

# BETTER PRACTICES FOR MANAGING INTELLECTUAL ASSETS IN COLLABORATIONS

*Integrating the practices identified in this study into your firm's fabric will help to maximize the value of its external innovation.*

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**OVERVIEW:** *Firms moving to a model in which they complement their internal innovation efforts with innovation from external sources need to manage their intellectual property carefully. This requires careful internal alignment and appropriate negotiations of non-disclosure and joint development agreements, at times that are appropriate for maintaining IP rights. Moving too soon can expose the firm to contamination, but waiting too long (while negotiating agreements) can result in a loss of the fruits of the collaboration. Likewise, the timing of negotiating commercial terms is a critical decision as the market-facing firm has more power before new technology is demonstrated. But the power shifts once a technology is demonstrated, and spending time negotiating commercial terms for an unproven technology can waste scarce resources.*

**KEY CONCEPTS:** *intellectual property, collaborative research, open innovation, strategic alliances.*

The R&D world changed forever when the “not invented here” syndrome was replaced with the “invented anywhere” approach. Industrial Research Institute (IRI) member organizations are rapidly moving to a model in which they complement their internal innovation efforts with innovation from external sources. This is not a straightforward process. The complexities of integrating decision-making structures, developing financial models that share both risk and rewards, and adapting the firm’s processes and systems to work across organizational boundaries make this a daunting task.

The creation and use of intellectual property is a critical aspect of collaborative relationships. In recent years, the IRI has devoted significant resources to protecting intellectual property in open innovation. Its working groups have explored protecting know-how and trade secrets in collaborative research agreements (1), allocating patent rights in collaborative research agreements (2), building

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# Creation and use of IP is a critical aspect of collaborative relationships.

university relationships in China (3), sourcing external technology for innovation (4), and protecting intellectual property during collaboration (5). This article builds upon that work and explores the topic of Intellectual Asset (IA) issues in open innovation.

To understand how firms successfully deal with IA issues in collaborative relationships, we assembled, processed and analyzed learnings from activities of the IRI's Research on Research subcommittee conducted in 2007–2008 (see “How the Study Was Conducted,” next page). We call our findings “better practices” rather than “best practices” because a best practice in one organization may not be best in another due to differences in organizational culture, structure or strategy. We use a broad definition of IP that includes patents, trademarks, know-how, show-how, and marketing assets including pricing algorithms, customer lists and marketing strategies. We use the term IA to describe this broad definition; we use the term Intellectual Property (IP) to describe patents.

The activities and deliverables of the relationship change over the life cycle of the collaboration. These efforts are governed by a series of agreements that include provisions for protecting the IA of each firm and allocating rights to newly created IA between the parties.

To describe this progression of activity, and the agreements that guide them, we arbitrarily divided collaborative relationships into three phases: Exploration, Joint Development and Commercialization (see Figure 1). While the issues in each phase will be described independently, the experienced reader understands that they are interdependent. Indeed, the IA positions a firm takes in early agreements may have important impacts on the positions that will govern later agreements. This fact argues strongly for the need for both firms to understand their long-term strategic intent and the strategic intent of the partner. Absent this understanding, the firms may take positions that will limit the long-term value of the relationship.

## Exploration Phase

The intellectual asset issues in the Exploration phase have their genesis in the collaborative act. If the firm can achieve its marketplace intent without a collaboration and is willing to assume all of the risk, then these issues are avoided. Therefore, the first step in dealing with IA issues is determining whether or not the firm needs to collaborate. As a simple rule of thumb, if the firm can achieve its marketplace objectives with internal resources, or with a combination of internal resources and assets purchased through normal procurement channels, the firm typically should not enter a collaborative effort.

Hard work is required to make the decision whether to collaborate or to enter the market alone. The firm must clearly define its long-term strategic intent, assess the intellectual property landscape for freedom to operate and ability to exclude others, define an IA strategy that links to the business strategy, determine zones of protection, and present the management team with an assessment of the firm's ability to develop the necessary IA internally. If the result of this assessment determines that a collaboration is necessary or desired, two fundamental issues must be addressed:

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## 1. Internal alignment

The first issue is ensuring that the firm is internally aligned with respect to goals, objectives, milestones, and timelines. The IA approach the firm describes to the potential partner during negotiations will directly link to these business requirements. The complexity is that every collaboration is really three relationships in one (see Figure 2), namely the two respective internal alliances within each firm and the alliance between the firms.

The internal alliance within each firm requires that all the groups that will provide critical resources to the relationship agree on critical issues. These issues include the firm's marketplace and technical objectives, the roles each party will perform, the resources each party must contribute, boundaries of the relationship, the need for marketplace exclusivity, the financial relationship between the firms, the allocation of foreground IP rights, each firm's ability to use the background of the other, and how the firms will manage day-to-day interactions and govern the relationship. Absent internal agreement within each firm on these critical issues, the alliance is at risk.

The third alliance is the relationship between the parties. Leading firms begin the collaboration process with this framework in mind. They seek alignment with the other party only after achieving internal alignment.

## 2. Disclosure versus pollution

After the collaborative decision is made and the partner is identified, the firms must assess each other's technology. This is a delicate issue because the parties are in the exploratory phase. They may not move to a definitive agreement. If a definitive agreement is not reached, both sides may be sorry they shared (and/or accepted) proprietary information. The goal during this phase is to balance the need for IA disclosure with the desire to avoid IA pollution.

**Hard work is required to decide whether to collaborate or to enter the market alone.**

The first step in avoiding IA pollution is to assess each other's assets with publicly available information and exchange as much non-proprietary information as possible in meetings. The goal is to recognize that collaboration is not in the interests of either, or both, firms using only non-proprietary information. Pre-work inside each firm contributes to an efficient information exchange. In many industries the pre-work includes defining the state-of-the-art, the date upon which relevant patents expire and an assessment of competitor activities. It requires that the team understand its firm's technical, business and patent strategy related to the relevant field of use. It is desirable to understand which third-party licenses are required if the firms move forward to an agreement.

Should non-proprietary discussions show that a valuable collaboration is possible but proprietary information is needed to make the next go/no-go decision, legal counsel determines the type of Non-Disclosure Agreement (NDA) and the appropriate terms to be proposed. A

### How the Study Was Conducted

Activities of the IRI Research on Research (ROR) subcommittee on which this study is based included two benchmarking sessions, workshops, co-chair teleconferences, and a panel discussion among knowledgeable practitioners.

The two benchmarking sessions were held with eight representatives of IRI member companies. Each participant was selected because of his or her central role in protecting IP, their organization's extensive experience in licensing and using collaborative research agreements to meet technology commercialization goals, and their willingness to bring to the meeting at least one document they use to manage IP in open innovation.

In addition, three workshops were held at IRI meetings in which dozens of member organizations from a broad cross-section of industry sectors were represented. The organizations included companies in life sciences, consumer products, oil & gas, chemicals, materials, control systems, defense/aerospace and electronics, as well as academia and the federal laboratories.

A panel discussion was also conducted at the 2008 Winter ROR meeting, which featured panelists from four companies that are recognized as managing their IP especially well.

In total, over 100 individuals, representing 65 companies in 17 industries, participated in various sessions. The authors conducted a number of interviews with academics and practitioners.

## The Three Phases of Open Innovation

1. Exploration—the parties explore the possibility of working together.
2. Joint Development—the collaboration/joint development/research agreement is written and work takes place.
3. Commercialization—a product or technology is made ready to take to market and to produce financial benefits.

	Exploration		Joint (Co-)development			Commercial
			Incubation	Development		
	→		OPTIONAL STEPS* →			→
<b>Contracts</b>	<b>Initial Contact</b> Non-confidential Letter	<b>Detailed Discussion</b> Mutual, One-way or Two-way Confidentiality Agreements	<b>Develop Relationship</b> Material Transfer Agreement	<b>Exploratory Co-Development</b> Exploratory Research Agreement	<b>Co-Development</b> Detailed JDA or Alliance Agreement	<b>Commercial</b> License, Buy or Commercial Supply Agreement
<b>Activity</b>	Identification of Interest Areas, Business and Cultural Fit	Clear Understanding of What Each Party Brings, Technology Expertise & Areas of Interest	Initial Testing to Develop Joint Technical Statement of Work	Successful Laboratory Test & Proof of Concept	Successful Field Test & Valuation Model	Market Success for Both Firms
<b>Deliverable</b>	Open Discussion	Agreement on Vision For Success	Joint Technical Plan	Understand Value Chain	Understand Valuation Thoroughly	Equitable Division of Profits

\*Depending on complexity & technology development stage

Figure 1.—Successful collaborators begin with a clear vision of their long-term strategic intent and use that vision to develop activities and deliverables in each phase.

detailed discussion of NDAs is outside the scope of this article. However, one decision point is particularly relevant to R&D managers. That is, should the NDA require each side to document the disclosure of confidential information and provide the documentation to the other side within a specified period of time?

This common clause is a double-edged sword. By documenting disclosures, each side knows which disclosures must be treated as confidential. However, disclosures not identified as confidential are considered public. If your firm's employees are not disciplined about reducing discussions to writing, the requirement to document confidential information should be avoided.

When the NDA is signed, team members are reminded that an NDA provides the parties with the opportunity, but not the obligation, to share. Even the most experienced teams should consider a team briefing with the project leader or legal department to review the terms of

the NDA. Additional better practices are to identify a focal point in each organization for exchange of confidential information in the NDA itself.

An adjunct to this practice is to have a separate internal group or external consultant evaluate the IA. This firewall approach should be documented, explained clearly to the relevant internal company personnel and described to the partner. Documentation shows that the firm took steps to protect itself from IA contamination if the parties do not enter into a definitive agreement. Firms must think through the advantages and disadvantages of using key scientists to evaluate third-party technology. A critical disadvantage is contaminating internal technical talent in a commercial area of interest.

Finally, new employees are a particular point of concern during the exploratory phase. They may not be trained in IA protection and may not know what is, and what is not, considered company confidential. A better practice

is to ask the legal staff to give an IA refresher to the team prior to substantive contact with the potential partner. A final better practice is to document the attendees at each meeting. How well does your firm stack up against these better practices? What steps should your research management team take to improve?

### Joint Development Phase

If the exploratory phase shows promise, the development phase begins. This is generally a joint development effort, but sometimes all that is needed is to in-license technology or obtain a sample of a material or product under a Material Transfer Agreement (MTA) that prevents analysis or reverse engineering. The depth and breadth of IP disclosures increase dramatically during this phase. This is particularly true if the two firms' technical staffs are working together in the same laboratory. Because a Joint Development Agreement (JDA) is the primary type of agreement that guides the project activities in this phase of all R&D collaborations, we will focus our attention on that agreement (6).

The interviewees and workshop participants identified two issues of particular importance: the technical plan and allocating foreground patent rights.

The technical plan defines the specific activities of the collaboration. It includes the respective roles of each firm, the level of resources each partner will contribute, the metrics, deliverables, and how the firms will make decisions during the collaborative process. Fuzziness in the technical plan results in confusion during implementation. Examples of fuzziness include each firm thinking the other was responsible for a task, a lack of agreement

**The depth and breadth of IP disclosures increase dramatically during the Joint Development phase.**

related to testing methodologies, differences of opinion on what constitutes a successful test, and no clear decision-making process to resolve issues.

The alignment of the firms' IP strategies is another issue. It may be particularly difficult to negotiate terms if one or both parties believe the collaboration may yield a fundamental breakthrough (e.g., cold fusion). Much time can be wasted negotiating future IP rights to something that probably will never materialize. One better practice that may shorten the negotiating period is to prepare and exchange a simple one-page summary of each party's IP strategy and needs for the collaboration agreement. This document clearly communicates to the other side your expectations and can dramatically shorten the negotiation period.

### Why alliances fail

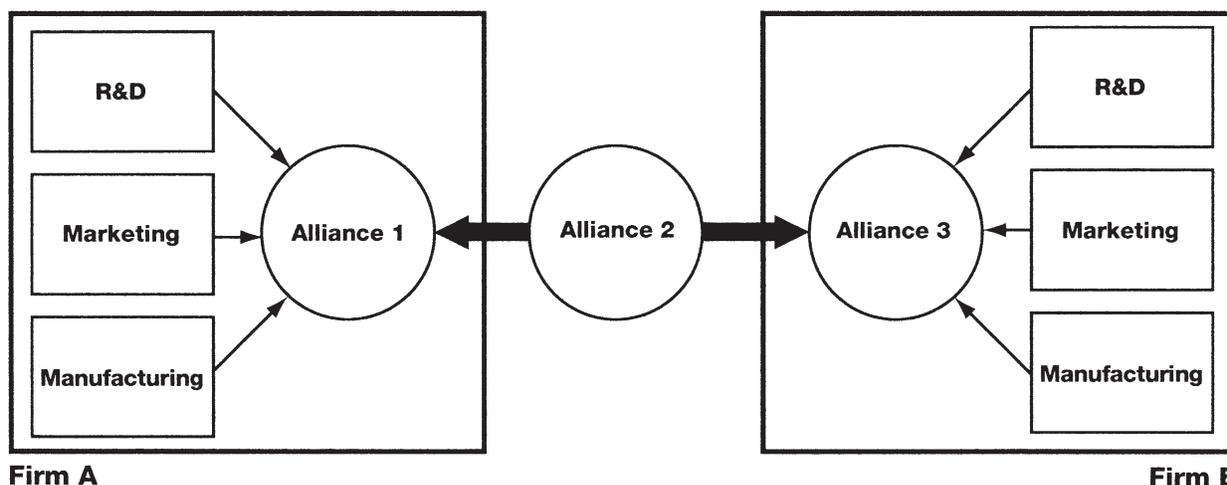


Figure 2.—Alliances are actually three relationships in one. Both firms must build strong internal alliances if the relationship between the firms is to succeed.

If the collaboration requires access to valuable know-how or trade secrets, it is common for the partners to describe how these assets will be protected by the partner after disclosure. Protecting IA during collaboration is more than a legal issue. It is a behavioral issue that requires the technical staff of each firm to disclose information in responsible ways, to use disclosed information in responsible and authorized ways and to protect the IA of the other.

Firms in our study have developed a technique to deal with this need. As a part of the first meeting, each firm's management team describes to its employees the collaborative intent around the following four questions:

- What IA must we share with the partner?
- What IA may we share with the partner?
- What IA must we never share with the partner?
- How will we protect the partner's proprietary IA?

#### *Allocating foreground IP rights*

The goal of R&D collaborations is the creation of protectable intellectual assets (foreground). The challenge is to allocate rights to these assets between the partners. Roundtable members described the value of approaching this discussion by focusing on rights-to-use (RTU) foreground IP, not ownership.

When business and technical executives discuss ownership, they are usually talking about controlling the use of the IA in the marketplace, including the ability to exclude others. The discussion begins with an understanding that the law provides collaborators with a great deal of flexibility when allocating IP rights between the parties. Ownership and patent rights to inventions made under joint R&D agreements may be allocated between the partners however they agree, subject to specific requirements such as antitrust law. In other words, each firm may have clearly defined RTU that allows them to meet their marketplace intent, regardless of ownership. By focusing on RTU instead of ownership, both parties can describe their IA needs directly in terms of marketplace intent.

Patent ownership is relevant and cannot be ignored; it has implications with respect to foreign filings, enforcement, maintenance, and other matters. However, discussions regarding the allocation of patent rights are much more productive when R&D executives concentrate *first* on RTU. Once the necessary RTU are agreed upon, counsel for both sides can develop mechanisms (such as appropriate licensing terms) to achieve the agreed RTU, as well as ownership.

Many times the patent ownership decision will be linked to the intellectual property strategy of the participating firms. Some firms may have a strategy that involves

ownership of any jointly developed intellectual property in its primary field(s) of business. Others may not care about ownership provided they have sufficient RTU. For each innovation, there are points along the value chain at which the value of the innovation can be exploited. In deciding ownership and RTU, an analysis of the value chain and the firms' respective positions in the value chain will help determine which firm will be able to maximize the value of the IA and thus which firm should own the asset (7).

The implications for the JDA discussion is that legal counsel for both parties should be involved in intellectual property RTU discussions from the beginning. This allows them to understand both parties' intents and translate those intents into a set of RTU, ownership and licensing provisions. Counsel can identify legal issues, explain the implications of various alternatives and begin formulating contract language, all with an eye to protecting their own firms but also crafting win-win scenarios. Also, counsel begins work on the following important patent issues: each firm's responsibility related to drafting and prosecuting patent claims, selection of countries to file for patent protection, patent maintenance, and enforcement (8). Each of these has implications for, and derives from, a firm's business and IA strategies.

#### *When to negotiate commercial terms*

Another thorny issue in the JDA stage is determining when to negotiate the details of the commercial agreement. More specifically, should the firms spend time and resources negotiating a commercial agreement as part of the JDA or, should they wait until the joint development work generates sufficient feasibility data to show that commercialization is possible? There are advantages and disadvantages to both options. Before we describe them, it is important to set the stage.

Market-facing firms (usually large firms) are interested in identifying breakthrough technologies. Technology sources (usually small firms or suppliers) possess these technologies. However, the technology is often at an early stage such as a bench-level prototype that must undergo significant technical development prior to commercialization. The question is, "Do you negotiate the commercial agreement prior to, or after, feasibility testing?"

There is no generic answer. Each of the firms has already performed at least a preliminary analysis of its own business case for the joint development effort and the development of the foreground IA. That preliminary analysis may inform the decision as to when to negotiate the commercial agreement, especially if the firm's business case hinges on the terms of the commercial agreement. The firms we studied indicated that sometimes there is an advantage to the market-facing firm if it negotiates the details early and the technology is successful. In this

case, the market-facing firm understands the commercial and IA conditions that will govern the collaboration throughout its commercial life.

However, there is a disadvantage as well. The firm must devote significant resources to planning, structuring and negotiating a full agreement without knowing whether the technology works or not. These resources are not trivial. Team members from R&D, finance, marketing, procurement, legal, and other functions will devote weeks if not months to the effort; outside counsel is often employed, and the effort devoted to negotiating this agreement is diverted from other projects. This represents a significant opportunity cost. In summary, no one has estimated the net present value (NPV) of planning and negotiating a commercial agreement, but the number is generally quite large.

While waiting is irrelevant if the technology development fails, there is a significant disadvantage to waiting when it succeeds. Specifically, the balance of negotiating power may shift from the market-facing partner (large firm) to the technology source (small firm/supplier). When the firms negotiate early, the balance of power rests with the market-facing partner because the technology is unproven. When the firms negotiate after feasibility is proven, power immediately shifts to the technology source. The shift can be large, especially when the large firm has multiple competitors. Depending upon how the JDA is written, the technology source may be able to take the fruits of the collaboration to the market-facing partner's competitors if a commercial agreement is not reached within a specific timeframe or upon completion of specific milestones.

Which tactic should you choose: negotiate now or later? There is no easy answer; companies make this decision on a case-by-case basis. However, if the firms choose to "wait" until the technology is proven, they must negotiate one critical point now: how the firms will allocate IA rights between themselves in the event they cannot come to commercial agreement. Absent this JDA provision, a market-facing firm cannot accept the risk of waiting because the default IA allocation is determined via statute.

In the United States, absent an agreement to the contrary, jointly developed IA will be jointly owned, with no requirement that one firm account to the other firm. Jointly owned IA may not be in the best commercial interests of one or both partners as it allows each firm to exploit the foreground IA independently and without accounting to the other (9). As an egregious example, the technology source may take the foreground IA to the large firm's chief competitor, license the IA to the competitor and not share the royalties with the large firm. Also, it is possible that one firm could donate the IA to the public, thereby destroying the value of the IA to the

**The business model  
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partner firm. In summary, if the firms decide to "wait" they must determine if the jointly owned IA option is acceptable and then, at a minimum, agree to a "good faith" requirement to negotiate in the future for such allocation. If not, they must negotiate provisions that allocate foreground rights between them.

### **Commercial Phase**

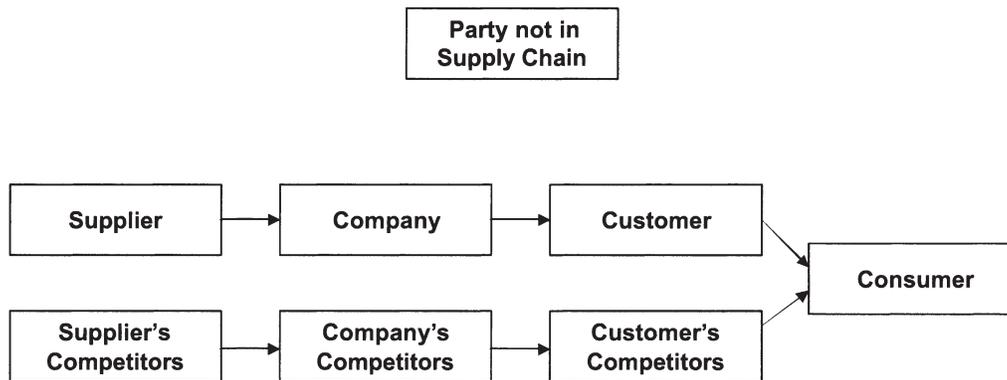
If the partners complete the Exploration and Joint Development phases, they have accomplished a great deal. The Commercialization phase translates this success into value.

There are two critical activities in this phase: developing the business model and creating a financial model that shares both risks and rewards. The business model must include a description of points for capturing value and the assets required to create it. The model depends on the industry, technology and the specific opportunity that is the focus of the collaboration. Following is an example based on a supply chain opportunity in the beverage industry.

#### *Identifying value in the business model:*

The supply chain analysis in Figure 3 is an example of including IA as a critical variable in a beverage business model. The analysis starts with a description of the players in the supply chain and their relationship to each other. Note that some of the players may not be part of the traditional supply chain. By answering the six key questions in Figure 3, the financial relationships between firms with respect to both dollars and IP are identified.

Modeling permits the evaluation of various scenarios. In this case, the model describes how firms capture and extract value when a drinks company develops new dispensing equipment for restaurants. The drinks company 1) does not make the equipment, and 2) wants more than one supply source. The company enters into a Joint



Where will IP result in competitive advantage?

How will IP rights be allocated?

How can value be extracted?

What are the terms for early termination?

How will value be divided?

How are development efforts divided?

Costs

Risks

Figure 3.—Interrogating the supply chain with these six questions can lead to additional value creation.

Development Agreement with a party not in its traditional supply chain to develop the new equipment and sell it to the company's customers as shown in Figure 4.

Because intellectual property provides competitive advantage to the drinks company in its relationship with its restaurant customers as well as to the equipment maker in its sales to the customers, there are two opportunities for the drinks company to extract value—from additional revenue by selling more syrup to the company's restaurant customers and from licensing revenue from the manufacturer of the dispensing equipment—as shown by the \* in Figure 4.

The model must be developed further to meet the drinks company's desire for a second manufacturing source. In Figure 5, the drinks company captures value through both equipment maker A and B's sales as shown by the \$ sign. While equipment maker A also receives a royalty from equipment maker B as shown by \$<sub>B</sub> in Figure 5, that royalty is offset by a loss of sales to B.

Finally, the model shows that both the drinks company and the equipment manufacturers can generate value through sales to the drinks company's competitors. This value stream recognizes the fact that the equipment suppliers want to sell dispensing equipment broadly into the market. This includes selling to the drinks company's competitors. If the drinks company owns the IA, then it would have the final say on whether its competitors would reap the benefit of a license.

Brands provide another source of IA value generation. The drinks company in the above example may have such a powerful brand that it can extract a high percentage of the future value through license fees (enabled by IA rights even if the bulk of the cost of developing the new dispensing equipment is paid by equipment maker A). The equipment maker is compensated for its efforts not only by sales of equipment to restaurants but also by license fees from its competitors.

Finally, non-IP value is extracted by sales of product from the drinks company to the restaurant and of equipment to the restaurant as shown in Figure 5.

This type of modeling is an important part of open-innovation relationship planning. By developing scenarios that describe the various cash and IP flows, the firms are able to analyze and then maximize their respective opportunities in the marketplace.

#### Developing the financial model

The financial model is the mechanism for translating the value proposition identified in the business model into cash flows. A description of the different modeling techniques that apply to collaborations is outside the scope of this article. However, it is important to point out that the IA issues surrounding the financial model can be large relative to a traditional business arrangement. It all begins with the principles behind a collaborative financial model.

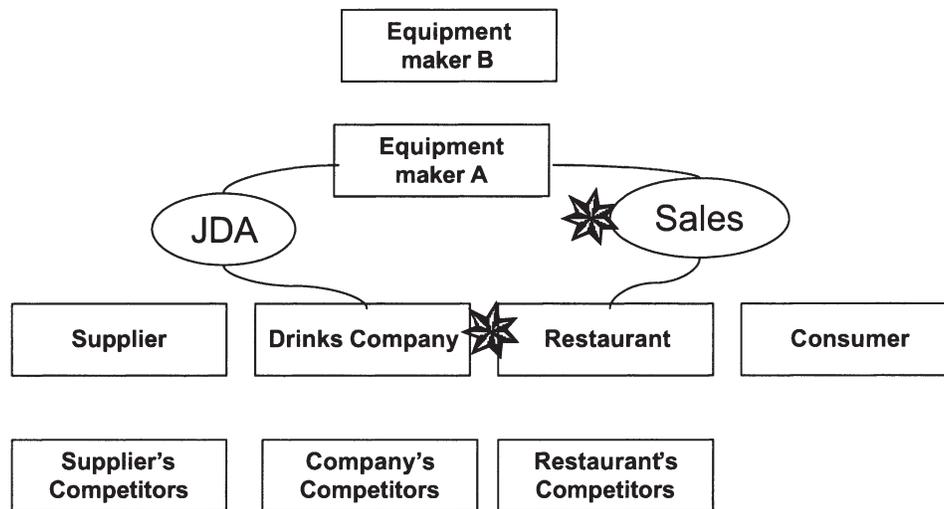


Figure 4.—Supply chain analysis allows Equipment Maker A to identify the value capture points in a relationship with a Drinks Company not in its traditional supply chain.

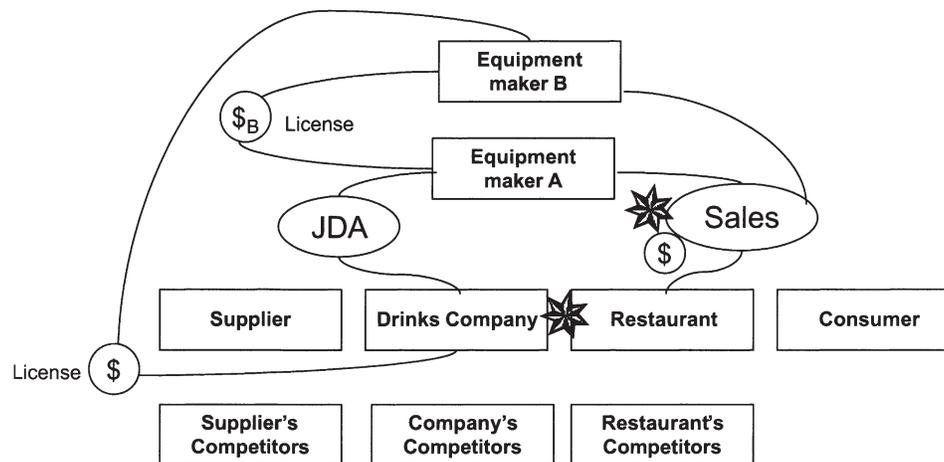


Figure 5.—Equipment Company A maximizes the value of its innovation through value capture at multiple points in the supply chain including its competitors.

The primary goal of a collaborative financial model is to ensure that each firm's resource contributions and benefits are equitable. In other words, if Company A provides 30 percent of the alliance resource inputs, it should receive 30 percent of the alliance benefits. Inputs include obvious contributions such as patents and headcount. They also include less obvious contributions such as liability responsibility, market position, and the firm's ability to execute in the market. The challenge is to exchange enough information about each firm's assets and financial structure to determine what percentage of inputs came from Company A versus what percentage came from Company B. Firms

have two options to meet this challenge. They can exchange highly sensitive information about their cost structure and financial measures, or they can negotiate in the absence of verifiable financial information. The choice is not easy.

Most firms prefer not to share their proprietary financial information. In this case they negotiate transfer prices, royalty rates, upfront payments, and success fees using publicly available information. Each firm makes educated guesses as to the other's cost of goods sold, profit margins and ability to capture market share from competitors using the fruits of the alliance.

# R&D leadership must demonstrate and reinforce the importance of collaborative innovation.

The opposite extreme is to share this sensitive information under the appropriate NDA. This allows the parties to develop a defensible model that clearly identifies the inputs while allocating an appropriate share of the outputs to each firm. Sharing financial information provides benefits beyond developing a financial model. It encourages the firms to think through the project at a level of detail needed to predict capital expenses, marketing costs and promotion budgets. It requires both sides to allocate headcount in each function that will support the effort. It also suggests different marketplace scenarios that will increase or decrease budget needs (the inputs) and therefore increase or decrease the benefits (the outputs).

Which method should the firms use? There is no universal answer. Armed with the advantages and disadvantages outlined above, the firms determine if the project plan is described in enough detail for each firm to develop a budget and if publicly available information is adequate to determine the input/output ratio and whether the firms are willing to share this type of proprietary information.

## Summing Up

The participants in our roundtable discussions were generally in agreement with respect to better practices and the advantages/disadvantages of each practice (see “Better Practices Identified During Research,” next page). However, the knowledge of better practices by lead practitioners does not ensure their use throughout an organization. Some of the more interesting discussions revolved around the firms’ efforts to build these practices into the organization. IRI firms are complex organizations; management techniques that allow one firm to institutionalize a new process into the firm may not work in another company.

An important management challenge is to introduce these better practices into the firm in ways that maximize the probability that these processes become an integral part of every collaborative relationship. While a detailed discussion of these activities is outside the scope of this paper, a consensus emerged with respect to three principles that guide employee behavior. The principles for R&D leadership (not necessarily in order of importance) are:

- Identify one or two institutionalized processes/systems that drive the firm’s new product development success and link collaborative activities to these processes/systems.
- Build the presence and address the absence of collaborative principles into the formal and informal reward systems.
- Demonstrate (“walk-the-walk”) and reinforce (“talk-the-talk”), the importance of collaboration innovation.

We believe these principles are important foundation stones in the deployment of the better practices outlined above. As just one example, the management team should incorporate external innovation into the firm’s new product development system, and ensure that the reward system encourages an “invented anywhere” approach, rather than being biased toward internal invention.

Finally, senior managers can take visible actions (e.g., ask questions about collaborative innovation steps during gate reviews) that support collaborative innovation. They can link a portion of their bonuses to external targets, develop budgeting protocols for external assets and implement training programs designed to develop “best-in-class” capabilities within the firm.

Collaborative innovation is a powerful tool for growth. Using better practices that protect IA during the course of these agreements is a management imperative. Integrating these practices into the fabric of the firm will ensure that the capabilities exist to maximize the value of external innovation. ☉

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## References and Notes

1. Slowinski, Gene, Hummel, Edward and Kumpf, Robert. 2006. Protecting Know-how and Trade Secrets in Collaborative R&D Relationships. *Research-Technology Management*, Vol. 49, No. 4, pp. 30–38.
2. Slowinski, Gene and Sagal, Matthew W. 2006. Allocating Patent Rights in Collaborative Research Agreements. *Research-Technology Management*, Vol. 49, No. 1, pp. 51–59.
3. Slowinski, Gene, Johnson, Albert, Hummel, Edward, and Story, Bruce. 2008. Building University Relationships in China. *Research-Technology Management*, Vol. 51, No. 5, pp. 13–16.

## “Better Practices” Identified During Research

### ❖ Pre-work, Planning, Business Model and Strategy

- Reach win-win outcomes by treating people fairly.
- Define, align and communicate IP, technical and business strategies.
- Clarify each partner’s IP strategy.
- Use value-chain analyses to identify opportunities and to determine IP ownership.
- Select partners at different positions on the value chain to define benefits and mitigate risks.
- Use gap analyses and panels of experts to determine whether needed technology is available in-house.
- Define whether the goal is to discover new knowledge or to commercialize.
- Choose a partner willing to see the process through to the end.
- Layer patent coverage to protect IP at multiple levels.

### ❖ Getting Things Organized and Communicated

- Align the strategic intents of parties.
- Ensure a good cultural fit for good business collaboration.
- Exchange summaries of preferred IP positions.
- Communicate deal-breakers early to kill poor deals.
- Itemize background and foreground rights to avoid early-termination problems.
- Define the state-of-the-art and when patents expire.
- Have technical experts oversee the progress of external projects.
- Have separate groups evaluate ideas to avoid contamination.
- Erect a firewall and post a policy on terms for accepting outside ideas.
- Use a master agreement for repeat collaborations.
- Identify gate-keepers for information exchange.
- Use a stage-gate process with defined tasks.
- Define organizational metrics, e.g., % net revenue.
- Reward individuals for technology found elsewhere.
- Refer to [www.DIDP.org](http://www.DIDP.org) for better practices related to collaborations between universities and industrial partners.

### ❖ Structure and Prepare the Documents

- Have a template for recurring agreement types.
- Itemize limitations on the field of use.
- Develop a check-list of tasks to be done and questions to be answered.
- Document disclosures of confidential information.

### ❖ Actively Manage Your Intellectual Property

- Decide which patents to protect, license or abandon.
- Decide whether to own or merely use IP rights.
- Own IP rights if they cover core competencies.
- Own IP rights if transferring or excluding is important.
- Own IP rights if seeking partners for new technology.
- Minimize risk with access to IP without ownership.

### ❖ Non-Disclosure Agreement, NDA

#### ➤ *Pre-Work and Getting Things Organized and Communicated*

- Use the overall goal of the collaboration to formulate language for the NDA.
- Decide what to share and what not to share.
- Exchange relevant non-confidential information early.
- Strive to reach agreement without disclosing confidential information.
- Cease communication if one party intends to disclose confidential information.

#### ➤ *Structure the Agreement and Negotiate Terms*

- Exchange relevant non-confidential information early.
- Track participants of information disclosure.
- Decide on single or multiple gate-keepers.
- Use a primary gate-keeper with individual contacts.
- Commit to reducing confidential information to writing only if you are good at it.
- Itemize time periods to disclose and to keep information confidential.
- Decide on one-way or two-way disclosure.
- Define terms for terminating the agreement.
- Terms for license and sales should not be in an NDA.
- Terms for disclosing trade secrets and know-how should be itemized.
- Delay valuation of technology until the JDA stage.

#### ➤ *Develop the Needed Documents*

- Develop a check-list of tasks to be done and questions to be answered.
- Prepare a template for recurring agreement types.
- Review the other party’s template to judge their drivers.
- Prepare a generic template for routine collaborations, and customize where necessary.
- Itemize time periods to disclose and to keep information confidential.
- Defer license and purchase terms until the JDA.

### ❖ Joint-Development Agreement, JDA

#### ➤ *Pre-Work and Getting Things Organized and Communicated*

- Define, align and communicate business, technical and IP strategies.
- Plan thoroughly up-front to get a better business result later on.
- Write a clear and concise problem statement.
- Ensure a good cultural fit for good business collaboration.
- Treat people fairly—it’s the key to success.
- Develop a check-list of tasks to be done and questions to be answered.
- Save licensing and sales terms for negotiations on the procurement side.

### ➤ *Structure the Agreement and Negotiate Terms*

- Negotiate the terms of joint development agreements between business leaders of the respective partners.
- Involve the attorney internally, not with partner.
- Specify termination date and conditions.
- Provide for transfer of trade secrets, know-how and IP.
- Decide who pays for filing and maintenance fees.
- Identify and communicate deal-breakers early.
- Provide commercial and technical personnel with legal support to negotiate JDA terms.
- Use a pre-nuptial/marriage/divorce model.
- Document actions and decisions to avoid misunderstanding.
- Identify relevant patents and their expiration.
- Negotiate IP rights and ownership as soon as outcomes can be visualized.
- IP terms can be vague on fundamental research; must be more specific for end-use applications.
- Link royalty payments to milestones.
- Decide responsibility for product liability and infringement of third parties' IP.
- Define single or multiple gate-keepers.
- Use a stage-gate process with defined stage tasks.
- Define organizational metrics, e.g., % net revenue.
- Reward individuals for technology found elsewhere.

### ➤ *Develop the Needed Documents*

- Have a template for recurring agreement types.
- Have a generic template for routine collaborations, and customize where necessary.
- Use a mergers & acquisitions template if you are the “deep pockets” partner and want more protection.

### ❖ *Protection from Contamination*

- Protect information to prevent loss of IP rights.
- Track participation in discussions and decisions.
- Layer patent coverage to protect IP at multiple levels.
- Have separate groups evaluate ideas to avoid contamination.
- Erect a firewall for outside ideas and post a policy.

### ❖ *Education and Training*

- Raise the awareness of employees through training to avoid irreparable loss of IP rights.
- Train employees who will interface with outside parties (critical).
- Train employees on antitrust issues in case potential joint development partners are competitors.
- Train new employees especially on confidentiality and IP rights.
- Raise awareness with periodic newsletters.
- Recognize that collaboration will become increasingly important as more companies participate in open innovation initiatives.
- Recognize that virtual workplaces will require working outside of organizational boundaries.
- Train employees to work across organizational boundaries and be more receptive to collaboration.
- Foster an environment of teamwork, relationship-building and information-sharing.
- Make employees aware that IP includes trade secrets, know-how and “show-how” as well as patentable art.
- Train employees on export control regulations and anti-trust concerns in addition to the IP issues.
- Make employees aware of different international IP regulations including the inability to protect trade secrets in India.

### ❖ *Attorney-Related Considerations*

- Select a transaction-minded attorney.
- Drive the attorney by specifying goals and urgency.
- Involve the attorney internally, not with the partner.
- Negotiate terms business-to-business with legal support.
- Use attorneys when commercial/technical people agree in principle but cannot agree on wording.
- Involve attorneys on antitrust issues when partners are competitors.
- Develop generic templates for multiple business segments.
- Have counsel on one side present if counsel for the other side is there.—**The Authors**

4. Witzman, Stewart et al. 2006. Sourcing External Technology for Innovation. *Research-Technology Management*, Vol. 49, No. 3, pp. 19–27.

5. Slowinski, Gene and Zerby, Kim. 2008. Protecting IP in Collaborative Research. *Research-Technology Management*, Vol. 51, No. 5, pp. 58–65.

6. Space does not allow us to go into detail on every important clause in a JDA. There are a number of excellent books and articles on the topic. The interested reader is directed to: Arena, Christopher and Carreras, Eduardo. *The Business of Intellectual Property*; Ville-neuve, T., Gunderson, R. and Kaufman, D. *Corporate Partnering: structuring and negotiating domestic and international strategic alliances*; Aspen Law and Business, third edition; and Goldscheider,

Robert. *The New Companion to Licensing Negotiations: Licensing Law Handbook*, 1996–1997 edition. Clark Boardman Callaghan, New York, NY.

7. See Arena, Christopher M. and Carreras, Eduardo M. 2009. Business Models, Value Chains and Value Propositions. *Intellectual Asset Management Magazine* 34, March/April, pp. 49–55.

8. The content of this section draws heavily from Ref. 2.

9. 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 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 may differ.