result is real and

repeatable before getting too excited and running it up to the brass. An experienced innovator will better know when a project is really completed and ready to sell versus one that looks good, but in which there have been short-cuts taken and where there are huge operational risks associated with the scale-up and roll-out.

A business guy will not understand that, if you made it work once, why can't you just do it exactly the same way and get it to work every time?

Now consider someone technical who is elevated to a leadership position, but who is still rather junior and lacks the track record of success as well as the lessons that come with setbacks, struggles, and failure. There are some people who just ooze leadership-enthusiasm, great energy and communication skills, and even a strong technical education and background. But they are green. In senior management's haste to get someone started along the management track, they move the person up too soon, and he is unprepared to really excel in a leadership role. He may have good leadership instincts, but may be lacking experience with people, and could permanently disengage key employees. A superstar researcher is unlikely to take direction from someone too junior, regardless of title and position. A few more years at the bench might have been all that was needed. On the other hand, I admit to having appointed people whom others felt would be unable to stretch into the leader role, and they often, but not always, surprised everyone with the rapidity and extent of their growth.

As I think of the top notch R&D leaders whom I really respect, all of them had strong track records at the bench before launching their management careers. Consider Bill Banholzer, author of this book's Foreword, who recently retired after nearly a decade of successfully running Dow Chemical's nearly two-billion dollar research team. Bill got on GE's management track quite early in his career, but not before graduating with a PhD in Chemical Engineering from top-tier Illinois, and then having a quick succession of big-impact projects. First, working with GE's Bill Ward and Ann Ritter, Bill lowered the reactor variability and eliminated a key catalyst poison for the "Direct Process" that converts silicon metal into methylchlorosilanes—the key building blocks in silicone manufacture at GE Silicones. A small change in the D/T ratio of dichlorodimethylsilane(D) and trichloromethylsilane(T) produced from the direct process translates into millions of dollars per year, as does the frequency of the costly changeover of the catalyst system, and Bill had a big technical and financial impact right out of the box. Shortly after that, working with John Ackerman, Bill co-invented the very materials that make the stealth bomber invisible to radar in a way that also allowed them to survive the harsh conditions and duty cycles of an aircraft engine, and which turned into a

major profit center for GE Aircraft Engines. Next, Bill made salient contributions to the development of synthetic diamond films and launched a business at GE Superabrasives to bring this to market. At the same time, Bill and colleague Tom Anthony produced an isotopically pure synthetic (all carbon-12) gem diamond that was a superconductor of heat and is still considered a significant scientific breakthrough decades later. By the time Bill was 30, he had a significant innovation track record under his belt, which earned him the respect of his colleagues at all levels in the organization. He also had all the raw leadership potential that GE's *Leadership Engine* [1] (See Noel Tichy and Eli Cohen's book by that name) would quickly develop and refine.

I know in my own career, I had many failures and a few big enough successes to stay on the payroll, and all of these were valuable lessons for me to lean on in leading others. I personally spent 6 years in college and grad school at the bench, along with 7 years full time at GE as an individual contributor, and another 8 years as a player-coach, still having projects of my own while leading a small group. It was with sadness that I left the bench for good after 22 years.

Experience and credibility matter. But there's more.

I think a good innovation leader really needs to love and value innovation. It can't just be a job—it has to become a major part of who you are and the meaning of your career. Bringing new stuff to the market—to real people—has to be exciting, fun, and important. You need to have a real passion for it, because most of the time, you will spend your days wallowing in data while making frustratingly slow progress. You need heart to sustain yourself, and even more heart to sustain the others around you.

A good innovation leader needs to be constantly learning, about new science and technology, as well as about people, organizations, business/finance, strategy, marketing, and communication. It is really tough to stay sharp enough on the science to be able to give high-level technical papers at international conferences, as well as to give good business presentations to Wall Street analysts and to your own Board of Directors. It is a challenge to apportion your time appropriately. It helps to be very well-grounded in the fundamentals of science and engineering and to be a very quick study so that you can have more time for other duties.

All leaders need to have excellent communication skills both listening and persuading. But I will posit that communicating the intricacies of science and engineering to a lay/business audience in such a way that they get it—this is a real art. Try explaining some arcane concept such as metallurgical grain boundaries, or statistical process control to the brass in a way that gives them the tools and information they need, and the understanding and support you

require. Sorry, but confusing them with fanciful jargon will not impress them—it will irritate them and you will not enjoy their support.

On the listening side of communication, consider that you may have dozens to hundreds to thousands of researchers in your organization, each with expertise, issues, and opportunities. You'd better be a good listener, because you will not only have to understand what you are being told, you will also have to make critical evaluations of what you hear, and be able to distill it into manageable, marketable packets for the rest of the company.

Leading Nerds

Obviously, while all leaders must relate, energize, and inspire their employees, not too many of you would argue if I suggested that our techies are a wee bit quirky. Let's face it—who goes into science and engineering? Yes, left brained, quantitative thinkers—in other words—nerds! I can say that with impunity because I am a nerd and proud of it. But we are generally not the most social beings—we are more comfortable in deep analysis. Moreover, we are very hard to manage. It is the rare bird who is both a technical and social person, which is why finding good R&D leaders is so difficult.

The Mistake of Promoting Your Best Scientist

Often organizations make the mistake of promoting their best scientists into leadership positions. It seems so logical—why would you promote anybody but the best scientist? Then he can tell everybody the right things to do. Oh yes, and he will. And he will also fail to develop the people reporting to him as well, because he knows all the answers. He will micromanage, and nobody will argue with him—they will either become overpaid technicians doing his bidding, or they will leave. It is usually a double disaster as you take your best scientist away from the bench where he was great and effective, thus losing his skills and impact, and turn him into a terrible manager where he is ineffective and unhappy and drives others away, while irritating his counterparts on the business and operations side, whom he often sees as inferior.

Far better is to promote one of your better scientists with a solid educational background and track record of success, but who has the propensity for leadership. She should be someone who understands that leadership is all about service and influence. Her role is to help the best scientist get better and to get

more stuff done, as well as to find great new employees and grow everyone on her team. And to make sure her team is working on the right things in the right way, not too overloaded but still stretched, and with the resources and cross-functional support needed to succeed.

In general, you want your innovation leader to have a consistent track record of innovation and impact, great social skills, high emotional intelligence, strong communication, empathy, and influence. He or she should be well-grounded in science and a quick study, and yet still have a driving interest in people and business, as well as the capability and unquenchable desire to bring new stuff to the market. No problem! Hopefully this book will help you get there.

Summary

In this chapter, we discuss what are the qualities and prerequisites for leading an innovation team. Ostensibly a cross-business process, leading innovation almost always defaults to the R&D leader.

Ideally, the innovation leader will have strong technical skills and a track record of success sufficient to earn credibility both cross-functionally and within the R&D organization. He will have excellent communication and influence skills. He will be well-versed in business acumen and its financial measures.

A strong case is made for a centralized R&D organization, as opposed to having several separate teams reporting to various business units. Here the R&D leadership can ensure that knowledge spreads rapidly across the team, and that resources can be quickly and easily focused on urgent needs. The dangers of having researchers reporting into business leaders with little R&D experience are described. On the other hand, equally problematic is promoting your best scientist who may lack the leadership skills and interests, and who may be prone to micromanaging.

Reference

1. Tichy NM, Cohen E (2009) The leadership engine. Harper-Collins, New York, NY

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