The Delphion Industry Insights Series:

GREATER VALUE
THROUGH
INTELLECTUAL
ASSET MANAGEMENT
(IAM)
THE CHALLENGE

Today's businesses confront a striking phenomenon: The market value of all publicly traded corporations now exceeds the book value of their physical and financial assets by a ratio 4 to 1 -- and this number is growing.

For many high-tech industries, such as software and biotechnology, this ratio is much higher -- almost all their market value derives from assets not reflected in their book value. But even "traditional" manufacturing and industrial firms now often have market valuations that are triple book value, or more.

Where is this "extra value" over that of physical and financial assets coming from? The answer is: from intellectual assets.

Corporate financial statements today bear powerful witness to the reality of the "knowledge economy". The financial earning power of intellectual assets now is seen in earnings, market valuations, and financial ratios that can be studied and compared to those of competitors.

These intellectual assets range from legally protected intellectual properties such as patents, copyrights, brands and trade secrets, to "softer" assets such as know-how and customer relationships.

Together they present a major new challenge for business leaders: To learn to manage intellectual assets to maximize business value in a world where established accounting rules, financial controls, and management practices focus primarily on physical and financial assets.

Not only do most operating managers lack experience in systematic management of intellectual assets, they lack even the necessary tools -- such as agreed-upon accounting methods and standardized financial reporting for such assets.

The challenge is made more daunting by the breadth and apparent subjectivity of the task. As the importance of intangibles to business valuations has become more evident in recent years, much literature has appeared on the subject of "knowledge management." But while business leaders can readily see the principle involved in these discussions, the recommendations for "managing knowledge" that are provided often are so generic or amorphous that they provide no clear, practical way to get a grip on the subject that immediately contributes to the bottom line. With no clear benefit in the form of increased earnings or a higher market valuation in sight, the cost of assigning valuable (and expensive) managers to the task of "managing knowledge" becomes a dubious one to incur ... and the business instead continues on as before.

This White Paper addresses one of the most important challenges facing business today -- how to manage intellectual assets that now represent the dominant and still growing portion of all business value.

The paper reviews new academic research and the successful innovative practices of leading businesses, both of which point to two things: the growing importance of intellectual asset management (IAM); and that for firms with substantial patent portfolios, portfolio management is the high-payoff starting point for initiating IAM.

Gordon Petrash
THE OPPORTUNITY.

This White Paper describes how businesses with substantial patent portfolios can use them as the practical, high-payoff starting point for IAM -- in a way that both earns a rapid positive return on investment, and spreads knowledge of IAM techniques throughout the business.

The company obtains a bottom-line return that easily justifies from a financial perspective, the adoption of IAM from the start. And this benefit is visible enough to motivate managers throughout the firm to address the issues of IAM -- from top leaders who approach it as policy, to line managers who see what the practical benefits of IAM can be for them.

Thus, patent management becomes the high margin starting point that leverages the spread of IAM throughout the business.

This paper follows in four main sections:

**The growing practical importance of IAM to management.** How firms need IAM to correct for distortions that exist in standard financial reports regarding technological assets. If not corrected, these distortions may cause investors to mis-value a business -- and may cause a company’s managers to misdirect its own investments.

**New financial measures companies can use to evaluate their use of intellectual assets.** New research has quantified the "knowledge capital" of public companies and their earnings on intellectual assets in dollar terms. Firms can now compare their competitive standing against others in their industry regarding their use of intellectual assets, in "league tables". The new research also shows that markets value patent royalties twice as highly as operating earnings when determining the market value of a business -- making patent management the logical high-payoff starting point for IAM.

**Practical steps and payoffs of implementing IAM with patents.** How firms can quickly increase royalty income from patents, maximize the value of patent portfolios, and improve the quality of technological research -- and a warning about the growing legal as well as business dangers that managers may face if they fail to do so.

**How patent IAM can lead to "holistic" IAM.** The specific process of how IAM’s practices can spread from the management of a company’s most concrete intellectual properties, its patents, to management of its whole range of intellectual assets.
THE GROWING PRACTICAL IMPORTANCE OF IAM TO MANAGEMENT

Although the importance of intellectual assets to enterprise market valuation has always been significant, it is now growing at an ever increasing rate.

As recently as 1978 the book value of the S&P 500 was 95% of market value. Since then, market value and book value have steadily diverged.

The reason is fundamental, says Professor Baruch Lev, of the Stern Business School of New York University, a leading expert on financial accounting for intellectual assets. New technologies present new opportunities for firms to earn income other than from physical and financial assets. It is the market’s valuation of this new income, earned from technology rather than physical or financial assets, that is pushing the market value of modern businesses above traditional book value, says Lev.

Because new technologies are used widely even in old "smokestack" industries, such as manufacturing and chemicals, their valuations are rising far above book value too. For instance, 70% of the estimated market valuation of both Caterpillar and Dow Chemical is now in excess of their book value.

And the growth of the importance of technology to all kinds of businesses seems only to be beginning. The noted economist and economic historian Hal Varian estimates that the economy today is only 15% of the way to fully absorbing the new technologies developed during recent decades. He compares today’s situation to when electricity was being widely deployed in the 1890s -- everyone knew it was very important, but businesses were just beginning to think of how to actually use it.

The continuing acceleration of the use of technology is evidenced by the fact that of all the patents issued in the U.S since 1836, 20% were issued in the last ten years.

But while new profit-creating technologies are welcomed by investors, they present a major new challenge for business managers and investors: How to account for them in a manner that reflects their true value, and which provides management with the information needed to most effectively manage existing assets and direct future investment.

The problem is that standard accounting systems and financial controls were developed for businesses that obtained their value from tangible physical and financial assets. They are not designed to deal with "intellectual" assets such as knowledge represented in new technologies. As The Economist magazine observed... “At the moment, the statistics that most firms collect tell them with ever greater precision about a smaller and smaller part of what makes most of their profit.”

Even worse, traditional accounting measures may significantly misstate and distort a business’s real economic value and performance. This is because they record amounts spent on developing new technology as an expense instead of as an investment – and when the resulting new technology is developed they do not generally record it on the books as an asset of value to the company.

The continuing acceleration of the use of technology is evidenced by the fact that of all the patents issued in the U.S since 1836, 20% were issued in the last ten years.
Thus, investments in new technology result in earnings being artificially reduced and assets understated. For example, when IBM bought Lotus in 1995, almost $2 billion of the $3.5 billion price -- most of it -- was paid for the value of new technology under development at Lotus. But accounting rules required the near-$2 billion to be expensed against IBM's income as if nothing was acquired for it. And the $2 billion of acquired technology could not be counted as an asset by IBM on its balance sheet.4

Professor Lev states that it is such unrealistic "official" financial reporting regarding technological assets that has caused even the most basic correlation between reported earnings and stock price to deteriorate continuously.5

Management consequences. A charge against earnings of $2 billion and corresponding understatement of assets is significant even for a corporation as large and established as IBM. For other technology companies, the distortion that results from such accounting can have serious practical consequences, both externally and internally.

Externally, if investors do not understand the value of new technology and focus only on a company's depressed earnings and statement of assets, the company's market value will be understated, its cost of capital will rise, and it may even be deemed not credit worthy. In fact, specific groups of companies have been identified by academic research as being systematically undervalued in this way -- including biotech firms, many computer and software developers, and chemical and pharmaceutical firms. All share the traits of having high technology research costs and below-average earnings -- and apparently suffer from investors being swayed by poor earnings without understanding technological prospects. The result for these firms can be higher cost of capital, forced mergers, even bankruptcy.

Internally, if the company's own top management only uses standard financial accounting to direct investment, but doesn't understand the full value of new intellectual assets being developed, the equivalent mistake may be made. Management may abandon as "loss making" assets that could be developed or licensed to others for major gains, and redirect investment to purposes that produce more visible but lower returns. So standard accounting may result in a firm's misdirecting its own investment.

But that is not the end -- there are follow-on consequences as well. After valuable technology is successfully developed and begins earning income, the income appears on financial statements to be earned on no assets. Thus, the income-to-asset ratio of the business is inflated. And because there is no depreciation charge reflecting the technological asset's loss of value over time, earnings are inflated over economic reality.

Now the practical effects of distorted financial reporting swing into reverse: Externally, the market value of the firm may be inflated -- pleasant enough for managers in the short run, but pointing to problems in the future when economic reality catches up. Internally, inflated returns from particular business operations may cause the firm to misdirect investment, and to fail to appreciate the real economic cost of deprecating technological assets.

Conclusion: Businesses need new methods of accounting for technological and intellectual assets that will better reflect their real earnings and value on the balance sheet -- both to show investors the true value of their operations, and to better direct their own actions.
Moreover, in addition to business importance, the Financial Accounting Standards Board (FASB) recently has taken the first steps towards making the accurate valuation of intangible assets an accounting necessity.

The new FASB Statement 142, effective in 2002, changes the accounting treatment given to intangible assets in business acquisitions. Formerly, the value of intangibles generally was included in the goodwill of an acquired business – the excess of its acquisition price over book value – and total acquired goodwill was amortized over 40 years.

But under FASB 142 intangible assets that are identifiable and which have an ascertainable value must be assigned a “fair value” that is not included in goodwill. The value of intangibles that have limited useful lives (such as patents) is to be amortized over their lives.

In addition, the intangible assets must be valued annually. When the value of an intangible asset is “impaired” – such as when a patent or trade secret suddenly loses its value due to new developments in the market – the resulting loss of value is to be recognized on the company’s financial statements.

Although FASB 142 applies only to assets acquired through business acquisitions, it already imposes significant valuation challenges on many businesses.

"It’s going to be a hard provision for smaller companies that lack the tools to do their evaluations internally. Rule 142 says you better do a good job at carving out all identifiable nonassets. Lots of small companies are going to pull their hair out over this", says one CPA.

And there can be little doubt that this is only the first step towards ultimately requiring such valuation and reporting for all intangible assets, including internally developed ones.

The importance that the SEC now places on the accurate valuation of intangible assets – and the SEC’s expectation that companies will obtain expert outside advice in making such valuations – are made clear in a recent statement by its Chief Accountant...

"Whether it is in conjunction with the acquisition of a business, the performance of the impairment test, or the evaluation of recorded intangible assets at transition, in almost every instance, companies will be required to obtain the assistance of a competent and knowledgeable professional to assist in the valuation of these intangible assets...

"I want to be very clear right now, the staff will expect that each and every valuation be completed using appropriate assumptions and that the conclusions reached are both reasonable and supportable. The auditors must ensure that they audit the key assumptions for reasonableness and consistency with other information provided to management, the Board of Directors, and that provided to the investing public and to challenge the conclusions reached.”
NEW FINANCIAL MEASURES COMPANIES CAN USE TO EVALUATE THEIR USE OF INTELLECTUAL ASSETS

Recent innovations have made it possible to determine in dollar terms the value that financial markets place on the intellectual assets possessed by publicly owned corporations, as well as the dollar amount of their earnings on intellectual assets.

This information has been calculated for S&P 500 firms in 22 industries by Professor Lev and Marc Bothwell of Credit Suisse Asset Management. It enables firms for the first time to compare their performance against that of their direct competitors in exploiting "knowledge assets" -- and to single out the leaders among all industries at maximizing market value and earnings from intellectual assets.

The basis of the method is to subtract from a corporation’s earnings the returns on its physical and financial capital, which are readily calculable and close to uniform across competitive markets. The remaining earnings are attributed to being on "knowledge capital". Dividing these earnings by the observed 10.5% average rate of return in industries which derive almost all their earnings from intangible assets (software, biotechnology and pharmaceuticals) provides a dollar value for the company’s knowledge capital. The figure for knowledge capital can be added to those for a company’s physical and financial capital to derive its "comprehensive value" reflecting all three sources of earnings. This may be viewed as the new equivalent for modern technological industries of the "book value" of 30+ years ago.

Within such data for 22 industries published recently in CFO Magazine, some striking results were evident:

- The distribution of knowledge capital among industries becomes clearly visible. The ratio of knowledge capital to book value by industry ranges from 8.4-to-1 for pharmaceuticals to 0.9-to-1 for forest products. The individual firms with the most knowledge capital were Intel, Microsoft, IBM and Pfizer.

- The strikingly high market values of many companies relative to book value become much more reasonable relative to comprehensive value -- for instance, Dell’s over 17-to-1 ratio becomes only 1.25-to-1. For all firms the median of the latter ratio was only 1.02-to-1.

- Firms with market values that were higher than their comprehensive values tended to see their market values fall, while those with the market values lower than comprehensive value have tended to outperform the market (although data was available only for a limited period of time).

Of more interest to most firms, though, may be their positions relative to competitors in intra-industry comparisons. The differing amounts by which comparable businesses have added to earnings above earnings on physical and financial assets may catch the attention of their managers.

The track record of this analysis is too short to verify its predictive power, but some cases are suggestive. For instance, Monsanto was found in early analysis to have below-par knowledge capital for a biotechnology firm -- but was soon eliminated from the listings by takeover.
THE SPECIAL VALUE OF PATENT ROYALTY INCOME.

The analysis above makes clearly visible the importance of earnings on knowledge assets in the competitive modern economy. But it is limited by referring to aggregate earnings on all intellectual assets, which cover a broad range for every business.

However, the new analysis also reveals that markets place striking value on one particular kind of such earnings: patent royalties. Recent analysis of data relating the patent licensing practices and market performance of 198 companies reveals that investors place about twice as much value on patent royalties than on other operating income when determining the market value of a business.10 Why this is so...

• Patent revenue is extraordinary profitable. There often is almost no cost involved in licensing out an existing patent to generate revenue -- and the same patent may be licensed many times. For example, IBM has a 90% profit rate on $1.7 billion of annual patent royalty income. So while this represents only 2.1% of IBM’s revenue, it is 17% of IBM’s pretax profit.11

• Patent royalties are more stable than operating income. Normal operating profits may vary widely due to a multitude of causes that may arise both within the business and outside of it. But patent licensing agreements produce a predictable stream of revenue that is much less susceptible to unforeseen swings -- and investors value predictability.

• Patent revenue can sustain a business through a period of hardship. Patents retain their value even when troubles befall operating elements of a business. So the sustained revenue they generate can be a lifeline if other operating income unexpectedly falls. IBM again is a prime example, as patent licensing earned critical revenue for it as it went through its major remaking in the early 1990s. "Licensing its intellectual property saw IBM through some very dark days," says an IBM patent official, "in the early 1990s the money we made from it literally exceeded the profits of the rest of the company".12 Investors value such insurance.

• Patent licensing revenue confirms the value of the company’s technology to investors. This relates back to a key business valuation issue mentioned earlier -- while investors clearly see the financial statement charges against earnings that result from investing in new technology, they often have a difficult time understanding the value of the technology itself.

Success in licensing patents to other firms signals to investors that the company is succeeding in developing technology that is an economic asset with real value, even apart from the licensing revenue generated.13 Licensing thus helps make up for the failings of financial statements by showing investors that a company’s expenditures on new technology are a real economic investment, rather than a misleading financial charge.
THE PRACTICAL STEPS AND PAYOFFS OF IMPLEMENTING PATENT IAM -- AND THE DANGERS OF NOT DOING SO

The good news for many technology businesses is that this particularly valuable patent revenue often can be increased quickly, even dramatically.

- IBM boosted patent revenue an amazing 5,000%, from a mere $30 million in 1990 to about $1.5 billion in 1999.14
- Ford increased its patent revenue 2,000% in only two years after creating its patent management program.15
- Texas Instruments, the first of the semi-conductor manufacturers to adopt an active patent management, now receives over $500 million of patent revenue annually -- more net income than it earns from manufacturing.16

The bad news is that these opportunities for rapid revenue growth exist where patent assets currently are generally being neglected or wasted on a large scale. For example, in 1996 Proctor & Gamble's senior managers decided to find out how many of its 27,000 patents the firm actually used in its own products -- they didn't know. At the same time they benchmarked the practices of other leading companies. They discovered that they were using less than 10% of their patents, and that the other firms were doing about the same.17

In fact, many major businesses don't even know how many patents they possess. Why: The way most firms develop new technology, they don't know what it will be worth or even how it will be used. So they patent it as a legal precaution, treat the related costs as part of the general "legal overhead" of doing business, then leave the patents "filed away in a drawer, and that's all" -- except in the unusual case where one becomes material in a legal dispute.

The cost of this neglect is not just forgone revenue -- it is also money subtracted from the bottom line. This is because patents are not free. A single U.S. patent may cost $20,000 in application and maintenance fees over its life. And if a patent is maintained world-wide, cost may rise to $250,000 or more.19 A company with a substantial patent portfolio may easily be spending millions of dollars on patents it doesn’t use -- or even know it has! Thus, the cash cost of failing to actively manage a patent portfolio is not merely forgone royalty income, but the full swing between that lost revenue and needlessly incurred patent expenses.

More fundamentally, this ignorance on the part of many companies regarding their own patent portfolios has its roots once again in the standard accounting rules that were developed for "tangible asset" intensive industries. These rules give companies reason to maintain a detailed accounting of real assets that may amount to only a trivial portion of their value -- but not for patents that may represent a substantial portion of a business's entire value, because the rules don’t recognize patents as "assets" on the books at all. Except in response to the new FASB 142.

"What's astonishing to me as a CPA and former auditor", says one expert, "is that probably 90% of the companies we've talked to can't tell us how many patents they have. But they can tell you exactly how many desks and chairs and computers they have, because they are religiously depreciating them on a periodic basis for their tax records." Except in response to FASB 142.
Interestingly, taxes have motivated the management of intangible asset portfolios along the line of other business assets in one context. Many firms have been able to reduce state taxes incurred on royalty income earned on intangible assets (patents, trade marks, and so on) by transferring ownership of the intangible assets to holding companies organized in Delaware, which imposes no state-level corporate tax on such income. These holding companies manage portfolios of intangible assets much as conventional businesses manage portfolios of financial or physical assets -- showing it can be done when there is financial motivation to do so.

IAM makes clear the financial motivation for managing and valuing patents and other intangible assets in their own right -- and provides the means for doing so at the level of business operations, throughout the entire organization.

MORE DANGERS OF PATENT NEGLECT TO AVOID.

The direct dollar impact on the bottom line by itself should draw the attention of business managers to the importance of active management of patent portfolios. But there are more reasons, and some potentially even larger ones, to initiate IAM for patents -- including growing potential for legal liability facing top managers who neglect their patent assets.

- **Blocked business operations and infringement damages.** Not understanding one’s own patent holding almost invariably means not understanding the competitive environment of others' patent holdings -- and this can lead to unwitting infringement upon patents held by others. The result can be costly liability for treble damages, and even complete closure of entire lines of business -- whether the rightful patent owner is a "mom and pop" inventor or major corporation. For example, solo-inventor Robert Kearns's successful enforcement of his patent for the two-speed windshield wiper against the U.S. automobile industry. Polaroid's successful claim of infringement against Kodak, which forced Kodak to pay $900 million in damages, pay millions of dollars more to buy back its own cameras from the market, and leave the field of instant photography.

- **Forfeited rights.** When patents aren’t managed as business assets, maintenance fees may inadvertently go unpaid on them -- causing the company to lose its legal rights in them. Surveys indicate this may happen to as many as 10% or more of patents held by companies that do not actively manage them. And when the business does not actively monitor the competitive patent environment, it may fail to detect infringements of its patents. This results in pure waste of the patent’s value and cost. Even merely being late to enforce a patent may reduce damages that the owner may collect in an infringement action -- or invalidate the patent entirely.

- **Uncollected fees.** Experience shows that when patents are not actively managed, businesses often fail to collect as much as 10% to 20% of the royalty fees due to them on patents that are licensed -- through simple oversight or inadvertence.

- **Wasting of assets.** Although patents aren’t carried on the books as a "depreciating" asset, they do depreciate. This is due to both their limited legal life, usually 20 years, and the fact that they may become technologically obsolete. Unused patents are a wasting asset, an expiring inventory. Unlike an underutilized tangible asset, such as real estate, which may later be sold for full value or put to better use, the value of an unused patent declines and then is lost forever.
Legal liability of corporate officers. Not least, top corporate officers and executives may consider the growing risk of incurring personal legal liability due to failure to responsibly manage patents as valuable property of the business.

Misvaluing valuable property can materially adversely effect the terms of a business sale, acquisition, financing or merger. Business managers who are responsible for such misvaluations can be found liable to shareholders. For instance, courts have often found that failing to determine the actual value, as opposed to book value, of a business participating in a merger is a "breach of care". There is no reason to believe that, as patents and other intellectual properties become an ever larger part of business value -- often the dominant part -- this "duty of care" will apply less to them than to other business assets. As two legal observers have noted...

"[T]here is no reason to believe that the standards the courts will apply for director’s and officer’s responsibility for management of IP assets will differ from the well established criteria and standards for duty of care in managing other corporate assets.

"Until recently the market for technology stocks has moved spectacularly and consistently upward and everyone was a 'winner'. With the recent market downturn, however, it seems only a matter of time until some disgruntled shareholders of a publicly traded technology company, seeing their stock price plummeting, will attempt to recoup their losses in a derivative class action suit against officers and directors for mismanaging corporate IP assets.

"Directors and officers of publicly traded companies are well advised to take prudent steps today to protect themselves from future liability."22

HOW TO BEGIN INTELLECTUAL ASSET MANAGEMENT

The imperative of IAM -- and logic of patent management as a high marginal return starting point of IAM -- should be evident by now. The question then is: how to do it?

One thing that is clear is that beginning the process of patent IAM requires a conscious decision by management. A study by Arthur D. Little of the patent-management practices of major firms23 found they separate into two categories. Most that manage patents at all do so "tactically" to obtain some additional cash from patent licensing as opportunities arise on an ad hoc basis. A minority do so "strategically" to maximize the full value of their portfolios -- and to have competitive knowledge that is gained from patent management feedback into helping direct the business as a whole.

A key finding of the study was that the movement from tactical to business strategy aligned patent management is not incremental. Firms with strategically aligned patent management processes had not seen them evolve gradually from tactical processes. Rather, adoption of strategic patent management invariably was a considered decision by managers who had weighed costs and benefits, examined best practices of other firms, and designed and implemented specific practices for their own.

The first step in practicing IAM for patents is to make up for the deficiency of standard accounting by creating an explicit patent portfolio that accounts for every patent, and that allocates management responsibilities for it -- including maintenance costs and licensing income -- to an appropriate specific operating unit of the business and its managers.
With this done, patents can be reviewed for the first time by operating managers for their financial and strategic importance. And the managers can plan to create immediate, medium term, and long-term benefits through the patent management process.

**Immediate savings.** Rapid savings that may more than pay for the start-up cost of the IAM program can come from simply identifying patents of little or no business value and abandoning them to save their maintenance costs. Even better, patents may be donated to a university research department for a tax-saving charitable contribution deduction. For example, after Dow Chemical began one of the first patent IAM programs conducted by a major industrial firm, it reduced its patent portfolio by more than 10,000 and cut the number of its U.S. patents in half. As a result, it saved $50 million in maintenance costs and taxes over five years (while simultaneously increasing the value of the patent portfolio by 400%) \(^24\) See Delphion Case Study: Becoming a Knowledge Company at Dow Chemical at www.delphion.com

**Medium term gains.** With a slightly longer planning horizon, a business can plan to more fully exploit the value of its current patent portfolio. Possibilities:

- License to everybody, including competitors, to maximize revenue. This is the strategy used by IBM. "We will license our software patents to virtually anybody, software business or not, on nondiscriminatory grounds", says an IBM patent official. \(^25\) Operating managers may initially be skeptical about giving away proprietary assets so readily. But advantages can be obtained even by licensing to direct competitors.

- Licensing to a competitor results in a cost-structure advantage since the competitor will be paying the license fee on every product sold, while the firm granting the license will not. What can be better than receiving a fee on every sale a competitor makes?

- Tying a competitor to the firm's technology reduces the competitor's incentive to work around the technology, or possibly even supercede it with an innovation of its own.

- Licensing within one's industry may enable a firm to establish its own technology as a standard, a potentially very advantageous situation - famously so in software and "high-tech", but also in manufacturing. Example: Ford established its technology for enabling car drivers to turn off passenger-side airbags as a standard by licensing it to other auto makers. \(^26\)

- Use patents to structure joint ventures and alliances. Patents, like other intellectual assets, are advantageously different than physical and financial assets in that an owner can give them away and keep them at the same time. A company that contributes physical assets or cash to a venture incurs the cost of no longer having the assets to use itself. But a company may contribute a patent in exchange for a valuable interest in a venture at no incremental cost to itself, even while retaining the right to use the patent itself. And it may be able to do this repeatedly with the same patent. IBM again is the leader in leveraging patents in this manner - using its patent portfolio to obtain $30 billion dollars of agreements with OEMs (original equipment manufacturers) in 1999 alone.
Long-term strategy. When business managers assume "ownership" of patents, they gain a reason to work to improve future patenting practices and business strategies. How...

- Better, stronger patents. Managers who know how a product will be used in practice can help draw up patents that are more readily enforceable. For example, a patent may be filed as protecting either an "apparatus" or a "method" -- and when both options are available, choosing the wrong one can be costly. Say the patent is for a technology that transfers information between computers on a network. A "method" claim for it may be much harder to enforce than an "apparatus" claim, because under the method claim violators would be users who are not readily identifiable, while the owner of the technology as an apparatus would be much more readily ascertainable. Business managers who have a stake in maximizing the value of patents will be motivated to work with the firm's attorneys to make patents as strong as possible.

- Fuller exploitation. To be fully exploited patents should be utilized from the moment they are granted -- and planning to do so should start before they are granted, while they are being developed. Planning should include not only searches for uses inside the company's own industry but also outside it, in completely different applications. For example, in one case a maker of underwater cable developed a super-absorbent material that proved of value to diaper makers. Companies are unlikely to find such far-flung uses for their technologies without having an organized program for doing so. But the payoff can be huge. Virtually all of Texas Instruments' $550 million of annual royalty income comes from patents for technology not used in its own business.

- Improved competitive intelligence and strategic vision. An essential element of IAM patent strategy is reviewing the field of patents owned by competitors. New tools makes it possible for business managers to view computer-generated "patent maps" that visually display, in an almost geographic manner, the distribution and ownership of patents around selected products and technologies. These maps can help increase the productivity of investment in technology by pointing out "open fields" where research and patenting may be lucrative ... areas where it would be more effective to license technology already developed by third parties ... and areas to avoid because they already have been "locked up" by competitors. Of course, this same information may be valuable from a business strategy perspective, pointing out the strengths and weaknesses of competitors, and the new directions they may be taking. New patent filings by a competitor may alert the company to a new initiative taken by a competitor long before it makes its presence felt in the market.

- Technology succession and bottom-line analysis. Patent IAM makes up for a key deficiency of standard accounting by making explicit to company managers the depreciation and obsolescence costs of aging patents. These patent-related costs are not captured on standard balance sheets and income statements any more than patent values are, but businesses that are reliant on technology must be aware of them to direct investment and plan for the future.

With accurate projections of these costs for coming years, managers can make quantifiable evaluations of the need to develop "successor technologies" to protect the firm's competitive position and profitability in the future, and optimize plans for doing so.
HOW PATENT IAM CAN LEAD TO "HOLISTIC" IAM

While patents are the most concrete of intellectual assets, they are far from being the only ones that add to the "knowledge value" of a business and reap earnings in excess of those on book value.

A successful program of patent IAM can lead to the spread the IAM throughout a business, increasing the value of other intellectual assets, the "knowledge earnings" on them, and the market capitalization of the entire firm. How...

- **Application to other intellectual properties.** The processes of patent IAM can be applied with only modest modification to other legally protected intellectual properties of a business -- such as copyrights, brands, trademarks, and trade secrets. In many cases the problems and degree of under-utilization of such assets are comparable to those of patents -- and the solutions are similar as well. A leading example of success with patent IAM can motivate managers to apply its techniques to these other intellectual properties as well -- and from there, to apply IAM even to the "softer" intangible assets of the business.

- **Spreading knowledge by breaking down "silos".** Information in business often tends to run vertically, up and down the chain of command. As a consequence, information that could be of use to diverse parts of a large company often remains in the "silos" of a given business unit. Patent IAM effectively breaks down such silos. Finding ways in which patents can add value to all parts of a business necessarily requires different parts of it to talk to each other. Business managers obtain the motivation to do so from their ability to benefit through their units' "ownership" of patents.

- **Deepening knowledge.** Similarly, patent IAM instills deeper understanding of each single technological product in business managers. For instance, maximizing the full value of a patent requires technologists, marketers, and the legal department to work together -- giving each greater insight into the others' concerns.

- **Motivating individuals about the importance of knowledge.** Patent IAM enlightens employees about the financial importance of knowledge by enabling them to construct financial measures that capture it. For instance, a well-developed patent IAM program may have measures showing the full value of the firm's patents, the percentage of sales protected by them, the percentage of new sales protected by them, the return on R&D shown in the value of such properties, annual changes in all these figures, and so on. Then these measures may be adapted for other intellectual properties as well. And this knowledge may be supplemented by financial motivation. When operating departments are given management responsibility of patents, salaries and bonuses may be affected by how well patents are exploited. Individual incentives may exist as well, as growing numbers of firms are providing money rewards and even stock grants to patent innovators.

Thus, by demonstrating the potential payoff from applying IAM to intellectual assets generally, and creating incentives for individuals throughout the business to pursue it, patent IAM may lead the way to realizing fuller value for and greater earnings on all the firm's intellectual assets.
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Petrash is one of the world's foremost authorities on intellectual asset management. Prior to joining Delphion, he was a partner at PricewaterhouseCoopers LLP, where he led the building of an IAM consulting capability, implementing processes and systems for Fortune 100 companies across a broad spectrum of industries. Previously, Petrash was Dow Chemical Company's first global director of intellectual asset and capital management.

An IAM visionary whose work has been cited by numerous books, journals and studies, Petrash has created and conducted IAM workshops and symposiums for organizations such as the Securities and Exchange Commission, Brookings Institute, Institute for International Research, Hoover Institution, M.I.T. and the Licensing Executives Society.
NOTES

2. Hal Varian, Dean of the School of Information Management and Systems and professor of economics, University of California at Berkeley, interviewed in Fortune, June 11, 2001, http://www.sims.berkeley.edu/~hal/
5. "Until the 1970s about 25% of the differences in stock price changes could be attributed to differences in reported earnings, but by the 1980s and early 1990s, this figure had dropped to less than 10%", reports Lev. http://www.stern.nyu.edu/~blev/Forbes9704071.htm.
9. "CFO’s Second Annual Knowledge Capital Scorecard: A Knowing Glance", CFO Magazine, February 1, 2000, http://www.cfo.com/article/1,5309,856%7C%7CA%7C14%7C100.html
11. Smart Business 2.0, 2001
25. Manny Schechter, ibid.
27. Manny Schechter, ibid.
ABOUT DELPHION

Delphion Inc. provides software and services that empower companies to manage and profit from their intellectual property. With Delphion's solutions, companies can better create, manage and leverage IP; provide enterprise-wide access to IP knowledge; analyze and gain strategic insights into IP portfolios and market opportunities.