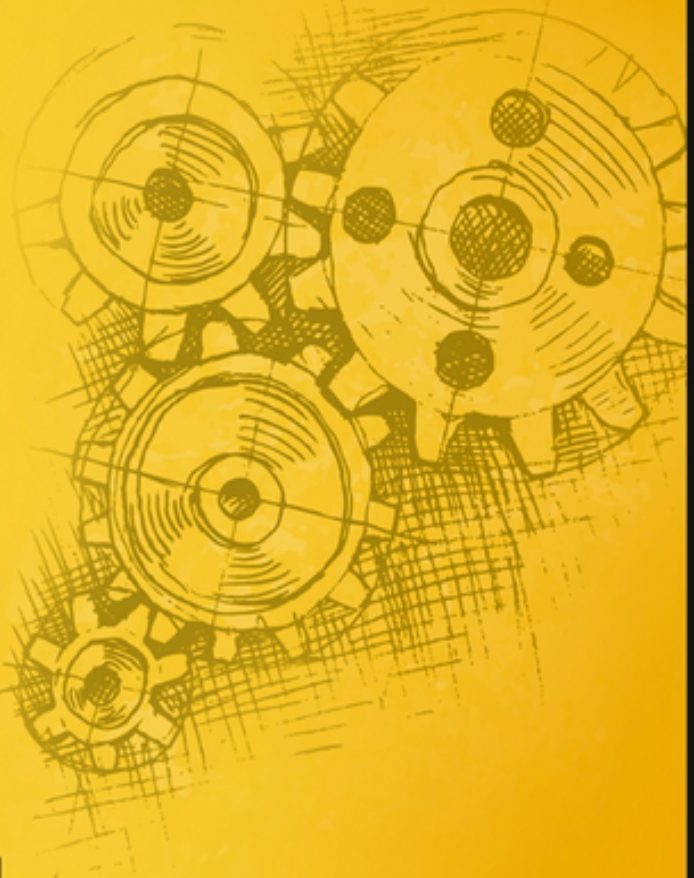
THE Innovator's TOOLKIT

SECOND EDITION



50+ TECHNIQUES FOR PREDICTABLE AND SUSTAINABLE ORGANIC GROWTH

David Silverstein | Philip Samuel | Neil DeCarlo

Table of Contents

Part IV: Demonstrate the Innovation

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WILEY
John Wiley & Sons, Inc.

Cover image: © Getty Images

Cover design: Paul McCarthy

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Published by John Wiley & Sons, Inc., Hoboken, New Jersey.

Published simultaneously in Canada.

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ISBN 978-1-118-29810-7 (cloth); ISBN 978-1-118-33522-2 (ebk);

ISBN 978-1-118-33409-6 (ebk); ISBN 978-1-118-33187-3 (ebk)

Dedicated to our co-author, Neil DeCarlo. Your passion and dedication have been an inspiration to us all. We couldn't have done it without you. You will be missed.

Downloadable Exhibits

Preface

We've updated this book because of you. We've received so many kind words and terrific feedback, and the first edition exceeded most everyone's expectations, that our editor at Wiley asked us to consider writing a second edition. Unlike most books, *The Innovator's Toolkit* sold more copies in its second year than in its first, and more in its third than either the first or second. Clearly the need for help with innovation is growing.

We didn't have any trouble agreeing to write a second edition because we ourselves learned so much about innovation as we worked with clients. We learned about why innovation is so highly touted in the marketplace yet so rarely achieved. We consulted with and advised the leadership of many companies, divisions, and R&D organizations. We got our hands quite dirty as we trained many individuals and shepherded many teams through the innovation process.

Many along the way weren't shy to tell us what they liked about our book—and what they didn't like. When they told us certain explanations didn't help, we changed them. When they said they needed a better example, we developed one and replaced what we had. Of course we didn't heed every complaint, but we sure listened when people or groups had the same problems or suggestions.

Specifically, this second edition provides:

- A new introduction that shows why so many fail at innovation—and how you can succeed.
- Several new techniques, and modifications to existing techniques, that better enable initial problem definition and ideation—leading to the population of a risk-mitigated innovation portfolio.

- Updated exhibits and examples to make the techniques more readily understandable, useable, and current.

This updated and revised edition of *The Innovator's Toolkit* simply helps innovation leaders, managers, and specialists do their jobs better than ever—giving them more confidence, reducing the chance of expensive failures, and packing more practical innovation know-how under one cover than we did before.

Please use what's in this book to become the very best innovator you can possibly be. We wish you amazing success!

DAVID SILVERSTEIN
PHILIP SAMUEL
NEIL DECARLO

Introduction

Growing an already sizeable company isn't an easy feat, and it's even more difficult to do on a sustainable basis. Two avenues exist: You can grow from the outside through mergers and acquisitions, or you can grow from the inside through organically engineered innovation. The problem is that both approaches tend to fall short of expectations, even when used in combination.

Leaving the problem of M&As to others, we wrote this book to take the mystery out of organic growth. Why is it that only a special few companies seem to have a grip on innovation? We watch a company like Apple in reverence as it releases new product after new product that meets or beats expectations in the marketplace (or at least did for an amazing period of time if this is not true after publication of this book).

Executives in every industry wish they could be more like Apple. Or, they come up with reasons why their companies just aren't and never could be:

“We're not a technology company and don't have the ability to make so many product revisions.”

“Our core technology simply isn't as robust as Apple's, so our opportunities are limited.”

You name it. Sometimes it's easier to make excuses than to admit your company just doesn't get it.

Under Armour is an apparel company, but it's not an apparel company that considers itself like others. That's why it's been pursuing innovation like a tech company. No, that's why it's become relentless about innovation, putting most tech companies to shame and outdoing them at their own game.

CNBC's Jim Cramer said this in a March 2012 television segment: “Tech stocks don't have a monopoly on using innovation to win new business. A lot of what we now consider tech isn't innovative at all. When was the last time Hewlett-Packard invented something new? Can you even remember? I know I can't...The real essence of tech is innovation.... I think we need to cast our net wider to hunt for game-changing inventions in places where you'd least expect them.”

Under Armour invented moisture-wicking compression fit clothes, a new category of apparel that regulates body temperature. But the company didn't stop there. In 2011, it rolled out *charged cotton*, which dries five times faster than ordinary cotton and is incredibly soft. Under Armour has a cotton, hooded sweatshirt (called Storm) that is *waterproof*. They've built an ultra-light running shoe that, as of this writing, Morgan Stanley says will take share away from Nike.

These and more planned product releases are the reasons for Under Armour's greatly enviable growth rate (at the time of this writing, Q4 2011 revenue growth of 34 percent and EPS growth of 40 percent). The company's innovation and resulting pricing power is also responsible for its long-term growth target of between 20 and 25 percent.

Impressive indeed, but what lies at the core of this success? Under Armour's mission is to make all athletes better through passion, design, and the relentless pursuit of innovation. But how can any company really achieve innovation, much less on any consistent basis?

There is a host of managerial principles and practices that must be adopted by all companies aspiring to organic growth. These include passionate and galvanized leaders who get what it takes to innovate—who not only inspire but also provide the rationale, create the roadmap, set up the systems, establish the processes, deploy the know-how,

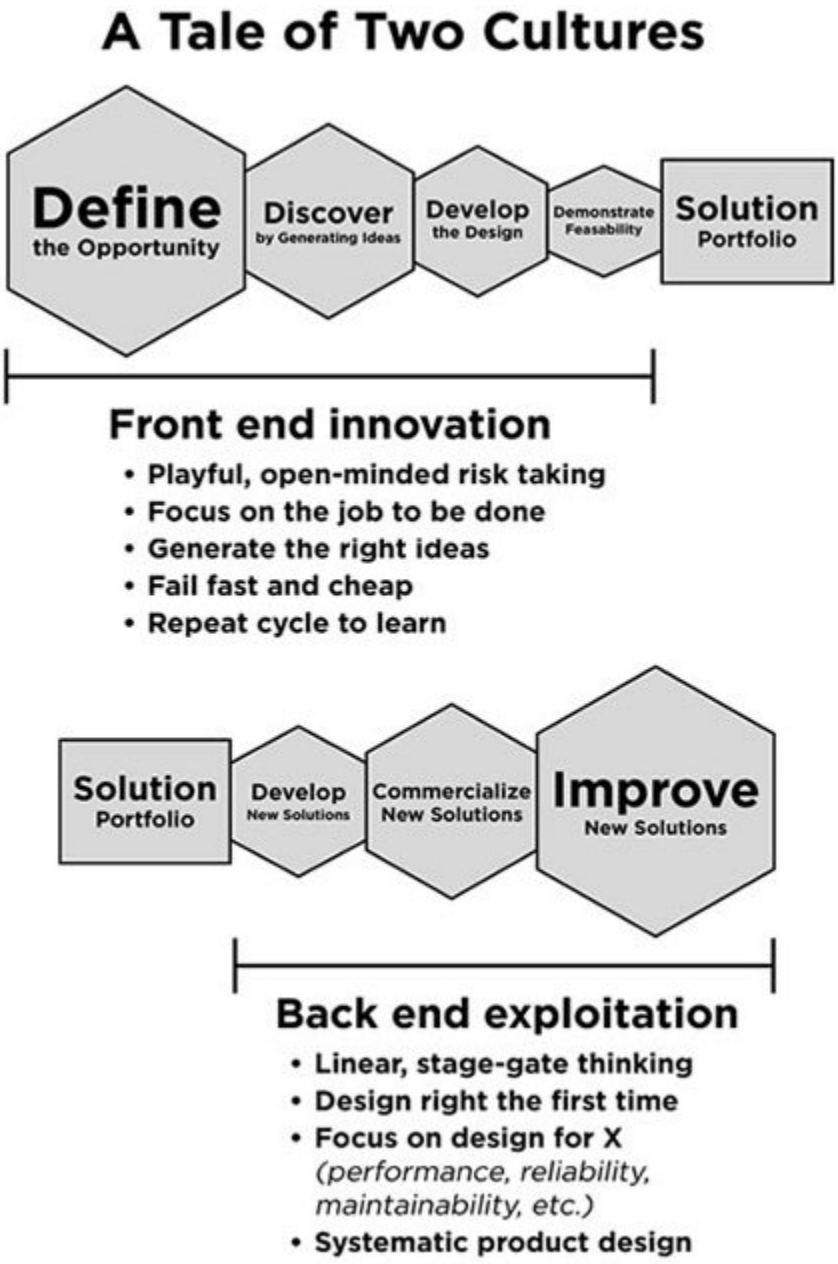
staff the teams, run the committees, and otherwise actively lead and manage the innovation lifecycle.

This book is obviously a very practical guide focused on the innovation process and the many techniques that enable it. It doesn't cover all the leadership or managerial aspects of successful innovation, namely, what executives need to know (and do) to create the right climate and set the organization up for continual reinvention of its products, processes, and business models. (We address these leadership topics in our seminars and consulting.)

Innovation is a Two-Faceted Process

Exhibit I.1 shows what the innovation process should look like in any company or organization. But we create a misnomer when we say process, singular—because *the key to successful innovation is that it is really two separate processes*, not one. This is where most companies fall down: They either focus on the left (front-end innovation) or the right (back-end exploitation), but not on both.

Exhibit I.1 A Tale of Two Cultures.



Let's define each side, and then look at some scenarios of what happens in real business life. The left side, *front-end innovation*, is a fluid, playful, nonlinear pursuit of new products, processes, and business models—new *solutions* as we call them throughout this book. The right side, *back-end exploitation*, is more of a stage-gated, linear, systematic approach for commercializing new designs that have already been proven viable by the activities on the left.

If you mix the left with the right, confuse one for the other, have a process for innovation but not exploitation, or have the same people dominating both sides—failure will be your friend.

We mentioned Under Armour, but we didn't mention the innovation lab it established in 2011. Adjacent to its headquarters building in Baltimore, the lab exists to "build the world's best product with no restrictions," according to what the company's senior vice president of sports marketing Kevin Haley told the *Baltimore Business Journal* ("Under Armour Debuts 'Innovation Lab' at Tide Point," February 15, 2011).

A YouTube video shows snippets of what goes on at the lab—whether it's testing the body suit used by NFL players to monitor their breathing and heart rates, or to perfect sewing methods, or to analyze just how people run, or to see how stable Under Armour bras are under real usage conditions (www.youtube.com/watch?v=cSc8m46RPPQ). Says a company spokesperson in the video: What happens at the lab "takes the guesswork out of product development and helps us really understand what our product is doing."

This is one of the keys to innovation's front end: If you're going to fail, fail fast and fail cheap (before what you're doing becomes a financial disaster). But you can only do this if you have the proper culture, people, mind-set, and tools. And you'll only do this if you have the right organization in place and a team of innovators who march to a different beat than their operational counterparts.

Nike, for instance, has a separate business unit that lives only in the world of innovation's front end. The unit generates thousands of ideas, makes detailed engineering drawings for those ideas, tests them, prototypes them, and above all, discards them. Nike accepts failure when it needs to be accepted—before the company bets large sums of

money by engaging too deeply in the development and commercialization phases on the right side of the process.

If you're in Nike's innovation business unit, you might be playing basketball in the middle of the day to free the mind from its endless concentration, or to get creation-friendly endorphins flowing. Or, you'll find yourself at a nice dinner celebrating the fact that you've bailed on a great idea because it's just not economically feasible, or because it's predicted to simply suck up too many resources in the process of making it into a final, commercialized product.

Contrast this with the standard practice in many Asian companies, which operate in a culture where failure is synonymous with shame. In such organizations, and in more U.S. companies than we'd like to admit, R&D happens inside a black box—not so much to keep the activities secret but to avoid the embarrassment of examining the amount of resources going in versus the new revenue coming out.

So many companies don't have a front-end process because the steps and activities, as we said a moment ago, aren't linear or stage-gated. Since these organizations are used to processes having very defined steps and tollgates and metrics, they either have a front-end process that is too systematic or they don't have a process at all.

Remember Iridium's attempt to bring a satellite phone to market? With a $5 billion budget, the company gathered inputs from 200,000 potential customers in 42 countries, secured about 1,000 patents, and spent more than 10 years perfecting the system and product. About as fast as the product was launched, it failed, and the company went bankrupt.

Anyone interested in this famous case study can find gobs of articles discussing what went wrong. Didn't anticipate the build out of digital cellular networks. Target market of traveling executives was too small. Price way too high ($3,000 for handset and $3 to $8 per minute). Phones didn't

work in moving vehicles or inside buildings. And in the end, company executives were highly reluctant to bail on the business since so much was already invested.

We can break it down in terms of our two-faceted innovation model. Iridium focused all of its efforts on the right side of the innovation equation, on the exploitation aspects rather than the front-end aspects. In the words of Iridium's Interim CEO John A. Richardson: “We're a classic MBA case in how not to introduce a product. First we created a marvelous technological achievement. Then we asked how to make money on it.”

Iridium should have been asking far to the left, and making sound calculations, about the feasibility of making money on its grand vision.

If you don't worry about how to make money on an innovation until you're into full design and production mode—especially a big, complex, marvelous innovation—it could bankrupt your company (and for Iridium, it did). It's better to spend focused time and effort on innovation's front end where you can fail fast and cheap.

So what about the opposite problem we said other companies have? What about an overemphasis on the creative front end of innovation to the exclusion of the more mechanical actions needed on the back end to exploit and commercialize? This happens, too, although less commonly, and it can also destroy value.

In its past, Microsoft was rightly known for using the market as its testing ground. It developed and launched an operating system in accordance with a good grasp of customer Jobs to be Done (Technique 1) and a focus on *certain* Outcome Expectations (Technique 3), like speed and reliability. But it didn't perfect its designs before releasing them into the market. As a result, users had to endure frequent crashes of the operating system and several

rounds of bug fixes. In this sense, Microsoft did a decent job with the front end but not so well with the back end.

Boeing's Dreamliner 787 is a great example of a highly complex product that managed its innovation risk by relying on already known and proven technologies. Like all companies, Boeing has to innovate, but if it fails to innovate a major release like a new jumbo jet, that easily puts the company at risk of extinction.

The vast majority of the many innovations in the Dreamliner had already been ideated, developed, tested, and proven—either at Boeing or elsewhere. Advances in composite materials. Innovations in air quality, humidity, and cabin pressure systems. Low-noise engines. These are a few innovations that Boeing incorporated into its designs.

So why has the company struggled so badly to meet its obligations to customers? All we have to do is look to the far right of our model. Most of the delays in delivering Dreamliners have been due to manufacturing and assembly problems (due in large part to outsourcing issues)—not problems with the airplane's core technologies.

We can imagine or name several companies that bring the left and right sides of innovation together for competitive advantage. Apple's doing it. Under Armour has achieved great success. Nike's done very well at bringing countless new products to market. (It's innovation production facility is the third largest footwear manufacturer in the world by volume.) You don't have to look so far, like *Fast Company*'s 50 most innovative companies in the world, to find stories and examples of those that have properly managed the different cultures needed for achieving greenfield innovation (the left) and success in the marketplace (the right).

Innovation's Front Edge—the D^4 Model

Many articles, books, and texts have been written—and many consultants can tell you—about how to engage in design excellence. This is where, for example, Design for Lean Six Sigma fits into overall business excellence—the right side of the model (develop, commercialize, and improve new solutions). Lean Six Sigma also obviously fits into this part of the model, as solutions are brought to market and improved over time.

But this book is about bringing substance to that very vague aspect of business we call innovation; and it's especially about providing much needed knowledge and clarity to the front end of innovation, since very little has been documented about how this can be done with any degree of predictability.

We've established that when a company has the right formula for perennial and pervasive innovation, it creates a special process and organization that functions quite differently from the rest of the organization. This organization plays. It works relentlessly at changing the game and seeking new growth opportunities. It rewards rather than eschews the right kind of failure at the right time. And it does this according to a process that is flexible, agile, and just systematic enough to breed success while keeping painful failure at bay.

So, in more detail, when we look at the front end of innovation, what do we really see? You'll note in Exhibit I.1 that we've chosen to depict both the left and right sides as a series of hexagons—and that the hexagons get smaller over time on the left and larger over time on the right.

Simply stated, when moving through the phases of innovation's front end, people and teams move from divergent thinking and action toward convergent thinking and action; we start by generating all kinds of ideas—sane, crazy, whatever—then use the techniques to hone in on the ideas that really do carry the promise of success. On the other side, we generally move from convergent to divergent thinking and action; we bring our feasible solution to market, and then keep improving it, expanding it, creating more options and customers (think iPod, followed by all the new features upon new releases, and any associated products like iTunes and iPad).

But *within* any phase of any part of the model, innovators both *diverge and converge*, and it's vitally important to keep this discipline. If we're only diverging or converging during any phase, we introduce risk and compromise our chances of achieving any true innovation. Exhibit I.2 characterizes how people and teams progressively diverge and converge as they move through the front end of innovation.

Exhibit I.2 Diverge and Converge within Each Phase.

Diverge and Converge Within Each Phase

D4 Phase	Diverge	Converge
Define the Opportunity	Many problems to solve	Choose one or few problems to solve
Discover the ideas	Explore many ideas to solve problem	Choose most attractive ideas
Develop designs	Create many different design concepts based on core ideas	Choose most attractive design concept(s)
Demonstrate feasibility	Explore different ways to convert assumptions to knowledge	Narrow down to final, most feasible concept

In the **Define the Opportunity** phase (Part I), we want to divergently explore as many opportunities for innovation as possible—using Jobs to be Done (Technique 1) as our overarching guide. Then, such techniques as Ethnography (Technique 5), Nine Windows (Technique 8), and Job Scoping (Technique 9) enable us to reframe the problem in many different ways.

After this, when we want to narrow our set of innovation problems down to a finite few, we look to Value Quotient (Technique 4), Project Charter (Technique 12), and others to help with such convergence. Some techniques in this part of the book can be used to either help when in divergence or convergence mode—like Job Mapping (Technique 2), and Outcome Expectations (Technique 3).

In the **Discover the Ideas** phase (Part II), the task is to first divergently explore as many ideas for solving the innovation problem as possible—using HIT Matrix (Technique