



# Primer on “open innovation:” Principles and practice

The next “big thing” in innovation

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*First it was phase-gates, then portfolio management. Now “open” models of innovation are the next major wave in helping companies to take innovation and Product Development to the next level. In this article, the author provides an overview of the principles of open and collaborative innovation, as well as best practices for successfully implementing them in your own company.*

There is little doubt that the profession of Product Development has advanced tremendously over the years. Through sharing of best practices within PDMA and other groups, Product Development and innovation practices have improved dramatically. From the development of phase-gate Product Development systems to the advent of Fuzzy Front-End tools, such as ethnographic research and the more recent focus and adoption of portfolio management processes, each step in the evolution of Product Development and innovation has brought with it improvements in time to market, new product success rates, and organizational efficiencies.

In spite of these successes, major challenges remain. Here is the reality of today’s competitive marketplace: growing retailer consolidation, ever increasing pressure on manufacturers/suppliers, and continual margin erosion. In this environment of intense competition, leading companies are searching simultaneously for low cost positions and new sources of competitive advantage.

## The next big thing

Now my prediction: within the next few years, if it’s not already happened, the concepts of open innovation and collaborative development will be understood and accepted as the next major wave in the art and science of Product Development Management practices.

We don’t have a choice. As Henry Chesbrough lays out in his groundbreaking book, *Open Innovation*<sup>1</sup>, “Competitive advantage now often comes from leveraging the discoveries of others.” Chesbrough’s argument rightly focuses on the fact that “not all of the smart people in your industry work for you.” Too much invention and innovation take place outside of your walls to ignore it. Much of it comes from smaller, entrepreneurial startups funded by venture capitalists that aim to leverage breakthrough technologies and

ideas, and business models to disrupt established categories and markets.

Open models of innovation create new opportunities and new challenges. So we’re all trying to learn new skills again—How to leverage external sources for internal growth. How to find and cooperate with new non-traditional development partners. How to move from “closed” models of innovation to “open” ones.

## What is “open innovation?”

Like any emerging management concept, there are varying and sometimes conflicting definitions of open and collaborative innovation approaches. See Exhibit 1 on this page for my attempt at defining some of the more commonly used terms and descriptors. Some of these concepts, such as joint ventures, have been around for many decades. Others, such as “open innovation” are more recent trends – while there are certainly examples that go back decades, the trend is really just now emerging for more widespread adoption of the concepts. For this article, I am focusing primarily on the definitions of open innovation and collaborative innovation contained in the table.

Beyond the terminology, creating a common understanding of open innovation principles requires an understanding of how traditional “closed” versus “open” innovation models operate. It’s useful to think of this model in three key aspects of the innovation delivery chain: Fuzzy Front-End, development, and commercialization.

### “Closed” innovation models

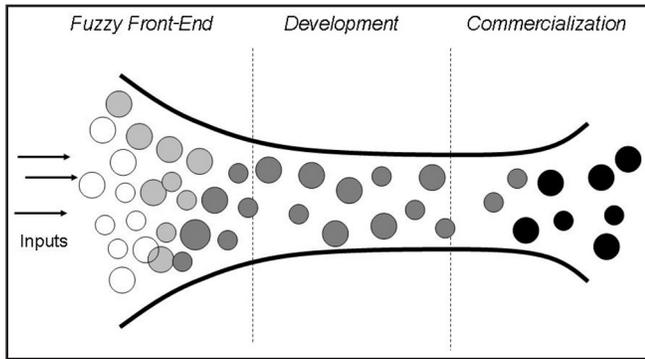
In the traditional closed model shown in Exhibit 2 on page 14, inputs to the model come from both internal and external sources – whether customer inputs, marketing ideas, marketplace information, or strategic planning inputs. With these inputs in hand, R&D organizations go about their tasks of

Exhibit 1: A Terminology Primer of “Open Innovation” Terms

Co-development	Working with outside partners in the development of new products and/or services. Can be a subset of joint venturing or open innovation initiative. May include peer-to-peer or supplier/customer co-development.
Collaborative innovation	Similar to concepts contained in definitions of open innovation and co-development, but can also include formal networks or consortia that come together in an alliance to study common issues and/or develop new products/services.
Joint venture	Usually a formal legal arrangement between partners in a joint development and/or business initiative. Risks and rewards are negotiated and shared formally.
Open innovation	Popularized by Chesbrough’s book “Open Innovation,” this term refers to the broad concepts of leveraging external sources of technology and innovation to drive internal growth. Also entails the spin-off and outsourcing of unused intellectual property.
Open-source models	Derived from the term used in the software development industry, where informally structured collaborations take place (usually without ownership or remuneration) to create a shared outcome from which all can benefit.

Source: M. Docherty, Venture2 Inc.

Exhibit 2: "Closed Innovation" Model



Source: M. Docherty, Venture2 Inc.

inventing, evolving and perfecting technologies for further development, immediately or at a later date. Companies often used to refer to developing technologies and innovations that could even be placed "on the shelf" for later development by their teams. The traditional funnel analogy is appropriate here, because large numbers of internal concepts are narrowed down to the ones that best fit that company's needs at that point. The focus is on internal development of technologies and products for internal commercialization. Think IBM, Intel, GE and Lucent in the 1970's and 1980's as typical examples of successful companies that leveraged large internal R&D organizations to create a pipeline of internally commercialized new products and services.

**"Open" innovation models**

Exhibit 3 on this page presents a graphic view of an open innovation model, a much more dynamic and less linear approach to innovation management. You'll find numerous different approaches to depicting these models in Chesbrough's book and in published articles by companies employing open and collaborative innovation. In open models, companies look inside-out and outside-in, across all three aspects of the innovation delivery chain (Fuzzy Front-End, development, and commercialization). In doing so, much more value is created and realized throughout the process.

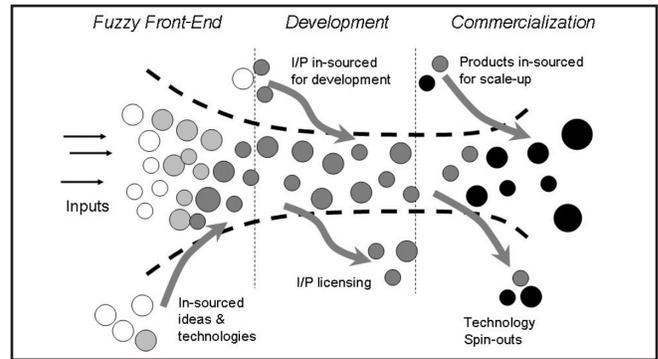
In the Fuzzy Front-End, not only are companies now looking externally for problems to be solved, but now also to inventors, startups, and other sources of available technologies that can be used as a basis for internal or joint development.

Exhibit 4: Benefits of "Open Innovation"

- Ability to leverage R&D developed on someone else's budget
- Extended reach and capability for new ideas and technologies
- Opportunity to refocus some internal resources on finding, screening, and managing implementation (important not to position as a threat to internal resources)
- Improved payback on internal R&D through sale or license of otherwise unused intellectual property
- A greater sense of urgency for internal groups to act on ideas or technology (use it or lose it)
- Ability to conduct strategic experiments at lower levels of risk and resources, with the opportunity to extend core business and create new sources of growth
- Over time, an opportunity to create a more innovative culture, from the 'outside in' through continued exposure and relationships with external innovators

Source: M. Docherty, Venture2 Inc.

Exhibit 3: "Open Innovation" Model



Source: M. Docherty, Venture2 Inc. (with concepts adapted from the book by Henry Chesbrough, Open Innovation: The New Imperative for Creating and Profiting from Technology, Harvard Business School Press, 2003)

In the development phase, established companies may acquire external innovations that have already become *productized* or even commercialized, but now offer the opportunity to develop new generations of the technology for scale-up by these larger players. In this phase, companies may also spinout technologies and intellectual property that were internally developed but are determined to be outside the core business, and better developed and commercialized by others.

Open innovation models apply to the commercialization phase as well. Companies may spin out already commercialized technologies where more value can be realized elsewhere, or acquire already commercialized product lines or businesses that can provide immediate sources of new growth for the company.

**Benefits of open models**

Some of the key benefits of open innovation are listed in the table contained in Exhibit 4 on this page. One of the most obvious benefits of open innovation is the much larger base of ideas and technologies from which to draw to drive internal growth. But beyond that, leading companies also recognize open innovation as a strategic tool to explore new growth opportunities at a lower risk. And, in spinning out unused ideas, companies not only capture economic value from the ideas, but also create an important "sense of urgency" by internal groups to "use it or lose it" when it comes to internally available technologies.

**Best practices in open innovation**

In today's intensely competitive environment, open-source business models and collaborative approaches to innovation and business growth are moving beyond "nice to haves" to "must haves." Joint ventures and strategic alliances are on a growth path because companies' successes and even survival can depend upon them. Much like an ecosystem, companies are recognizing their successes depend upon a delicate balance of interdependencies within a much broader network of potential partners. According to a 2005 KPMG study<sup>2</sup>, 64 percent of surveyed U.S. executives said they plan to increase their use of strategic alliances during the next two years. Nearly 70 percent of the executives responding said that strategic alliances help companies reach growth objectives, in part because they hold out the prospect of attractive returns and shared risk.

In a recent Bain survey<sup>3</sup>, "open-market innovation" is included for the first time among twenty-five management tools studied. The executive survey showed that open-market innovation methods are currently being employed by more than 24 percent of respondents.

So, more companies are using open and collaborative approaches to innovation. But are they succeeding? If you look at companies that are "ahead of the curve" in adopting these practices, you can see some impressive results.

### **P&G's Connect & Develop**

P&G's much-heralded focus on open innovation, including C.E.O. Lafley's stated goal of capturing 50 percent of their innovation from the outside, has led to double-digit sales growth, while maintaining better than 50 percent gross margins<sup>4</sup>. What's even more impressive about P&G has been their ability to deliver this increased focus on innovation, while decreasing R&D spending as a percentage of sales from 4.8 percent in 2000 to 3.4 percent in 2005<sup>5</sup>.

P&G has institutionalized its Connect and Develop program to ensure external ideas have access to the organization and that internal intellectual property is marketed to the outside. And to ensure that internally developed technologies have an avenue for spinouts and licensing as well. Today, P&G is the model of open innovation implemented effectively, and their financial results demonstrate the power of the approach.

### **Nokia Venturing**

Nokia uses a very interesting corporate venturing model for finding and nurturing innovation. They've moved beyond "not invented here" and are embracing the best ideas wherever they are. Nokia's Venturing Organization is focused on corporate venturing activities that include identifying and developing new businesses or as they put it, "the renewal of Nokia." Nokia Venture Partners invests exclusively in mobile and I/P related startup businesses. They have a very interesting third group called Innovent that directly supports and nurtures nascent innovators with the hope of growing future opportunities for Nokia. Nokia's approach is ensuring that its organization remains connected to the pulse of innovation within mobile technology.

### **More bounce at Spalding**

It's not just the largest companies or technology-based industries that are embracing open innovation. In a category long considered a commodity, Spalding is reinvigorating the company through innovation, including technology developed externally. First, they introduced the Infusion, the first basketball with a built-in pump, which led to a 32 percent increase in sales<sup>6</sup>. And now more recently, they've announced the introduction of the "Never-Flat" basketball. According to Spalding, "It's the first-ever ball with proprietary pressure retention technologies guaranteed to hold air up to 10 times longer than traditional basketballs."

Spalding is demonstrating an excellent ability to find and exploit innovation from external sources. In fact, the Never-Flat technology was actually developed by a small invention company called Primo Innovations, founded by two PhD's from NASA and DuPont. According to Spalding's VP of Marketing Dan Touhey, "We are much less of a "not invented here"-type of company than we ever have been. We listen to the chatter of what's going on in sporting goods and other industries."<sup>7</sup>

### **Technology spin-offs**

Look at Caterpillar, Sharp, Kimberly Clark, Philips, and again P&G as examples of corporate venturing that also includes spin-outs and/or licensing of internally developed intellectual property. The benefits include the value derived from otherwise unused knowledge; but also, useful strategic partnerships are developed in ways that allow these organizations to leverage their core strengths in ways that otherwise would never have seen the light of day. Case in point: P&G's underlying technology licensed to Clorox and launched successfully as Glad Press'n Seal Wrap. In this approach, P&G was able to leverage the value of the patents and enter a successful joint venture with Clorox, whose Glad brand was already a leader in the category<sup>8</sup>.

### **Keys to implementing open innovation in your company**

By the growing attendance at collaborative innovation conferences, including PDMA's recent CoDev 2006, and recent surveys, it appears that many companies are still trying to find out how to implement these practices successfully. In the Bain Survey previously mentioned, open-market innovation received a satisfaction rating of only 3.8 out of 5. This

## **Key Factors to Implementing "Open Innovation"**

- Broaden your view (where you look and your ability to see what's there)
- Create alignment across the innovation ecosystem
- Adapt an approach for your organization's tolerance for risk
- Put the focus on learning, not just results

is not what you'd expect from a management tool that is providing such outstanding results for companies like P&G.

It's easy to assume, especially since much of the open innovation movement focuses on identifying external sources of innovation, that ideas and technologies (or the processes to find them) are the keys to success. As an engineer and analytical problem solver, I've personally fallen prey to the "siren of the process." But now, having spent much of my career in innovation management and general management, including turnarounds of historically troubled businesses (where leveraging external sources of innovation was a life or death choice), I believe that it is not only about the technology and scouting for new ideas. It's just as important to focus on the interpersonal, cultural, and implementation challenges. Making open innovation happen requires overcoming the significant barriers and perceived risks on the people side of the equation.

At leading companies like P&G, Spalding, and others who are successfully adopting open innovation models, the stories behind the scenes are tales of inspired leadership, aligned incentives, and cultures that support strategic experimentation and reward collaborative results. They have created in their organizations an "open innovation mindset."

From my own work and research with others, here are some key factors for your consideration in implementing open innovation models within your own company.

#### **Key #1: Broaden your view**

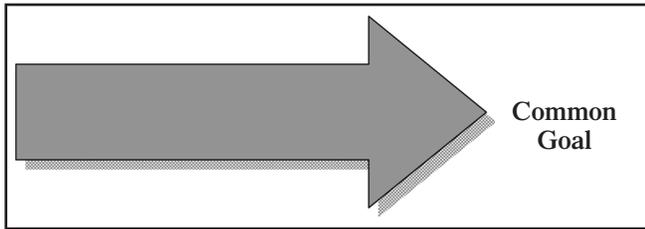
We all see the world through the "lens" of our own experiences and pre-conceived viewpoints. For this reason, having the right people doing the looking and having the right mindset becomes critical in where/how you look for innovation and how you filter what you discover. As an example of this "filtering," it's interesting to look at a study from Dr. Richard Wiseman's book *Luck Factor*, about his study of self-reported "lucky" and "unlucky" people.

One of his studies showed that when each of these groups were shown a newspaper and asked to count the number of pictures, on average the self-reported unlucky people spent about two minutes on the exercise while self-reported lucky people spent seconds. The reason? Lucky people tended to spot the message on page two—in big type—"Stop counting: there are 43 photos in this newspaper." In fact, the unlucky people tended to miss not only this message, but the next one about halfway through—"Stop counting. Tell the experimenter you saw this and win \$250."

The lesson: "Unlucky people miss chance opportunities because they're too busy looking for something else. Lucky people see what is there and not just what they're looking for." Leverage nontraditional sources of ideas and inspiration for your innovation efforts. Create ongoing collaborations with inventors, universities, entrepreneurial startups and other creative sources that can give you surprising insights into the next big thing.

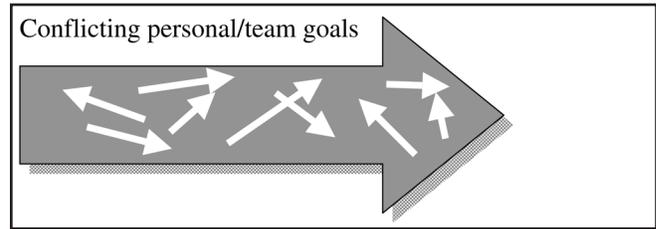
I know an inventor who took his patented small appliance to nearly every major branded player in the category, only to be shunned time and time again. Even when one manufacturer agreed to take it to market, their launch plans were nearly nonexistent; and the inventor took it upon himself to line up a spokesperson and convince the company to launch the product via infomercials. The inventor's name is Michael Boehm and his invention was the George Foreman Lean Mean Grilling Machine.

Exhibit 5: A Common Goal



Source: The author

Exhibit 6: Individual Goals



Source: The author

**Key #2: Create alignment across the innovation ecosystem**

Creating alignment within any company is critical to achieving the organization's goals, and a lack of alignment is often cited as a barrier to effective innovation, especially when there are conflicting goals across functional groups. These barriers become even more pronounced in cross-company collaborations.

Often in collaborative relationships, at the highest levels it appears that groups are aligned because they agree on the major goals to be achieved (See Exhibit 5 on this page). But if you look deeper, you'll often see that indirect systems, and functional and organizational goals are often in direct conflict with the overall stated goals (See Exhibit 6 on this page).

So, how do you minimize these issues and drive for alignment across the innovation ecosystem? It is critical to surface these issues early in programs, and we have found no better way to do this than extended face-to-face planning summits.

Whirlpool Corporation has been managing co-development programs for many years, often long term and global in scope. One tool they have adopted is the concept of Partner Summits<sup>10</sup>. These are three- to five-day extended sessions with all key players, and include both working sessions and social events to reduce barriers, develop deeper discussions, and ultimately deeper relationships that often pay dividends during difficult periods of development.

**Key #3: Adapt to your organization's tolerance for risk**

In my current business, I had a new product/service executive from a major utility approach me with a request for support in convincing his management to pursue what he saw as strategic initiatives that were critical to the organization's success. He had the support of the CEO, yet the business general managers and other levels of middle-management took a more risk-averse view of these opportunities. This executive saw the others as roadblocks and was compelled to bring them over to his way of thinking or go around them if needed.

The problem was, this wasn't one or two individuals—this risk-averse mindset was a broadly held view across most of the management team. I advised him to stop trying to take on an organizational culture change within his program, and instead adapt his approach to innovation in a way that matched his organization's tolerance for risk. Authors and consultants James Andrew and Harold Sirkin<sup>11</sup> present a framework for alternative approaches for structuring strategic initiatives that are in line with an organization's tolerance for risk. An organization needs to determine which role best suits its own culture and initiative-specific needs.

The three types of roles outlined in Exhibit 7 on page 16 include that of Integrator, Orchestrator, and Licensor. Integrators manage all the steps necessary to generate profit from an idea. Orchestrators carry out some steps and link with partners to carry out the rest (the traditional view of co-development). Licensors license the innovation (or brand) to another company to take it to market.

When viewed through the lens of managing risk, these approaches can be adapted to suit an organization's culture and needs. For example, we've used the Licensor role to allow a smaller group to take the initial risk with a venture, while providing the larger established company with a first right of refusal to scale up the venture should it succeed in a small scale launch.

**Key #4: Put the focus on learning, not just results**

Open innovation initiatives can be thought of as strategic experiments in many ways. In collaborative development, there are many unknowns and the focus should be on accelerating learning, not solely results. Theory-focused planning<sup>12</sup> and other more flexible planning approaches recognize these differences and put the focus where it belongs: on learning. Exhibit 8 highlights the differences in planning within different environments, and highlights the need for a different set of planning tools.

**Advice from Michael Boehm**

Here's some advice from Michael Boehm, inventor of the George Foreman Grill: "In my world, if I were running a medium to large company I would certainly take the steps necessary to first ensure that our internal resources had the tools necessary to protect and maximize growth opportunities within our core businesses. I would also train a select group of internal personnel in the disciplines of invention, innovation, design, and marketing. The purpose of this group would be to search out innovation personnel from the outside to bring in for innovation workshops, a cross pollination, if you will, for the purpose of introducing to the marketplace new, problem solving products each year."<sup>9</sup>

Exhibit 7: Roles of Structuring/Managing Initiatives

	Role	Best Used When...
Integrator	Manage all steps necessary to generate profit from an idea	<ul style="list-style-type: none"> <li>• Speed to market not critical</li> <li>• Proven technology</li> <li>• Incremental innovation</li> </ul>
Orchestrator	Focus on some steps and link with partners to carry out the rest	<ul style="list-style-type: none"> <li>• Technology in early stages</li> <li>• Intense competition and need for speed</li> <li>• Specific talents in partner/supply base</li> </ul>
Licensor	License the technology (or brand) to another company to take it to market	<ul style="list-style-type: none"> <li>• Strong I/P exists</li> <li>• Market is new to innovator</li> <li>• Open to brand license or brand not critical</li> </ul>

Source: Adapted from James Andrew and Harold Sirkin "Innovating for Cash," Harvard Business Review, Sept. 2003

Flexible planning methodologies focus on creating conceptual and predictive models (even simple graphical views) that describe the business model, how value is created, and how spending and revenues are likely to interact. Success in implementing an open innovation model depends at least in part on your ability to learn quickly (i.e., fail fast) within an environment with many unknowns.

### Your next big thing

In the beginning of this article, I made a prediction that “open innovation” methods will soon be recognized as the “next big thing” in innovation management practices. I hope that you have found this information helpful as you undertake or continue your own journey to develop or expand your organization’s capability for open innovation approaches.

So here’s one more prediction: If you embrace open innovation principles and learn to implement these collaborative approaches successfully within your culture and organization, you’ll create your own “next big thing”; and, more importantly, a stream of innovation that fuels new sources of growth. And the personal rewards of partnering with many of the other creative minds out there besides our own.

*Mike Docherty is CEO of Venture2 Inc., a consulting and new ventures company that identifies and commercializes breakthrough new consumer products.*

### Endnotes

- <sup>1</sup> Chesbrough, Henry, *Open Innovation: The New Imperative for Creating and Profiting from Technology*, Harvard Business School Press, 2003.
- <sup>2</sup> “Collaborating to Grow,” KPMG Study, cited in *Industry Week* article, Aug. 1, 2005.
- <sup>3</sup> “Management Tools and Trends Survey,” Bain & Company, 2005.
- <sup>4</sup> 2005 edition of P&G gross margin estimates, *The Motley Fool*, Jan. 2006.
- <sup>5</sup> P&G R&D as percentage of sales; from P&G 2005 annual report.
- <sup>6</sup> “An Idea with Bounce,” *Technology Review*, April 2005.
- <sup>7</sup> “A Ball that Won’t Deflate,” *Technology Review*, Dec. 2005.
- <sup>8</sup> Press’n Seal background from Clorox Web site and press releases.
- <sup>9</sup> Michael Boehm comments taken from interview by M. Docherty for *Innovation.net*, July 2005.
- <sup>10</sup> Whirlpool supplier summits mentioned in *The Disney Way*, McGraw Hill, 2003; and interviews with Jerry McColgin, the project manager profiled in the book.
- <sup>11</sup> “Innovating for Cash,” *Harvard Business Review*, Sept. 2003.
- <sup>12</sup> Govindarajan and Trimble, *Ten Rules for Strategic Innovators*, Harvard Business School Press, 2005.

*Exhibit 8: Planning & Metrics for Different Environments*

<i>Proven, mature business</i>	<i>New, unproven business</i>
Accountable for results —>	Accountable for learning
Details —>	Critical unknowns
Prediction —>	Underlying logic
Numbers —>	Trends
Annual planning cycle —>	Monthly or quarterly
Focus on financial measures —>	Focus on leading indicators

Source: Adapted from Govindarajan and Trimble, *Ten Rules for Strategic Innovators*, Harvard Business School Press, 2005