



Intellectual property: Partnering for **profit**

Companies could earn up to 10 percent of their operating income from the sale of patents and proprietary processes. But how?

JEFFREY J. ELTON, BAIJU R. SHAH, AND JOHN N. VOYZEY

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Companies whose reported earnings didn't clearly flow from actual sales and real assets found themselves punished by investors in 2002. Paradoxically, however, some companies face a different challenge: making use of assets that could generate revenues but haven't been fully exploited. These neglected assets take the form of intellectual property—patents, proprietary technologies, and processes—that could be sold or licensed to others. Certain sectors, including biotechnology, pharmaceuticals, and telecommunications, have made the licensing of intellectual property a way of life. But most of the 40-plus companies we studied had projects to develop, manage, and commercialize such assets. In general, these companies have failed to capture their full value, because management hasn't been paying enough attention.

Nonetheless, many companies—some far removed from pharmaceuticals, high technology, and other knowledge-based industries—could make substantial sums by transferring technology from a core business activity to outside industries. One consumer products company, for example, licensed a food additive as a cleansing agent in toxic-waste spills, thus recouping what had been an uncertain investment. An automaker found markets for its technology in heavy construction and health care, thus opening the door to a sustainable licensing business. Similar opportunities are more available than most executives realize.

As a rule of thumb, any company that owns at least 450 patents and spends \$50 million or more a year on R&D—and several hundred companies in the United States alone fit the bill—possesses enough intellectual property to bring some of it to market; typically, 10 percent of the patent portfolio could be put to work in this way. Our study of current intellectual-property practices and valuations⁴ suggests that such assets could generate 5 to 10 percent of these companies' operating income, equivalent to the improvement that might be expected from a 20 percent cut in expenses or from a successful acquisition, with little capital investment. Yet only a small number of the companies we looked at earn more than 0.5 percent of their operating income from licensing. Unlike the top performers, which on average do at least one intellectual-property deal a month and earn licensing revenues of more than \$10,000 annually for each active patent, most companies in our survey complete only one or two deals a year and average less than \$1,000 per active patent. The good news is that some companies have closed that performance gap quickly by changing the way they manage their intellectual property.

Because so few companies have made good on their earnings potential in this area, we can't propose a best-practice list for others to emulate. But our observations and our conversations with executives in the field do permit us to offer a blueprint for best practices in the future. The heart of the emerging strategy is an outside-partner network that can increase the frequency and value of intellectual-property transactions.

THE CURRENT STATE OF PLAY

To profit from intellectual property, companies must know whether it can be usefully and valuably applied in other industries and, if so, whether sales deals can convert that potential into revenue. At present, the market knowledge and deal-making infrastructure of most companies come up short because they rely on their internal business-development staffs and on narrow technical specialists to manage the sales of their intellectual assets. Much as companies look outside their own organizations to find the lawyers and bankers who manage their stock offerings, so too should they look outside to find the experts who can identify market applications for intellectual assets and convert these ideas into revenues.

Engineers at chemical companies, for example, aren't likely to know that the materials and processes they use to separate atmospheric gases could help semiconductor manufacturers reduce the time and money needed to manufacture the high-value integrated circuits that use ceramic rather than plastic bindings. (Ceramic can withstand more heat than plastic and thus allows for smaller sizes and higher densities.) Yet one midsize chemical company, helped by an external network of technologists, discovered that its process could cut the production costs of these chips by up to 20 percent, or more than \$200 million.

For the most part, companies are **out of their depth** in negotiating intellectual-property agreements lying outside their own industries

Most companies will be out of their depth in striking intellectual-property deals on their own, because without personal contacts and experience in other industries they probably won't be able to identify the likely buyers or know how to extract the best terms. Some companies simply list themselves on Internet exchanges, wait for buyers to call, and let their lawyers or business-development managers negotiate sales. By contrast, the midsize chemical company, having little knowledge of licensing arrangements beyond its own industry, didn't pretend to know what the rights to its gas-separation process might be worth; instead, it brought in specialists to test the market, find a buyer, and transact a deal.

BUILDING AN INTELLECTUAL-PROPERTY NETWORK

Companies will need to build networks consisting of two kinds of experts: knowledge partners, who assess the possible applications and potential value of intellectual property for a range of users, and conversion partners, who sell the assets. Some companies already have certain components of such a network, but we are not aware of any company that systematically uses a complete one. What follows is a user's guide to building these networks. Based on the early experience of the companies we studied, it outlines the role of each of the participants, their likely terms of engagement, and the keys to managing each relationship.

KNOWLEDGE PARTNERS

Companies aiming to extract the maximum value from intellectual property should begin by reviewing all of their patents, processes, and technologies and be prepared to do so at least once every three years. They will need two types of on-call knowledge partners—broad-based technologists and industry specialists—to suggest applications for their technologies across a range of industries and then to confirm that each application is viable and to estimate its business impact in every relevant industry. That process should yield an A-list of ideas warranting immediate attention.

Broad-based technologists. Generalists with the experience needed to think up applications across many markets are a rare breed. Typically based in technical societies, universities, and research laboratories such as Battelle Memorial Institute (Columbus, Ohio) and Argonne National Laboratory (Argonne, Illinois), these generalists conduct fundamental research across a wide range of industries. To review each technology in the portfolio, a company will need access to several broad-based technologists.

Procter & Gamble, for example, used a panel of technologists, including academics and representatives of small technical firms, to generate new applications for its Olestra molecule. When Olestra first appeared, it was hailed as a low-fat ingredient for snack foods, but unpleasant side effects (since corrected) caused sales to fall flat. Stuck with a multimillion-dollar plant equipped to produce the molecule, Procter & Gamble sought other applications for it. Internal technologists came up with a shortlist of ideas, mostly for consumer products such as lotions, but outside experts generated many more. The winning application so far is environmental remediation: poured on contaminated soil or sludge, the Olestra molecule binds itself to

pollutants, which can then be removed easily. Thanks to these alternative applications, Procter & Gamble has salvaged its investment in research and infrastructure.

The technologist's task is twofold: to produce a summary of all a technology's possible applications, ranked according to technical and business feasibility, and to estimate the economic impact of each application (for example, the savings semiconductor manufacturers could realize from the gas-separation process). Such estimates are especially important when companies negotiate terms with potential buyers.

A company should secure enough of these advisers' time to have them available as needed but refrain from engaging them full-time or from limiting their ability to work with other companies; a large part of the value of such people lies in their exposure to cross-industry knowledge, which can come only from working with a variety of companies on common technologies. Advisers are usually paid through project fees or retainers (perhaps \$2,500 to \$5,000 a day) but seldom have a financial stake in a project's outcome.

Brokerage firms usually enter the **licensing game** when patents or processes are well established and have a clear market value

Industry specialists. Experts with a knowledge of applications in specific markets can often be found in the same institutions that employ broad-based technologists. Most companies will need a roster of specialists in a dozen or more fields to refine and validate ideas the technologists bring to light.

One carmaker, for instance, learned that a magnetostrictive sensor in its steering mechanisms could have several unexpected applications. The most promising of them was a system to test the strength and stability of the poured concrete used in bridges and roads. (The sensor responds to changes in pressure and then sends electromagnetic signals that can be read as the concrete cures.) To test the technology's potential value and performance requirements, the company interviewed more than 20 industry specialists: engineers for construction companies, professors of materials sciences, entrepreneurs in related markets, and employees of the transportation departments of several US states. By saving time and improving compliance with industry codes, these specialists said, the device could save construction contractors and transportation departments billions of dollars a year. The carmaker should realize more than \$17 million in annual licensing revenues from this unexpected application.

Academics, engineers, and other professionals don't routinely sell their services on the open market. Such experts might be prepared to donate their time to pursue the intellectual challenge of assessing the market demand for a new technology or of surmounting the technical barriers to its success. But when the commercial validation of an idea and the development of performance specifications take center stage, most of these people will expect to be compensated. Their fee arrangements are comparable to those for broad-based technologists.

CONVERSION PARTNERS

When a company has identified its marketable assets and assessed their approximate value, a network of conversion partners—intellectual-property brokers, consolidators, and business builders—can help it strike licensing and equity deals with buyers. The dozens of mostly small firms that occupy this fast-growing niche have pushed US licensing revenues to an estimated \$100 billion a year.

Each type of partner can assist the intellectual-property owner in a different way, and sometimes the same firm serves different clients in different capacities. Like investment bankers, conversion partners can price and market a property, provide industry contacts, and, occasionally, offer a portfolio of existing intellectual assets (from other companies and institutions) that enhance a company's offerings. It rarely makes sense for the owner to maintain such conversion specialists on its own staff unless it expects to conduct ongoing deals in a specific industry.

Brokers. Intellectual-property brokers use the technical specialist's initial assessment to judge how much a buyer would be likely to pay for an asset. Like their counterparts in commercial real estate, they can draw on a wealth of potential purchasers.

Brokerage firms are usually boutiques, often started by former business-development leaders of large corporations. (Competitive Technologies, NineSigma, and Chipworks are among the leading names in the

United States.) Such a firm generally enters the game when patents or processes are well established and have a clear market value, though the owner doesn't care to develop them further. For example, researchers in Monsanto's electrochemical-sciences group developed a flexible color display. The project, far removed from the company's core business, was about to be dropped, but the office supplies company Avery Dennison had an interest in just such a technology, which could be used in retail displays and in packaging for consumer goods. Competitive Technologies brokered a deal between Avery and Pharmacia (Monsanto's parent), and the first products are expected to reach the market early next year.

An owner of intellectual property should identify the broker with the best track record in each target market (medical devices, transportation, or consumer goods, for example), give all of the company's business to that broker, and hold it to strict performance standards, such as the number of interested buyers approached and of discussions held during a given time period. The owner should also arrange an exit option in case of nonperformance.

Brokers usually receive a commission of 10 to 30 percent of the transaction price, though for less well-developed or more speculative assets they could command up to half of it. They might also require a retainer to offset early expenses; if so, they should contribute some up-front value by helping to refine an application for intellectual property, reassessing its value, and suggesting specific companies and managers to target.

Consolidators. Some companies see the activities of intellectual-property consolidators as the moral equivalent of telemarketing, for they will call, uninvited, to generate business. Even so, don't hang up on them. Consolidators, often backed by private equity firms, purchase selected properties from a variety of players—even before patents are secured—and assemble packages that could be used to launch new businesses or sold to strategic buyers. Sometimes consolidators also conduct additional research to develop the full package or to show how different patents complement one another. These firms are most useful to organizations that have intellectual assets with limited stand-alone value and that aim for quick sales rather than continuing participation in ventures.

Certain deals can provide both, however. The intellectual-property division of the law firm Greenberg Traurig bundled five patents from three universities and licensed the package to a pharmaceutical company that was developing cancer treatments. The package is worth up to \$300 million to the drug company, with the universities sharing the royalties. Other consolidators, including firms such as British Technology Group (BTG) and Research Corporation Technologies (RCT), play a similar role.

When working with consolidators, owners of intellectual assets may receive compensation in forms ranging from up-front payments to royalties.

Business builders. Business-building partners, which help companies create new ventures based on patents or technologies, are usually private equity firms, such as Accel-KKR and Milcom. A firm of this kind focuses on a particular end market and provides industry-specific management talent and operating skills.

Companies should use business builders when technologies could serve as growth platforms for other products or services or as the foundation for self-contained businesses. McDonald's, for instance, developed its own point-of-sale software for its cash registers and order-tracking and other systems. In 2001, Accel-KKR helped the company launch eMac Digital to sell software and services to the global restaurant industry. Unlike a consolidator, which cherry-picks one or two ideas from a company's portfolio, a business builder wants all relevant assets in a given area. It looks for ideas in the early stages and assumes most of the risk, usually acting as the lead investor in any new venture.

Occasionally, an intellectual-property owner will contribute financing through its corporate venture capital arm. It then typically becomes an equity partner with a minority (usually less than 20 percent) stake in the venture and provides in-kind support, such as access to developers of the technology. There are dividends only after the business is profitable, and the exit comes with the venture's sale to a strategic buyer or a financial investor or with an equity placement. Intellectual-property owners should maintain only two or three business-building partnerships at a time: given the longer-term involvement, these are the most demanding relationships to operate and maintain.

MANAGING THE NETWORK

The most successful companies see their intellectual-property programs as one of several business processes—including internal R&D, mergers and acquisitions, and in-licensing—that drive growth and innovation. To that end, these standouts build a dedicated, cross-functional intellectual-property organization. But such organizations are rare; most companies, if they have any intellectual-property unit at all, usually staff it with a few patent attorneys working alone. Ideally, the team should be small (no more than ten people) and accountable for its performance, with pay tied to the unit's annual financial goals. In general, half or more of the team should be drawn from the product-development, business-development, and R&D departments and work with the technical experts; the lawyers on the team should oversee the conversion partners.

Above all, the team must be independent—that is, it must constitute a separate unit led by the chief of R&D or some other senior manager, for without the visible involvement of high-ranking corporate leaders, the effort will founder. (Such advice has become standard for any kind of change initiative, but because the commercialization of intellectual property involves noncore activities and is rarely anyone's top priority, the effort will die on the vine if not supported at the highest levels.) Furthermore, management backing and organizational autonomy are needed if the unit is to avoid a host of political pitfalls: unless managers define clear decision-making rights, for example, organizational lobbying will influence choices about what or what not to sell, and to whom. The provision of top talent and adequate resources calls for high-ranking leadership as well.

Finally, the involvement of senior executives can help a company avoid one of the problems of network management: the possibility that the intellectual-property team will cede control of the process to its outside partners, particularly those who help it value a technology. Teams should have a sense of the value of any application before negotiating an arrangement with brokers or consolidators and especially before dealing with business builders. (Knowledge partners, as independent advisers with no stake in a deal's outcome, can help make this assessment.) Likewise, companies should be extremely cautious about negotiating value-sharing deals or other terms favored by their conversion partners; in lucrative licensing arrangements, the difference between a 4 percent royalty and a 4.5 percent one can actually be millions of dollars.

Ultimately, managers must understand that uncommercialized intellectual property is a wasted corporate asset. They must make the sale of these assets a way of life, giving the unit responsible for it a clear place in the company's strategy and wide latitude to make deals. When this unit can find no use for patents, it should have the authority to reduce the cost of unproductive assets by retiring them. Exploiting intellectual property to the fullest extent is certainly difficult—that is why most companies are not capable of doing it alone. But those willing to build the kinds of networks that are now emerging will be in a strong position to deliver real and reliable growth in the years ahead.

Notes:

Jeff Elton is a principal in McKinsey's Boston office; Baiju Shah is an alumnus of the Cleveland office, where John Voyzey is a consultant.

¹The study focused on sales of patents, licensing opportunities, corporate intellectual-property-management units, intellectual-property-based business launches, and R&D strategy.

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