Technology Licensing:
A Strategy for Creating Value

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Would you like to increase your bottom line – without additional capital or research investment? Would you like to tap into new foreign markets – without investing in property, plants, or equipment? Would you like to develop new technologies – without expanding your existing R&D resources? Would you like a base level of revenues to help smooth out otherwise cyclical earnings? Would you like your technology to become the industry standard?

Too good to be true? Companies such as Dow Chemical, Union Carbide, IBM, Intel, AlliedSignal Technologies, and Phillips Petroleum are enjoying just such results today, and they are not alone. An important vehicle these companies have used to achieve these results is technology licensing – licensing that they approach strategically, rather than opportunistically, to maximize the value of their technology.

The performance of Dura Pharmaceuticals makes the case for a strategic approach to technology licensing. In the summer of 1996, Dura Pharmaceuticals made a Wall Street offering at $58.75 per share that grossed more than $150 million for the company. Dura was able to make so much money from the offering because it had several products to sell, but those products weren't the result of Dura's R&D.[1] Instead, Dura, with annual sales now exceeding $100 million, has made a business out of licensing pharmaceuticals neglected by other manufacturers, either approved or in late-stage clinical trials, and marketing them.

Xerox claims that its 1987 Shanghai joint venture and licensing agreement with the Chinese for manufacturing copiers achieved its profit goals three years ahead of schedule, with revenues reaching $100 million in 1993. Despite the fact that five of Xerox's competitors were operating in China ahead of Xerox, Xerox Shanghai grew to 40 percent market share in two years, the highest market share of the group. The reason: Xerox planned an integrated manufacturing and licensing joint venture and executed it with uncompromising patience. In contrast, its competitors settled for comparatively quick technology-transfer agreements, in which some Chinese partners received „boxes of drawings at high cost and little else."[2]

And IBM's Lou Gerstner, in an interview with *Fortune*, specifically mentioned licensing as one of IBM's „high-growing businesses," like „services, PCs, distributed software, and OEM manufacturing."[3] High-growth it is, with collected royalties increasing by $250 million in one year, from $650 million in 1995 to $900 million in 1996.[4] On a net income basis, IBM's 1996 licensing „business" alone is comparable to that of Nike. Furthermore, strategic licensing is a means by which IBM has managed the rate of diffusion of its core products (architectures for key components such as the operating system and the logic) to the industry. Keeping such technologies „close to the vest" in the computer industry usually results in permanent market share loss and a marginalized position with respect to industry standards. Consider Apple, as an example. Despite the user-friendliness of its Macintosh computer, it likely will never enjoy more than its current small market share. IBM's open architecture and Microsoft's broad licensing have prompted hundreds of application programs, which have convinced the market that the IBM-compatible architecture, not the Mac architecture, owns the future.[5]

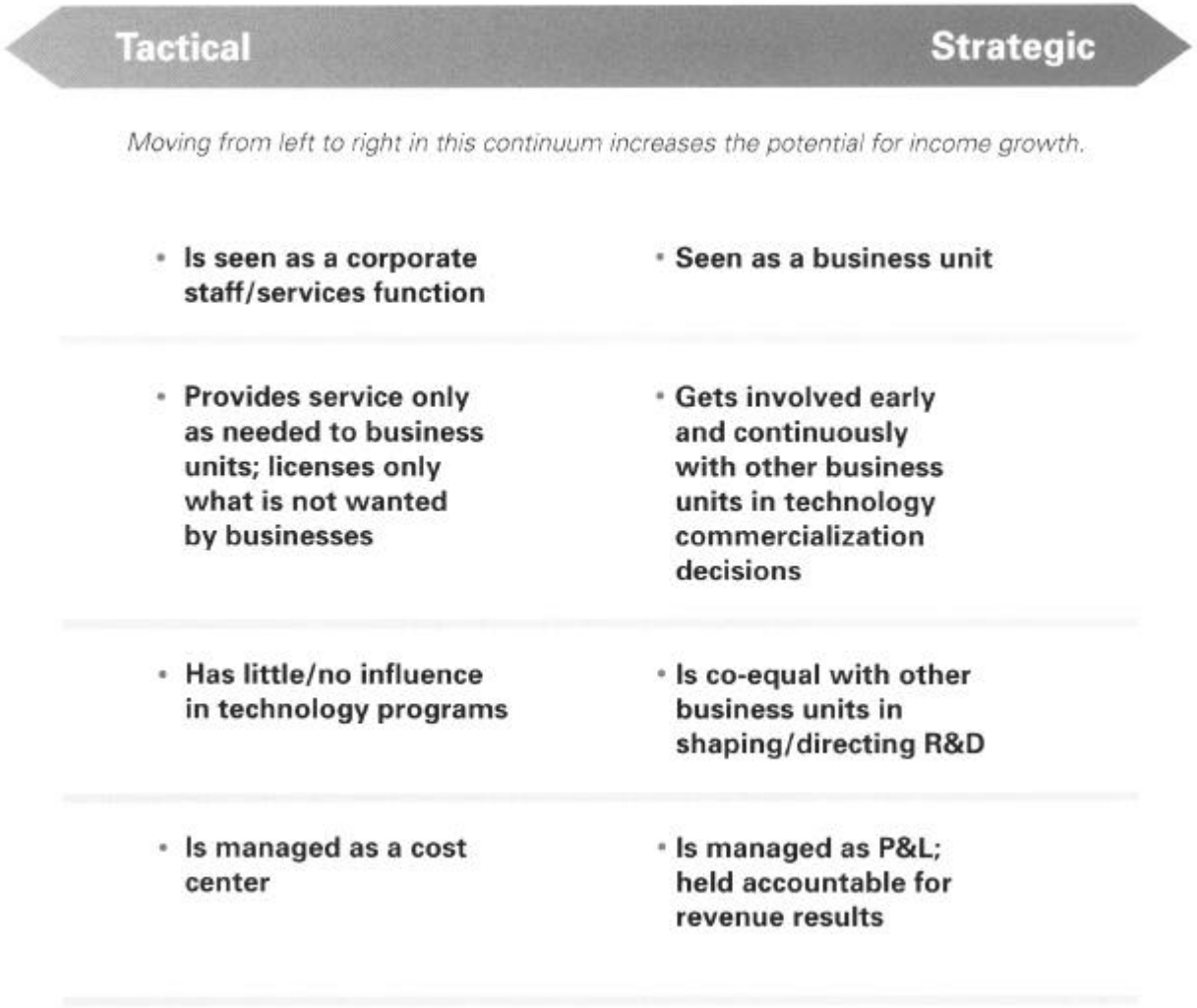
The majority of companies, however, have yet to recognize the potential value of technology licensing as a significant element of business strategy. Often these companies treat licensing as merely a low-priority, after-the-fact tactic (Exhibit 1). These companies, whose licensing of intellectual properties can be described as tactical or opportunistic, undertake technology licensing as a means of recovering a portion of the development cost, as long as licensing will have no impact on the company's strategic position. In these companies, the licensing department provides service to the business units only as needed and licenses only what the business units don't want. Licensing in this environment is a corporate staff/service function; resources are ad hoc, and revenues are intended to exceed cost. This type of licensing organization usually has no influence on the company's technology programs.

Because companies operating in this way don't recognize technology licensing as an element of overall business strategy, they haven't established critical technology-licensing processes: for identifying licensable technologies and appropriate licensees; for valuing technologies to be licensed out or to be licensed in; or for handling negotiations and managing post-licensing activities. Nor do they have adequate resources to support licensing as an ongoing element of business strategy, i.e., a stream of marketable technologies, coupled with the people, time, and finances to convert those marketable technologies into revenue streams. In general, these companies don't tend to view technology licensing as a P&L center.

At the other end of the spectrum are companies whose approach to intellectual property is best described as strategic. These companies have effectively created sustainable technology-licensing businesses based on developing and realizing value from technology-based intangible assets.

Exhibit 1

Tactical vs. Strategic Technology Licensing



In early 1997, Arthur D. Little completed an interview program with 20 participants representing 16 global companies in the petroleum, petrochemical, and chemical industries to learn how these industries look at technology-based intellectual assets as a source of value. These industries can be described as conservative, capital-intensive, and highly proprietary. Nonetheless, we found that many of these companies had made significant movement from tactical to strategic technology licensing – some more recently than others (Exhibit 2). Furthermore, in every case, this shift had improved their income.

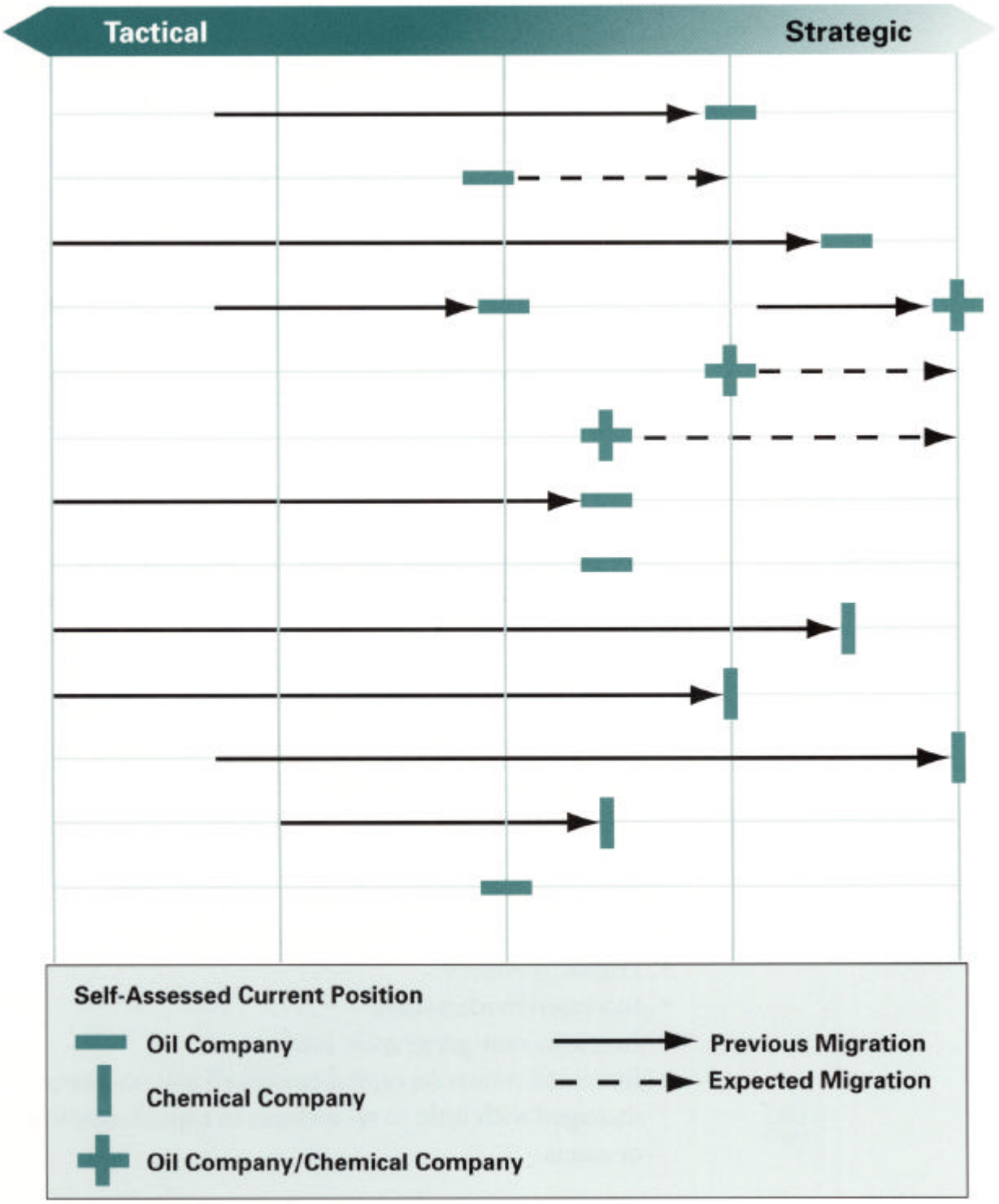
Dow Chemical is an example: In response to top management's directive to maximize the value created from all its assets, Dow radically changed its approach toward managing its technology-based intangible assets. Not traditionally a licenser of its own technology to third parties, Dow embarked in 1992 on a value-creation program that will grow its licensing revenues to $100 million by 2000. At the time of our interview, Dow had already realized almost a third of its long-term licensing revenue goals. In addition, it had completed two joint-venture transactions in which its technology-based intellectual assets had been used for a substantial fraction of its equity position, thereby increasing its growth potential in markets and geographies it considers strategic.

A second example is Phillips Petroleum, where licensing revenues have increased almost 80 percent since 1992 (1996 revenues were a record $93 million).

Another example is Union Carbide. UC's integrated manufacturing and licensing strategy for its polyethylene business has resulted in its capturing 1 of every 4 pounds of UC's addressable market, either through its own manufacturing plants or through the plants of its licensees. So how do companies make the shift from tactical to strategic technology licensing?

Exhibit 2

Tactical vs. Strategic Technology-Licensing Positioning of Selected Arthur D. Little Survey Respondents



Making the Decision

Moving from tactical to strategic licensing does not happen at the grassroots level. The decision to incorporate technology licensing as a key part of the overall corporate strategy is most often made by the CEO, and it's made explicitly. At some point the CEO decides that the company is going to begin using its intellectual assets in a way that is significantly different from the way these assets had been used historically.

The choice to adopt this strategy is motivated by the perceived desirable outcomes, namely these:

• Higher revenues

• Increased market share

• Access to new geographic markets

• Increased return on capital employed and on assets managed with little to no increase in capital expenses or assets

• Strategic joint ventures

• Accelerated demand for new technologies

• Accelerated technology diffusion to establish new industry standards

The Transformation

The operational transformation from tactical to strategic technology licensing requires a supporting evolution in three distinct areas; processes, resources, and organization.

Do we have the right processes in place?

In terms of processes, the key issue for companies trying to become more strategic in their technology licensing is decision-making: how to choose whether or not to license. Licensing organizations in these companies are migrating toward use of comprehensive business cases that take into account the implications of technology licensing on their existing businesses.

BP Chemicals is perhaps the archetypical example of how prudent combinations of self-manufacturing and licensing generate greater returns on capital employed than pure self-manufacture alone. In 1960 BP Chemicals began commercial production of a proprietary catalytic process for the single-step conversion of propylene into a high-value chemical, acrylonitrile. BP proved that it could make a profit on acrylonitrile prices below the production cost of competitive processes. Upon consideration of all the issues, however, it became clear to BP that it could not, on its own, satisfy projected demand for the product, nor could it afford to invest in all the new plants it would need around the world. Therefore, BP chose to exploit this proprietary technology fully by licensing the technology and technical know-how to others, and from that position grew its worldwide acrylonitrile licensing and catalyst business.[6]

Some companies in our survey developed formal business cases for licensing, similar in breadth and depth to five-year plans, including spreadsheets of projected revenues and costs, with input from multifunctional teams. In a common, less formal, alternative, licensing organization managers and their counterparts in the business units are empowered to make licensing decisions.

Do we have licensable technologies? Assuming that you now have a technology-licensing organization, which the CEO expects to behave as a business, new questions emerge. How are you going to generate licensable technologies? Does the licensing organization then fund R&D to develop more technologies?

Although our study found a few instances of licensing organizations directly funding R&D programs, these don't represent the majority. In most cases, the operating units or business units continue to fund and direct R&D. *Yet* many companies told us that their licensing organizations now get at least a voice in the early stages of the technology-development process. We think that this is an important reflection of the shift from tactical to strategic technology licensing. If you're licensing tactically, there is no reason for a licensing organization to be in on the early stages of development; licensing won't occur until and unless everyone else in the company is through with the technology. If you're thinking, even potentially, in terms of strategic licensing, then having your licensing people involved early on is a way to develop increasingly valuable properties.

Does our licensing organization look and act like a „P&L"? The transition from a tactical to a strategic approach to technology licensing also tends to involve shifts in organization. In our study, we found a variety of management-reporting structures for licensing organizations. Almost half the licensing organizations we surveyed report to a corporate technology center or corporate R&D. Some report to the business units, and a very few report to a patent or legal department, perhaps assisted by someone from R&D.

The latter arrangement is typical of companies in which licensing is tactical. Companies that have begun to treat licensing as a bona fide business tend to put someone with successful P&L experience at the helm, gradually building a full-time supporting cast dedicated to commercializing technologies.

Another significant finding is that the performance of strategically focused licensing organizations is measured in terms of income generated, whether these organizations are „real" P&L centers or not. If the licensing organization isn't a real P&L center, it can still set up an accounting mechanism that demonstrates to

management that it is contributing to corporate profitability. Interestingly, half the licensing organizations we surveyed are organized as traditional P&L centers. In each case, the person in charge of licensing is a business manager with demonstrated prior success in managing a business.

Where does the licensing income go? Most of our respondents send it back to the operating and business units. There's a practical reason for this: you need a business manager's cooperation to free up internally used technology for licensing to the outside. Since the business manager is going to participate in the development of the business justification for licensing, he or she might as well enjoy some of the financial reward for helping to realize the maximum value of the technology. There's also a philosophical reason: increasingly, business managers are expected to manage, and generate a return from, all assets required to support the business, including the intellectual assets associated with internally developed technologies.

Is licensing a viable strategy element for us?

Technology licensing can be a useful vehicle for both technology-rich and technology-wanting companies. Before you decide whether licensing is a viable element of your strategy, you should assess the following key issues:

• What's in your portfolio of proprietary technologies?

• How are they linked to your business units, now and in the future?

• What's the value of your technology to your business units? To others external to your company?

• Are you better off keeping your technology proprietary or using it to become the „industry standard"?

• Which technologies have the most potential for licensing revenue?

• What are the barriers, internal and external, to commercialization of these technologies?

• What will be your net gain, for how long and at what cost, if you do decide to adopt licensing as an element of your overall business strategy?

In many industries, technology-based intellectual assets are a major contributor to sustainable revenues and profits. Technology licensing is a means of exploiting such assets to maximize the potential value inherent in them. As with technology development, technology licensing should have its own strategy, consistent with and supportive of overall strategic business objectives. And it should be managed creatively for the best possible results.

1 BIOPEOPLE, *No. 18, Spring 1997, as reprinted in* Les Nouvelles, *September 1997.*

2 Les Nouvelles, *June 199-5'.*

3 Fortune, *April 1997.*

4 TechWeb News, *'November 6, 1997*

5 Les Nouvelles, *June 1994*

6 Les Nouvelles, *March 1995".*

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