

VALUING HIGH TECH INTELLECTUAL PROPERTY

I. Introduction.

There is increasing attention placed on the value of intellectual property assets (IP) by companies. The financial community wants the value reflected in financial statements, and management wants to know the value of a principal asset. This summer new accounting rules (FASB 141, 142) were put in place to require that IP be valued in acquisitions rather than be subsumed in goodwill of the acquired firm. It is estimated that for the YR 2002, 87% of corporation value is in intangibles that include IP.¹

The frequent question asked of legal and accounting IP professionals is what is the worth of IP meaning, broadly, patents, trademarks, copyrights, trade secrets, know-how, etc. There is no ready answer because there is no ready market for IP, unlike tangible assets or securities that have a market. It is possible to place a value on IP as a contributor to revenue, or as a source of revenue from licensing, sale or tax benefit. When the value arises from use as a contributor to the enterprises' revenue, accurate valuations can be achieved by systematically identifying the IP with the source of revenue and measuring the IP's contribution to the revenue stream. It is also possible to indirectly value IP as a function of R&D and its contribution to the enterprise's revenue.

IP in the pharmaceutical/biotech industry has clear value, as it protects the investment in a new drug or discovery. The value is evident as a drug comes off patent and the price falls in the face of generic competition. Likewise, consumer products such as Coca-Cola and Pepsi derive value from trademarks and secret formulas. So valuable was the asset that, at one time, Coke even pledged its trademark as security for a loan from Chase Manhattan. Consumer and industrial products also enjoy monopoly status during the life of a patent and can be priced accordingly. The high tech industry is different in that it usually does not have either a single or a handful of patents dominating a product or category of products. Rather, a new device or piece of software is composed of many components, each of which may be protected by patent, and the device or code as a whole. The short life cycle usually ends before the patents expire. Competitors may have their own patents covering comparable products.

Some high tech companies such as IBM and Texas Instruments have leveraged their extensive patent portfolios by aggressive licensing and report substantial royalty revenues, up to \$2B in IBM's case. Although IBM has imitators, by and large the high tech industry has not followed the licensing model during the tech boom. Increased patent litigation may signal the end to that period of relative patent peace as companies search for revenue and competitive advantage. Licensing and litigation may be on the rise.

¹ Duffs & Phelps, LLC, LES Presentation, Sept. 2002.

No matter how valuable the corporate IP asset is in theory, its value is in the hands of management to use as a business asset. Skillfully played, it has relatively more value. Poorly played, it is a wasted asset.

II. IP Strategy.

IP strategy is described in the simplest of terms as defensive versus offensive and, sometimes, as strategic or opportunistic. In a defensive posture, IP is used to protect investment in R&D or product development so that there is unfettered access to the market. In this scenario the contest is usually played out in the marketplace, not courts. An offensive strategy is one in which the IP is used to aggressively extract royalties or concessions from infringers, or push competitors out of the market. A strategic strategy is the use of the IP as a tool in business negotiations, strategic alliances, and joint ventures as an economic incentive. An opportunistic strategy is a mix of the previous strategies. For those interested in an in-depth discussion on the subject,² there are many published works in the Licensing Executives Society papers.

IP strategy has an impact on enterprise value, as it directly affects revenue. Pharma/Biotech companies sue infringers almost automatically to protect profit margins. Competitors expect to be sued if they make an infringing product. Citibank is a forerunner in using technology in the finance sector and a pioneer in patenting its innovative technology. Yet, it does not typically sue competitors.³ Perhaps the value of its IP is its superior IP position and freedom from competitors threatening to interfere with its business. IP can also be used to block competitors from a field, even if the owner does not enter it. There are examples of companies having invested in one technology and using acquired IP to block competition from new and different technology.

All of these strategies are inherently aimed at the same target, the success of the business as measured by its financial performance or increased value. The contribution of IP to achieve these goals is a measure of its value.

III. IP Valuation Background.

In the absence of a royalty, measurable attributable income, exchange for a value, or income preservation by a tax-deductible contribution, there is no uniform IP valuation approach. There is much attention being paid to the question of valuing an enterprise's IP estate by the accounting profession and academia. In particular, the NYU Stern School of Business, Vincent C. Ross Institute of Accounting Research, has an ongoing research project on intangibles led by Professor Baruch Lev. It is the source of current research on the subject. The project is being sponsored by major accounting firms and DuPont, Dow Chemical, Hewlett-Packard, Rockwell, and Skandia, among others. One of Professor Lev's research papers concluded that:

“The absence of organized trading in intangibles has been a major hindrance to their recognition as an asset in financial reports. Economic circumstances, however,

² www.les.org

³ One exception is TTI et al. v. Online Resources, E.D.VA, in which the author was counsel for Citibank/TTI.

change fast and markets in intangibles, particularly in patents and know-how, are operating both off and on-line (Internet). We examine the most active of these markets – the licensing of patents and know-how – which has grown exponentially in recent years, focusing on information-relevance and valuation issue.’

“Our findings indicate that: (a) a significant nonuniformity exists in the reporting of royalty income across firms, (b) royalty income is highly relevant to investors, (c) in addition to being an important source of income, the intensity of patent royalties provides investors with a strong signal concerning the potential of R&D expenditures, and (d) there are systematic positive risk-adjusted future returns to licensing-intensive companies, consistent with either a systematic undervaluation of these companies’ shares, or a yet unknown risk-factor associated with patent licensing....”⁴

As Prof. Lev says, royalty income from IP is important to a company’s valuation, yet it is not usually produced. There are many reasons, one of which is the habit of overly cautious protection of licensing agreement content, arguably to keep it from the eyes of competitors. In reality, most professionals in the licensing field end up understanding the parameters of comparable deals from experience and networking. This non-public source of information is fairly accurate as to deal value for companies known to licensing professionals. Experts in the field collect this data and are a source of royalty rates and expectations. The trend is to make this valuable information public.

IV. High Tech IP Valuation.

The High Tech industry has historically been characterized by relatively high investment in R&D. Overall It has even increased during the recent downturn, there being exceptions such as some Japanese and Telecom companies.⁵ R&D expenditure as a percent of sales and per employee (while employee head counts are declining) is also generally heading up, an indicator that competition is more intense, and perhaps a reflection of a maturing market with intense technology competition.⁶ The by-product of this R&D investment is increased IP, which is the codified legal asset capturing the value of the R&D investment. The decision to protect that investment is some measure of its value by the company. The number of patents applied for and issued in a particular field should be a predictor of expected earnings from that technology. Conversely, the abandonment of patents through sale, non-payment of maintenance fees or donation to universities for tax benefit, is equally a negative signal for that technology, at least to its owner.

Identifying products covered by IP (patents, copyrights, trademarks, etc.) allows value to be assigned to the IP as a component of the revenue associated with the product or service. Comparing products sold by competitors without IP protection or comparable products sold off

⁴ Markets in Intangibles: Patent Licensing, by Feng Gu and Baruch Lev, May 2000, Boston School of Management, and New York University, Stern School of Business.

⁵ IEEE Spectrum, September 2002, p. 44, Special R&D Report, “They Might Be Giants,” by Harry Goldstein.

⁶ Id.

patent or without brand identity allows the value of the IP to be measured. The following are approaches to measure IP value, including the author's own estimates of value based on R&D expenditures.

Income

IBM uses its IP to generate income. That is directly measurable and can be valued by projecting an income stream, adjusting for risk to the income stream, and applying a discount rate to get NPV. The income model may also be used when there is an offset in royalties in a cross licensing agreement, as measured by the amount saved in licensing fees. Likewise, the avoidance of payment of licensing royalties due to a defensive patent portfolio is measurable as a saved cost when calculated over time and given an NPV. All of these methods have as characteristics either an income stream or cost avoided, both of which are measurable.

Margins

Intrusion into an IP-protected market by competitors directly challenges margins through price erosion. A strong IP portfolio can either deter direct competition or be used to tax infringers or put them out of the protected market. Both the actual use and the threatened use of IP in infringement litigation can have the same effect. The skill of management in using its asset to protect its turf has a direct bearing on the value of the IP estate. In this scenario, the negative effect on margins is akin to a drug going off patent. The loss in value is measurable and calculable over time. Using a measure of the time value of money lost, such as NPV,⁷ a value on an IP estate as a financial asset is determinable.

R&D Expenditures

The level of R&D expenditures by a company vis-à-vis its competitors, and as an historical reference to its own R&D, is a predictor of future revenue, assuming that the company has been a successful innovator or has acquired that capability. If it is an efficient R&D innovator, that efficiency is reflected in its margins for IP-protected products. Once a ratio is established between R&D and IP-protected product/service margins, increases or decreases in R&D spending should reflect future margins or at least indicate direction.

Sales

Companies culling their portfolios for a variety of reasons abandon, sell or license IP. Internet exchanges are available for IP sales. Their effectiveness is hard to evaluate. The more conventional sales method is time tested and is done through brokers. Typically a valuation is performed and the market potential analyzed for potential buyers based on holes in their IP portfolio or as licensing vehicles. Valuations are based on value to the enterprise to avoid the

⁷ See Appendix A, Valuation Methodologies

cost of infringement litigation and/or payment of licensing royalties, or as an income producer from licensing royalties, enhanced market position, or protected margins.

The author has sold IP for clients, and in the process, priced the IP and negotiated the sale.⁸ In the process, there are patterns and practices that have emerged as to pricing and negotiations. When used to generate income from licensing, the value is a discount from expected income adjusted for patent risk and time value of money. A ROI calculation to support the licensing effort is typically made and the value additionally adjusted. This tends to be the upper limit of the price for the asset. Some patents are acquired for defensive purposes and are put in portfolios as defensive chips. These tend to have lesser value, and are in the range of \$100-250K, depending on the size of the portfolio and the coverage of the patents.

Time to Market

Another way to value an IP estate is to approximate the cost and time for a competitor to replicate the investment to place it in the same position to produce the goods covered by the IP. In a fast-paced tech environment, the time factor alone is of huge value. Simply denying your competitor the opportunity to compete in the same time frame has value not only in bringing cutting edge products to market, but also aids in the perception of being a market leader. Hewlett-Packard is increasing its patent filings as a reflection of its new motto “Invent.” Perception and reality as a market leader are important to its value.

V. IP Valuation Metrics.

There are indicators of IP value in the absence of published company data and even with that data. Analysts should ask the questions such as:

1. What technology is being patented or abandoned by non-payment of annuities, donation, or sale;
2. What is the present and projected IP royalty income and its stability;
3. Are there infringers and, if so, what will be done about them;
4. Who is competing for patents in the same technology space;
5. What are the relative positions of each competitor’s patent portfolio vis-à-vis one another as to strength and dominance, i.e., who owes what to whom if there is an infringement issue;
6. What is the company’s patent litigation history, i.e., do the company’s patents tend to hold up and, therefore, be respected by competition;
7. What is the average cost per patent, is it below the industry average, indicating poor quality for lack of investment; and

⁸ The author has been active in the sale of IP through Hogue Management, LLC, 44 Wexford on the Green, Hilton Head, SC 29928, 843-341-3127, dale@hoguetech.com.

8. What is the number of invention disclosures and patents per R&D \$, and how does that compare to the industry average?

Most companies can answer these questions if they are serious about their IP estates. If they can't, then a fair inference is that management has not focused on these assets and is unlikely to extract value from them.

VI. Conclusion.

Management is the crucial element in the value of IP, assuming that the codified IP captures valuable R&D. The process of inquiring into a company's IP estate will give insight into how management views its IP and its plans for its use. Whether the IP strategy is offensive, defensive, strategic, or some variation thereof, the fact that the asset is being employed for a business objective gives it value. How well that card is played will determine its ultimate value. In the absence of published data on royalties and licensing arrangements, inquiry into management IP plans is perhaps the only way to fully understand the IP value. Public data on IP trends, such as R&D expenditures, patents issued, and infringement litigation may predict the value of the underlying IP, and, as a trend, can predict future income and value for a high tech enterprise.

Dale Curtis Hogue, Sr.
November 2002

Appendix A

Valuation Methodologies

Traditional methods of valuing tangible assets such as gross book value, net book value, and replacement costs do not readily apply to intangibles such as IP. One approach to valuing intangibles is to approximate their economic value (EV) as reflected in the present value of future cash flows. Other methods are Economic Value Added (EVA)⁹ and Market Value Added (MVA), which measures the EV of intangibles as a contributor to future income. EVA is more readily used in pharmaceutical and biotech companies with patent portfolios dedicated to a drug, therapeutic, or medical device line. Price erosion is readily measurable once the products come off patent.

IP licenses are susceptible to valuation based on various economic models that value their royalty streams. Essentially, the income stream is calculated over a period of years, and then a discount rate is applied based on the period and the stability of the income stream. In effect, a risk value is assigned by the discount rate.

Even though there are no uniform measurements of IP valuation, some of the methodologies are useful in approximating value. They are discussed below.

1. Net Present Value.

Risk and return are the basis upon which rational and intelligent investment decisions are made. Risk is a measure of volatility or uncertainty of returns. Returns are the expected receipts or cash flow expected from an investment. Investment analysts take the IP estate into account when assigning a value to projected income stream as a hedge against disruption of income. Fluctuations in projected income streams are accounted for by using higher discount rates. This, in turn, results in lower Net Present Value (NPV) of the firm's equity.¹⁰ In this way, associated risk is accounted for in the valuation of a going enterprise. Obviously, a stable rate of return is preferred and warrants the most favorable discount rate.

2. Return on Investment (ROI) and Return on Equity (ROE).

The characteristics associated with ROI or ROE are autonomous operations; free access to vendors and customers; separate revenues and costs; and management design. Typically, unless an IP estate is set up as a separate profit center, ROI and ROE are not appropriate measurements of performance. If, however, an IP estate is set up as a separate profit center, then ROI and ROE may be used as measurement tools.

⁹ EVA= Net Operating Profits After Taxes (NOPAT) - % cost of capital x total capital (TC).

¹⁰ NPV = Present Value (PV) – Initial Outlay (I)

3. Return on Assets (ROA).

Return on assets measures operating efficiency (ROA = Operating Income/Average Total Assets). The average total assets are measured by taking the sum of the beginning and ending balance sheet amount and dividing by two. Some analysts use either the beginning or ending asset value. There needs to be operating income attributable to an activity to use this measure of performance. It is most often used to measure a company's overall performance or a measure the overall performance of a division which has separate financial reporting statements. It may be used if there is a separate IP holding company or licensing activity.

4. Economic Value Added (EVA).

"EVA is net operating profits minus appropriate charge for the opportunity cost of capital invested in an enterprise."¹¹ It is an estimate of the amount by which earnings exceed or fall short of the required minimum rate of return that shareholders and lenders could get by investing in other securities of comparable risk.

5. Market Economic Value (MVA).

MVA is the difference between what investors put into a business and what they could take out at any given time. MVA includes the valuation given for future income growth.

6. Licensed Value.

A licensed IP estate may be valued on its income. The income over the life of the patent estate is determined and a present value (PV) calculation is performed. A discount rate is applied to the PV to reflect the stability (risk) of the income stream. If the estate is not licensed, then a calculation is made as if it were licensed, the value determined, and an imputed cross-licensing fee is subtracted if appropriate. An example of a fully licensed valuation is the value put on IBM's patent portfolio in 2001 as a function of average annual revenue over the number of patents in the estate treating all equally in value.¹²

7. R&D Value.

R&D is valued in relation to earnings and revenue for technology companies. If revenue and earnings do not increase in response to R&D expenditures, the expenditure is negative and penalizes future earnings estimates. Loss of the market advantage from R&D by virtue of copying devalues R&D. Pharmaceutical and biotech companies experience loss of value from copying, especially when drugs go generic. They are also characterized as long-life-cycle products. Copying in the software industry is yet another example of lost R&D value. Shorter cycle products, such as in the computer and electronic industry, are less sensitive to profit

¹¹ Bennett Stewart, Stern Stewart & Co., www.sternstewart.com/evaabout/whatis.shtml.

¹² Assuming approximately 20,000 patents and annual revenue of \$1.5+B the average patent value is at least \$75,000.

erosion from copying and are more likely to be impacted at the end of the product cycle as competition erodes profit margins.

8. Deterrence Value.

IP estates are believed to have value by deterring copying and forcing competitors to either design around the protected product to avoid direct infringement or avoid direct competition. The benefit to the IP estate owner is to protect the market for their product from price and technical competition. Competitors cannot supply the same product and so must compete with different technologies or take the risk of an infringement suit. The value is the difference between the earnings from a protected product less the earnings without IP protection. This is expressed as $DV = \text{Protected Profits} - \text{Unprotected Profits}$. Looking at aged technologies and measuring profit erosion as competition enters the market at the end of the IP protection cycle can estimate unprotected Profits. A case in point is Johnson & Johnson's experience with Tylenol as it came off of patent. The monopoly pricing of the drug was readily apparent as the unprotected profit plummeted. Product managers are able to estimate the price erosion from their experience. Another example is Hewlett-Packard protecting its lucrative replacement ink cartridge market from competition. Hewlett-Packard used its patent portfolio to close down infringers and protect its margins.