GET OUT OF THE WAY

HOW TO MANAGE DEVELOPMENT OF TIMELY, INNOVATIVE AND RELEVANT PRODUCTS

JOHN LEVY

Happy About

“Get Out of the Way!” Book Excerpt

How to Manage Development of Timely, Innovative, and Relevant Products

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Forewords by Andre Neumann-Loreck and Mark S. Williams

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Foreword by Andre Neumann-Loreck

Great products introduced on time to meet tight and quickly closing market windows represent the Holy Grail of the technology business. To realize this daunting vision, innovation and execution must happen in unison. In 'Get Out of the Way!' John Levy examines how managers can help drive—not hinder—the development of truly innovative, relevant, and timely products.

During the '80s, I worked for a small manufacturing company in Japan building electric motors for disk drives. There, we wrestled with a perennial product innovation question: do we dedicate all our engineering resources to projects requested by customers, or should we put a team on a new technology that could be a game-changer? The customers paid the bills that kept the lights on, but we lacked the resources to do all they were asking of us. Ultimately, we realized that their requests served another purpose—keeping us commoditized enabled them to play us off against our competitors with low switching costs.

Several internal discussions failed to produce anything that approached a solution. Then, one of our most highly respected engineering managers decided to act on his own and plowed ahead with confident zeal to create a new product line. The result of that maverick move proved to be very successful. And from that, I learned, as John points out in his book, you can't always blindly listen to your customers.

There is more to it than that, of course. In this book, John guides us to an understanding of the many success factors in product development and lays out a map for avoiding the equally plentiful pitfalls. John has learned the ins and outs of the development process in numerous industries and across many product lines. He has led, coached, facilitated, and, above all, been a careful observer of product development—and he has the battle scars to prove it. I have had the good fortune and pleasure of working with John on product teams, corporate strategy, and in architecting product development efforts at several companies. His insight, wisdom, and patience have been a boon to our efforts every time. His book will now help lead you down the straight and narrow as well.

Andre Neumann-Loreck
Vice President of Engineering and Operations
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Foreword by Mark S. Williams

In his book 'Get Out of the Way!' John Levy gives managers the tools to solve the unique problems of innovation: unpredictable customers; challenging technology; bright, opinionated people; and corporate environments that can be capricious. With all the buzzwords that attend the term "innovation," the work fundamentally comes down to how people work together to make technology work for people. This is learnable, teachable, and trainable. But it is not easy. 'Get Out of the Way!' extends specific actions you can take to increase your odds of success.

John's street credibility comes from his work in top companies like Apple and Quantum, doing development work that kept them on the cutting edge. He has a deep understanding of technology and all the right credentials, but his natural talent is bridging the gap between people, organizations, and technology. With simple but powerful concepts that will help you improve team performance in the complex world of technology innovation, his coaching provides insights that can be immediately applied and will take a career to master.

I recently brought John in for a consulting assignment. The assignment was to create a new front-end application and, at the same time, push business and technical teams to integrate at a whole new (to us) level. This is John's sweet spot, and he delivered above my high expectations. Not only did this team succeed, but John's work resulted in a "spin up" of new skills and a permanent capability gain which is still paying dividends.

If you are managing a team of professional technology developers, you know they are motivated to do great things—technically. But you also know the zeal to do great things can be dampened by tight deadlines, underappreciation, and disconnects between elegant technical solutions and pragmatic product innovation. How you strike the balance makes all the difference. Your skill in handling the people is what makes you different and your team a success. This book provides the guidance you need to make the leap from technical mastery to managerial mastery.

Technology will continue to change. What doesn't change is the need to understand and guide how it is created and used. That takes people who really understand the technology at its core and can bring it to life, who can get off their own need to control the process and engage others and inspire teams. You'll see that spirit throughout this book. It's reinforced at the end of every chapter with a closing thought on how to "get out of the way!"

Mark S. Williams
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Chapter

3 Timely Products: Consistent Resources

Chapter Preview: Your job is to manage the organization's research and development (R&D) investment wisely; this involves allocation of resources, selection of projects, and creation of effective teams and cultural values.

Uncertainty Creates Inefficiency

Nothing makes people more anxious than uncertainty about what will happen next. In developing products, people work best when they know what is wanted, have access to the people and technology they need, and have a reasonable expectation that the project will continue long enough for them to complete it.

Successful development requires continuous allocation of resources to projects, even as you are making decisions about continuing or terminating various approaches to the product. How well you manage the process of allocation may have a large impact on the efficiency of your development organization.

The worst thing you can do is to make frequent changes to product development resource allocations. For example, even though you may not be consciously changing manpower allocations, whenever you require development people to "drop everything" to attack a crisis in product quality, manufacturing yield, or customer support, you are interrupting the continuity of product development work.

In this chapter, we focus on things you can do to establish continuity for the development organization while keeping your investment in R&D under control.

R&D as Capital Investment: Design-in-Process Inventory

Don Reinertsen, in his excellent book, 'Managing the Design Factory,' describes the process of product design as being like a factory where the result is recipes. Each recipe (or product design) is the template for producing one product. Since no economic return occurs until the recipe is used to make a product, Reinertsen argues that we should regard R&D investment like work-in-process inventory in a factory. He calls this investment design-in-process inventory.

While work-in-process inventory in a factory is often depreciated at 25 percent per year, R&D design-in-process inventory depreciates even more rapidly because of technological obsolescence and competitive product introductions. But because of a quirk of accounting history, R&D costs are written off as they are incurred, and most companies do not regard R&D investment as an asset to be managed.

We can learn to manage this R&D investment wisely by following some key principles.

Eliminating the Unworkable

Even though the true requirements for a product may not be known until after a prototype is delivered to a customer, there are many possible design elements that can be tested for validity and applicability early in the process of product development. Most successful

designers start by enumerating the possibilities, and they relatively quickly settle on a small number of alternatives. The ability to eliminate dead-end approaches early is crucial to keeping R&D costs down.

Therefore, you should reward your R&D team for finding unworkable solutions to the design problem! As long as they do it early in the project, they are improving the return on your R&D investment by reducing the probability that the whole project will require reorientation late in the development cycle.

Naturally, this requires that the team be mature about abandoning dead ends quickly, rather than doggedly pursuing "favorite" solutions that don't work. Don't make their job harder by promoting your own technological favorites.

Kill 'Em Early

Even when a project develops workable technologies and designs, there may be many reasons for stopping the development. You may discover that a competitor has introduced a loss leader in the same product area, or that your key customers prefer an existing product over the proposed new one.

You should concentrate your marketing and competitive intelligence gathering at the early stage of a product development, because the cost to you of killing a development project is lowest early in the development cycle.

The cost includes:

- investment made in R&D (including both labor and capital equipment)
- market research completed
- time lost in reassigning R&D people from one project to another
- time lost refocusing management on new projects

Continuity: Staff Cohesion and Team Formation

If you are fortunate enough to have top-notch development teams in your organization, there is another hidden cost in canceling a project. Like all top performers, technologists and their managers develop enthusiasm for their work and their relationships with each other in developing the best possible products. Successful teams tend to continue to produce successes time after time because of this synergy.

Canceling a product early in the development cycle allows a team to get focused on the next project relatively quickly. Late cancellation leaves everyone on the team wondering about the skill of management. After all, it is management's job to anticipate and deal with business contingencies. If your explanation for the cancellation is not satisfactory, you may lose your best technologists to other organizations. Even when the explanation is good, repeated late cancellations burn out even the most tolerant people.

The basis for creating a pipeline of successful products originates with development teams that are cohesive and motivated to go on from one successful project to another. When a project is cancelled or fails for one reason or another, a cohesive team moves on quickly because the members have learned that satisfaction comes only partly from the product delivery itself. Much of the team's motivation is simply continuing to be part of the team. The team's loyalty may in fact be greater to the team than to the organization. You see evidence of this whenever a highly motivated team leaves one company as a group to go to another company or starts their own enterprise.

You need not fear this team motivation, as long as you recognize the power of team loyalty and support the continuity of teams in your organization. The following sections of this chapter address ways in which you can enhance the continuity of teams in your development organization.

Continuity Is the Basis for Organizational Learning

Organizational learning refers to improvements in the operation and output of an organization over time.

Organizational learning is good for you—even when, at times, you feel as if you are pushing on a stubborn organization to get better results. After you have checked to see whether you have defined for your organization a set of values that are consistent with high performance in product development, you should review your hiring and retention policies. Are you promoting continuity? Are you bringing in fresh talent regularly? Are you reinforcing behaviors in management and staff that emphasize long-term improvement in product development?

Experienced People Carry the Cultural Values

When an organization has values that encourage creativity, open communication, and commitment to project goals, those values are passed on from older staff members to younger staff. You should regard experienced staff members as the repository of the organization's value system. They are the ones who know "how things work around here" and what they say to new hires has much greater impact than your first-day orientation talk.

This may seem far too simple, but it is true: if you cut staff from the top (that is, lay off the more experienced staff members), then you lose not only the more mature technologists and managers, you undermine the organization's value system. Beyond the implicit message that says that experience and loyalty don't count in determining job security, you are leaving a void into which younger, less-experienced staff will bring their own—possibly less mature—ideas about how to run the organization. This may or may not be good for you and your company.

Mentoring as a Benefit for Both Younger Staff and Experienced Staff

There is another reason to keep and nurture experienced staff members in your organization: they make good mentors for the younger people. Furthermore, mentoring is a positive experience for the mentoring senior staffer. It promotes reflective thinking about what works and what doesn't work in the organization, encourages exploration of technologies, and establishes the principle that the organization values experience.

Consider setting up a formal mentoring program in your development organization. This can help new hires cope with the complexities of the development process and at the same time encourage exploration of technologies and processes.

Organizations that encourage mentoring, formally or informally, are providing recognition both for the senior member of the mentoring pair as a valuable contributor beyond their technological contribution and to the junior member as a person in whom the organization has a long-term interest.

Recognition vs. Other Rewards

Mentoring is only one of the ways of recognizing the value of people in your organization. While many technology firms regard pay and stock options as the primary recognition tools for their technical staff, the most successful organizations establish regular recognition for project achievements, educational goals, and improvement suggestions.

Highly technical people, beyond their own satisfaction with their work as an activity, regard the opinion of their peers as the most significant factor in determining their worth in an organization. Therefore, you should encourage your managers to recognize achievements of the technical staff in front of their peers. But beware of doing this in a way that becomes perfunctory or rewards insignificant achievements in the same way as outstanding achievements.

You may also want to set up an independent review of significant technical and process contributions by qualified people in your R&D organization. Recognition for patents applied for, processes improved, and customer feedback acted upon is always a good idea, as long as it is based on real results that provide real benefits to the organization.

Investing in Young Talent Consistently

Seymour Cray, the founder of Cray Computer and chief architect of many generations of supercomputers at Control Data Corporation, had a unique approach to designing each new generation of computers. Using himself as the chief architect, he hired bright young specialists in each of the engineering fields needed for the design. His insight led him to avoid bringing in experienced designers because each of them

had prejudices about how to approach the design problem. While he kept the overall project on track by understanding the ultimate constraints, the young team members would explore a very wide space of solutions to the problems without preconceived limitations. As a result, his computer designs were among the most innovative in the world.

For example, when asked what was the most significant invention in the design of the Cray-1 supercomputer, Cray replied that it was the technique of bonding aluminum to steel[6] which permitted Freon cooling to be used at the circuit boards of the computer. This invention, among others, allowed Cray to use higher-power circuits that ran faster than any other manufacturer's circuits at the time.

This story may convince you to hand over the development of your next major product to one senior architect and a bunch of young specialists, but you should consider hiring new college graduates on a regular basis. This fresh influx of young people not only will bring the latest tools and theories into your organization, but will introduce new people who will tend to ask the existing staff why things are done the way they are done. They will learn from the older staff and at the same time expect to keep on learning from their mentors and peers outside of the organization. This is good for you and your product development organization.

If you have been constrained to stop growing your staff during a downturn, you should still consider hiring new college graduates on a regular basis. At the very least, bringing summer interns into the organization will keep up the contact with colleges and universities and bring some of the latest thinking into the organization.

Continuity is important. You can maintain continuity in your product development organization by recognizing the contributions of project teams, by consistent hiring, and by mentoring. When you do these things, you are implementing policies that recognize R&D as an asset and the people who do R&D as the key leverage for that asset's value.

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6. "If there is a crack in the stainless steel tubing at the bond between the tubing and the elbow then the Freon leaks through the aluminum casing." Richard M. Russell, "The CRAY-1 Computer System," *Communications of the Association for Computing Machinery* 21, no. 1 (January, 1978), 72, http://at www.eecg.toronto.edu/~moshovos/ACA05/read/cray1.pdf.

Limiting the Size of the Organization

When your organization is small, it is easy to coordinate across the various components of the development function. As it grows, coordination becomes more difficult.

> ***How Many People on a Team?***
>
> *I use the following rules of thumb about team sizes:*
>
> ***Levy's Rule of 5:*** *To make decisions quickly and complete the definition of a design or other project, no more than five people should be involved.*
>
> ***Levy's Rule of 8:*** *To review information or technologies or to coordinate a development project across teams, no more than eight people should be involved in the day-to-day coordination.*
>
> ***Levy's Rule of 20:*** *To explain project or technology or process decisions and to receive useful feedback from the audience, no more than twenty people should be involved at one time.*
>
> *If you have too many people in the room, the team will be much less effective.*

For successful development work, there should be informal communication going on all the time throughout the development organization. This can only happen if the organization is co-located, is connected by high-bandwidth communications links, or, in some other way, allows members to bump into each other frequently, outside of formal meetings.

If your development teams are divided geographically, you must make extraordinary efforts to provide communications media for these informal interactions.

Even when the teams are co-located, be sure that there are not physical or social barriers to an easy exchange among all team members.

Beyond the team, exchanges between specialists in each field are important, both within and outside of the organization. Consider having your R&D lab management designate "anchor" members of each technology specialty who promote internal communications and exchange of ideas with others in their fields.

Finally, consider limiting the size of each segment of your R&D organization to the number of people who can fit in one building, or at least can meet in one auditorium or cafeteria. I have heard it proposed that one hundred and fifty is the maximum number of people who can work together and know all of their colleagues; and, therefore, divisions or other working organizations should be limited to this number.

Chapter Summary: Getting top performance from your development teams requires an understanding of what motivates them and consistent support of the individuals on them. Focus on choosing and encouraging them. Then they will provide the innovative results you need.

Getting Out of the Way: Much of your job as a manager is to listen to people. Cultivate the habit of listening respectfully to people, even when what they're saying is not important to you. Listening and asking pertinent questions will have very positive effects on the people you work with.

About the Author

John Levy is a management consultant to high-tech organizations for development of consumer products, software, computers, and IT. He has over thirty years of experience in the computer and software industries, including engineering management positions with Quantum, Apple Computer, Tandem Computers, and Digital Equipment. He has a Ph.D. in Computer Science from Stanford University and holds engineering degrees from Cornell and Caltech.

Levy helps product development and IT organizations get consistent, predictable, and innovative results. Much of his current work is related to mediating conflicts between technology and business. If you would like to find more information about his consulting services, please visit http://johnlevyconsulting.com.

At the website you can download the additional stories referenced in the text, sign up for newsletters, visit his blog, and learn more about how he does his work.

If you have feedback you would like to offer about this book, including suggestions for improvements, please send an email to info@johnlevyconsulting.com, or write to him at:

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Getting "Get Out of the Way!"

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