Achieving Breakthrough Innovation And Adjacent Space Growth Through Collaborative Innovation

By Gene Slowinski and Matthew W. Sagal

Abstract

Collaborative Innovation (CI) enables firms to access resources needed for growth in all three of its forms: incremental growth, breakthrough innovation growth, and adjacent space growth. Collaborative Innovation for incremental growth employs familiar technology in existing market spaces, often using established suppliers and channel partners. Many firms successfully execute CI for incremental growth. Breakthrough innovation involves technology new to the firm, requires technical skills and intellectual property beyond that of the firm or its established suppliers. Growth into adjacent space expands the firm's footprint into new markets and requires market knowledge, brands and distribution outside the firm's experience. Breakthrough innovation and growth into adjacent space often require the firm to establish collaborative relationships with unfamiliar partners who control the required new technology or market knowledge. These relationships are much more difficult to plan, negotiate, and implement than relationships for incremental innovation. This article describes the challenges and suggests ways to resolve them.

Three Types Of Growth Opportunities

The primary concern of senior management is growth. Firms must find ways to profitably grow the top line and move their share price in the right direction. From the R&D perspective, there are three types of growth: incremental innovation, breakthrough innovation and growth into adjacent spaces. The central theme of this article is that Collaborative Innovation (CI) is valuable for achieving all three types of growth; but is a critical tool for achieving the most difficult forms of growth, breakthrough innovation and adjacent space growth. Our goal is to describe the barriers to using these growth paths, how CI overcomes those barriers, and to provide managers with a set of principles to guide their thinking as they implement CI.

Incremental innovation is based on modest technical changes to products in existing market spaces, typically using existing internal resources or resources of established suppliers and channel partners. While these incremental growth initiatives are important contributors to business unit objectives, they tend to be low risk and yield modest rewards. To grow at a higher rate, firms turn to higher risk breakthrough innovation and movement into adjacent market spaces.[1] The current literature on growth through innovation emphasizes these higher growth opportunities.[2]

Collaborative agreements enable all three types of growth. R&D managers regularly collaborate with suppliers to bring incremental innovation benefits to their products. Common examples are new fragrances to refresh a consumer product line or the creation of flavors tailored to the tastes of specific regions. Firms commonly use collaborative relationships with suppliers for access to needed technology.

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Collaborations are even more important enablers for breakthrough innovation and adjacent space opportunities. UPS' global leadership position in package delivery is due in part to collaborations focused on adjacent space. Its strategy was to partner with high quality delivery firms in each region/locality to

1. The authors are indebted to Rensselaer Polytechnic Institute researchers for their seminal work on Radical Innovation. The interested reader is referred to: Leifer, R., McDermott, C., Colarelli O'Connor, G., Peters, L., Rice, M., and Veryzer, R., 2000 *Radical Innovation: How mature companies can outsmart upstarts,* Boston, MA: Harvard Business School Press. Colarelli O'Connor, G., Leifer, R., Paulson, A. S., Peters, L., 2008 *Grabbing Lightning: Building a Capability for Breakthrough Technology Innovation*, New York, NY: Jossey-Bass.

2. Meyer, M. H., 2007 *The Fast Path to Corporate Growth: Leveraging Knowledge and Technologies to New Market Applications*, New York, NY: Oxford University Press; Zook, C. 2004 *Beyond the Core: Expanding Your Market Without Abandoning Your Roots,* Boston. Boston, MA: Harvard Business School Press. Meyer, M. H., Boushell, R., Willcocks, N. 2008 *Corporate Venturing; An expanded role for R&D.* Research Technology Management, Jan-Feb, PP. 34-42.

increase its global footprint. Today, UPS can deliver a package almost anywhere in the world. Breakthrough innovation opportunities also benefit from collaboration. The film technology that enabled Listerine Pocketpaks™ was a breakthrough technology for Listerine. Pfizer's (now Johnson & Johnson) collaboration with a Japanese firm provided Pfizer with a film that could deliver the benefits of Listerine, but was easy to transport and use. Interestingly, this breakthrough innovation also allowed Listerine to move into an adjacent space and compete with mints.

In this article, we make three simple but powerful points. First, collaborative innovation is an important enabler for all three types of growth. Second, collaborative relationships for breakthrough innovation and adjacent space growth are more difficult to create and manage than collaborations for incremental innovation. Third, the issues that cause this difficulty are predictable, well understood and can be addressed by management.

Why Incremental Innovation is Easy and Breakthrough Innovation and Adjacent Space Growth is Hard

The fundamental reason that incremental innovation is easy compared to breakthrough innovation and adjacent space growth is the varying uncertainty that management faces as they implement these different growth strategies. Incremental innovation opportunities are more certain because they fall within the scope of technology and market spaces familiar to the firm, its established suppliers, and its established channel partners. The Pre-CI matrices in Figure 1 graphically depicts this by showing that the market and technology needed to generate incremental growth are current to the firm; either internally or through its existing suppliers.

Breakthrough innovation opportunities are hard because the associated uncertainty increases rapidly as the project wanders from the firm's core capabilities. For example, Unilever is pursuing a breakthrough innovation opportunity through a collaboration with Cynosure. Unilever's skin care brands are known globally for their quality and efficacy. They provide skin care benefits through a variety of active ingredients. However, there are other methods for providing skin care. Cynosure is a technology-based firm with expertise in providing light based skin care in a dermatologist's office. The goal of the alliance is to apply Cynosure's light-based skin care technology to Unilever's consumer skin care business.[3] From Unilever's perspective, projects based on light based skin care (not a core competency) have inherently larger levels of uncertainty than projects based on topically applied active ingredients (a Unilever core competency).

One Firm's Breakthrough Innovation is Another Firm's Adjacent Space Growth

Note that the assignment of growth type between breakthrough innovation and adjacent space growth can change depending upon the perspective of the party in a CI relationship. Unilever's alliance with Cynosure is an adjacent space growth opportunity from Cynosure's perspective, as Cynosure seeks to expand its existing marketplace of professional offices into the consumer world. However, it is a breakthrough innovation opportunity from Unilever's perspective as they gain access to light based technology. The key insight is that by combining each firms' current asset through an alliance (see resource combination matrices in Figure 1), both firms can achieve their ambitions (see Post-CI matrices in Figure 1) because both firms now have the resources they need to jointly enter the marketplace.

Adjacent space opportunities have a similar uncertainty profile. They involve marketplace positioning outside the market knowledge of the firm or its established channel partners (Pre-CI matrices in Figure 1). We can use another well-known Unilever example here. Unilever's Lipton Tea product line traditionally reached consumers through supermarkets and other "eat at home" channels. When Lipton wanted to expand into "ready-to-serve" drinks in bottles, they did not have the bottling facilities or the distribution capability to manufacture bottled tea and reach convenience stores and vending machines. Building the required manufacturing and channel capability would take more resources and time than Unilever management could justify. Forming the "Pepsi-Lipton Tea Partnership," a CI relationship that combined Lipton's tea expertise and brand with Pepsi's powerful channel capability, solved the problem.[4]

The major differences among these three types of growth opportunities are management's ability to make decisions and resolve uncertainty. The far-

3. The July 1, 2009 press release can be found at *http://www.bloomberg.com/apps/news?pid=conewsstory&tkr=UL%3AUS&sid=arGaNVRktbJs.*

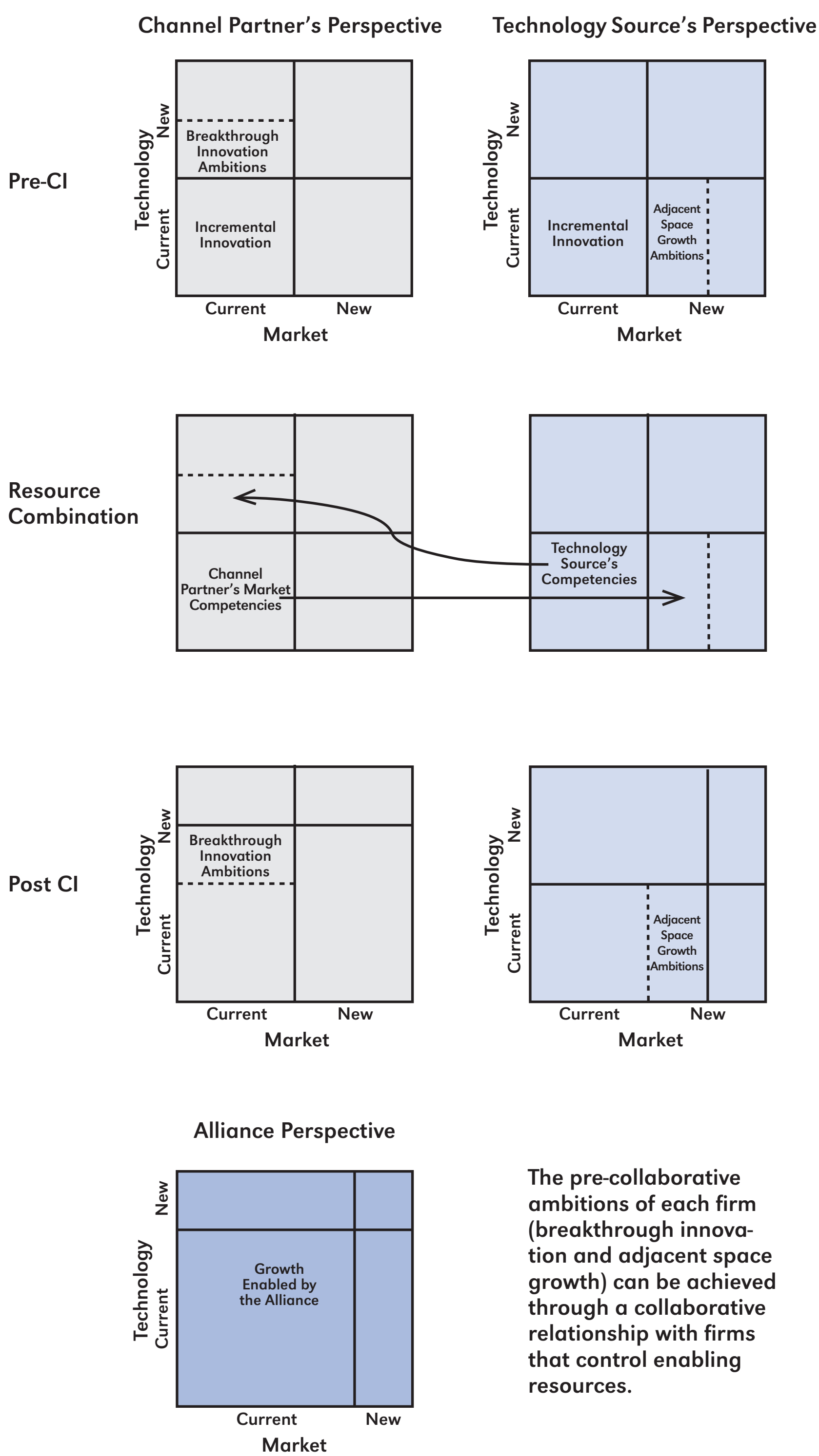
4. A description of the alliance and its benefits to both PepsiCo and Unilever can be found at *http://www.allbusiness.com/marketing-advertising/300568-1.html.*

ther the opportunity strays from the firm's understanding of the technology or the market, the higher the uncertainty level and the more difficult the decision-making process.

Collaborative Innovation Challenges in the Three Types of Growth

If uncertainty is the issue, than what are the challenges and solutions? Let us start the analysis with incremental innovation. Business units are well positioned for incremental innovation. They excel at near-term extensions that fit their established brands' current marketplace positioning. Most relevant marketplace knowledge already exists in the firm or in established channel partners. Many companies effectively execute incremental innovation involving collaborative relationships. This typically involves cooperative work with existing equipment and materials suppliers who view the firm as a valuable customer and react positively to collaborative relationship proposals. The agreements can be negotiated and implemented with minimal difficulty for several reasons. Agreement terms that include providing the firm with favorable rights to intellectual property, a supplier agreement to limit work with others on a specific technology in a specified field of use, and allocation of costs are relatively easy to negotiate; both because of supplier motivation and because the firm and its supplier have a history of working together under past agreements. Examples of an incremental innovation in the food industry would be a new flavor addition to an existing line of snacks, or a new pack-

Figure 1. Breakthrough Innovation And Adjacent Space Growth



The pre-collaborative ambitions of each firm (breakthrough innovation and adjacent space growth) can be achieved through a collaborative relationship with firms that control enabling resources.

age with a limited calorie portion. The firm's management team will look to its established flavor and packaging vendor base for the collaborative effort required for these projects. These innovations are typically near-term extensions of brand franchises, often designed to deliver products into the market in a year or less. For firms in other industries, the time scale to market may be longer, but the concept of an extension of an existing franchise remains.

In contrast, breakthrough innovation is a longer-term (typically 3+ years) initiative that is a discontinuity from the product scope or marketplace positioning of an established franchise. Ideas for these growth initiatives come from many sources including internal groups such as R&D or long range strategic planning; or externally from the investment community, external technology sources, consultants, or customers. Typically, these growth initiatives require collaborative relationships with technology-based firms that are not existing suppliers. These technology-based firms view the company as one of many possible pathways for marketplace realization of their underlying technology. In addition to the absence of long-standing relationships, these unfamiliar potential partners lack the motivation of an existing profitable relationship with the company. To an unfamiliar technology-based firm, the company is just one of many potential opportunities to exploit their technology. The company and the potential technology partner have no history of past relationships to suggest mutually acceptable contract provisions. In addition to these relationship problems, the company's management faces other challenges. Internal planning processes are less capable of dealing effectively with unfamiliar technologies. The company's intellectual property position in the technology is weak or non-existent. Top company executives do not understand the technology or the associated commercialization pitfalls. Finally, the company's technical subject matter experts are not "expert," making it difficult to accurately assess the value of the potential partner's technology compared to competing technologies.

An example of a breakthrough innovation is the development of an entirely new type of snack with healthier ingredients than the existing snack product line. The ingredients and processes required to provide low calorie or low sodium snacks with similar consumer acceptance as traditional products, require skills outside of the firm's core competence. Breakthrough innovation to achieve these goals may require collaborative relationships with technology-based companies that are not traditional suppliers.

Firms trying to achieve adjacent space growth face similar challenges. They must plan and structure collaborative relationships with channel partners that are new to the firm. There are no existing agreements to suggest acceptable terms. Managers are new to each other and coordination processes are not in place. Similar to the situation with potential technology partners, the channel partner has options. It will seek the best partner among many.

For all of these reasons, collaborative relationships for breakthrough innovation and adjacent space growth are much more difficult to plan, structure, negotiate, and implement than relationships for incremental innovation. In our experience, firms with an excellent track record in collaborations for incremental innovation often stumble when trying to execute breakthrough innovation and adjacent space collaborations.

Management Solutions to Collaboration Challenges

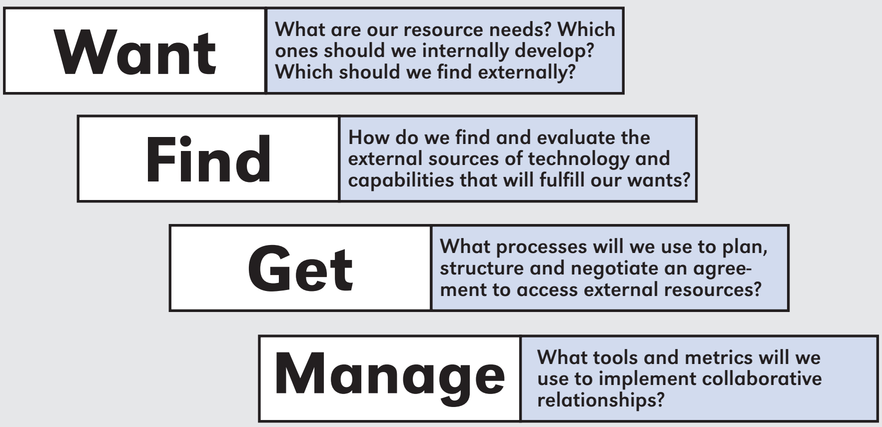
Collaboration challenges associated with breakthrough innovation and adjacent space growth occurs during the entire lifecycle of the relationship. Different challenges emerge during different parts of the lifecycle. We will use the "Want, Find, Get, Manage" Model®[5] (WFGM) as a framework to describe the lifecycle and its challenges. The model divides the collaborative innovation process into four segments (see Figure 2). In the 'Want" segment, responsible executives determine the assets, intellectual property, and skill sets they want to access externally. In the "Find" segment, they search the world for high quality sources of the identified resources. Next, they "Get" the resources contractually, including acquiring the necessary rights to carry out their business intent. Finally, they "Manage" the CI relationship to success.

Many companies are experienced and effective in CI for incremental innovation. A business unit's commercial groups and R&D team work well together to define exactly what is needed from a CI relationship (Want). These well-defined needs serve as the starting point for negotiating and implementing CI with established suppliers. Finding a potential partner (Find) is easy, because the existing supplier base has all of the required capabilities. Since the firm is a large customer, the supplier is motivated to be cooperative, and negotiations (Get) go quickly. Long-standing working relationships al-

5. "Want, Find, Get, Manage" Model is a registered trademark of Alliance Management Group, Inc.

Figure 2. The "Want, Find, Get, Manage" Model®

The "Want, Find, Get, Manage" Model is a framework for describing the entire life-cycle of collaborative innovation. It allows managers to identify key issues in each of the four stages of collaboration.



low the implementation teams from both sides to integrate their resources. The fact that the supplier is experienced with the nuances of the customer's in-place systems, such as the firm's decision-making structure and new product development processes, allows the project to move swiftly (Manage).

Things do not go as well when the same companies start to carry out "Want, Find, Get, Manage" for breakthrough innovation or adjacent space growth. As the firm moves farther away from its current product lines, it is harder to develop a careful description of the Wants and, to determine the priority of each Want compared to others. Greater marketplace distance makes the Find step more difficult and inefficient. The complexities of searching for a solution are exacerbated by the fact that finding an asset involves locating and evaluating unfamiliar partners and new technologies. The Get step requires planning and negotiating CI agreements with partners who view the firm as only one possible pathway to market among many alternatives, and who lack existing suppliers' motivations to accept the firm's usual agreement terms. Negotiations also require the firm to make financial decisions in the face of uncertainty and often without the comfort of market projections and financial models that work well in the firm's established businesses.

The relationship is further complicated if the potential partner's technology can be used in many applications in multiple industries. That has a significant impact on both the terms of the prospective alliance and on the working relationship during implementation, as the technology partner wants to avoid constraints on those alternative applications.

Internal organizational issues pose additional barriers in many firms that are less experienced in breakthrough innovation or adjacent space initiatives. Since a breakthrough innovation project such as a healthier snack line requires several years of development with an outside technical source, business unit and marketing leaders may look upon CI as only an R&D responsibility. For that reason, some CI costs may become a problem. Even if the R&D budget is adequate to support the required internal technical work in a CI collaboration, other CI costs are outside typical R&D budgets. For example, a potential technology partner may expect an upfront licensing payment before collaborative work begins. Even if an internal business case (prepared to enable Get) demonstrates that such a payment is reasonable, the relevant business unit may balk at funding such a payment for a project where uncertain revenues would not begin until well into the future. Where the budgeting process has not anticipated these CI costs, the firm may bog down in debates over "where will the funding come from?"

Beyond the budget problems, CI requires participation beyond the R&D function. For success, the relevant business units and functions must be actively engaged in Want, Find, Get, Manage. For example, commercial involvement is essential for adequate definition of each Want and developing agreement terms in Get that satisfy marketplace intent. Without serious commercial involvement, Want lists are lengthy, fuzzy, and lack a sense of priority. Agreement terms may miss vital future marketplace interests of the firm.

In addition, Find and Get are bilateral processes. A technology source that is needed for healthier snacks is simultaneously "Finding and Getting" its channel partner. When the source is evaluating several potential partners, including the firm's competitors, the visible role and commitment of business unit leaders is a competitive advantage. This is less of an issue in incremental innovation where the Find and Get steps are carried out with a current supplier, often with a well-established history and prior agreements that establish precedent for contract terms.

The need to allocate intellectual property rights is another component of CI relationships that requires management's attention. One option is joint ownership. It helps to start this discussion with a definition of joint ownership. The actual words are found in United States patent law at 35 U.S.C. 262: "In the absence of any agreement to the contrary, each of the joint owners of a patent may make, use, offer to sell, or sell the patented invention within the United States, or import the patented invention into the United States, without the consent of and without accounting to the other owners." Laws in other countries differ.

Joint ownership has implications in the areas of drafting patent claims and enforcement. Intellectual property attorneys define the legal boundaries of a patentable invention in drafting patent claims. Joint ownership of patents complicates the drafting process because claims that are crucial to one partner's interests may be irrelevant to the other. Patent counsels of the two firms will not agree on claims. This leads to increased cycle time and poor utilization of intellectual property counsel's time.

Enforcement is an equally important issue. The ability to decide when and how to pursue patent litigation is an important part of intellectual property strategy. Technology based firms have a valid business interest in protecting their intellectual property. In the United States, courts will not permit a patent infringement suit to be brought unless all of the parties having an ownership interest in the patent are named in the suit.

Additional issues must be taken into account. When patents are jointly owned, questions arise as to which firm will pay to file, maintain the granted patent, and file for foreign (non United States) equivalents. If the patent is commercially successful, can one party unilaterally abandon the patent, or will one party be obligated to prosecute and/or maintain regardless of their continued interest?[6] These issues must be satisfactorily resolved and put into the alliance contract to set the stage for a good alliance relationship. For all these reasons above, joint ownership is often considered an undesirable option.[7] The interested reader is directed to the December 2012 issue of *les Nouvelles* for a complete discussion of joint ownership and its implications in the United States as well as in other nations.

Another option is to allocate intellectual property rights based on marketplace needs, such as field of use, market segments, applications, geography or time. This option provides each firm with the rights they need to meet their marketplace intents outside the collaboration and upon termination. It also clearly defines the rights of each firm to use the background intellectual property of each party and foreground intellectual property arising from the collaboration.

To effectively deal with these matters, intellectual property counsel must be an integral part of Get teams as CI negotiations are carried out.

Principles for Carrying Out CI for Breakthrough Innovation and Adjacent Space Growth

There are three "lessons learned" that management can use to maximize the probability of success as they seek to grow through collaborations. They are principles that should guide management thinking.

1) Collaborative innovation cannot be treated as only an "R&D effort," with loose or non-existent coupling to marketing and other business unit functions. Even where a long range CI initiative is appropriately led by R&D, responsible business unit functional managers must be active in each segment of the process to show the technology partner that the firm is committed to commercializing the technology of interest. Experienced technology-based firms have learned the importance of business unit engagement through unsuccessful experiences, where the technology-based firm has collaborated with an enthusiastic large firm's R&D organization only to find out that the large firm business units are not interested in commercializing the results of the R&D collaboration. It is this problem that provides a competitive advantage to the firm whose business unit leaders are visibly involved.

6. O'Reilley, D. Patrick. "Allocation of Ownership of Inventions in Joint Development Agreements: the United States Perspective." *les Nouvelles*, December 2000, pp. 168-172.

7. This section draws heavily from, "Allocating Patent Rights in Collaborative Research Agreements," *Research *Technology Management*, Vol. 49 No. 1, January—February, 2006 by Gene Slowinski and Matthew W. Sagal.

2) The company will have to change its mind-set on some familiar negotiation positions. An example from the intellectual property portion of the contract is the "we will own everything" stance, which firms often take when dealing with an established supplier in an incremental growth initiative. That position is unacceptable to a partner, new to the firm, with a technology that enables a breakthrough innovation opportunity is applicable to multiple fields of use. The firm does not have the power to demand intellectual property ownership, restrict the technology source's work with competitors, or require that the technology source conduct all R&D at its own expense. These provisions drive technology sources to seek partners with a realistic view of acceptable positions. For breakthrough innovation and adjacent space growth, the firm must learn how intellectual property provisions, exclusivity terms, and financial models can be negotiated so that both partners' marketplace intents are achieved.

3) Crisp decision-making is required when management teams try to manage breakthrough innovation or adjacent space growth initiatives. The amount of marketplace distance is strongly correlated to managements' uncertainty with respect to customer needs, competitive threats, regulatory requirements, supplier reliability and a host of other issues. This uncertainty leads to delay and a continual request for "more information" from the management team. If executives cannot respond quickly to requests for decisions (example: a request for an upfront payment from a technology source), a potential partner will choose a company that can react quickly and reasonably.

Managing Collaborative Growth Relationships

Managing incremental innovation relationships tends to go well because of the factors we have described. That is less true for the two other types of growth initiatives. They require disciplined methodologies to get over the inevitable operational difficulties in working with a new partner. Breakthrough innovation initiatives usually require collaborative development in which both firms' scientists and engineers work closely together. The intellectual property issues surrounding close collaboration must be anticipated and built into the contract. The firm's new product development process must be reviewed for its ability to function in a breakthrough innovation initiative and accept critical assets from an external partner. Budgets must be considered from a product life cycle perspective and the impacts of long-term commitments to partners must be anticipated in the agreement. Equally important is a contract that clearly describes each partners' rights-to-use the fruits of the collaboration upon termination.

Conclusion

The central theme of this article is that collaborative innovation is a critical tool for achieving the most rewarding but difficult forms of growth: breakthrough innovation and adjacent space growth. If breakthrouth innovation and adjacent space growth opportunities are to succeed, they must become an integral part of the firm's long term growth strategy. This is a leadership function. Only senior management has the capability to maintain committment to growth initiatives during good and bad times. The firm's employees need this type of leadership. Their motivation comes from seeing bigger opportunities ahead and knowing that they can participate in the challenges and rewards these opportunities offer.

The need to grow through collaborative innovation leads to critical questions. How can management better use the firm's entrepreneurial talent? The skills it takes to run a 2 billion dollar business are not the same skills it takes to run one hundred distinct 20 million dollar businesses. How can managment encourage innovation on every link of the value added chain? Growth and innovation are not just R&D functions. Every link on the chain must be part of the CI growth process with metrics linked to clearly articulated goals. How can management improve the decision making quality in uncertain growth environments? One answer is to collaborate with partners who have deep experience in areas where the firm is not strong and utilize the partner's expertise as part of the firm's internal management decision making structure. ■

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