Getting To The Best First: Proactive, Efficient, And Effective IP Screening

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Note: The ideas presented in this paper were first accepted for publication in the chapter "Extracting Value from Your Patent Portfolio" (by Laura A. Schoppe and Nancy Pekar) in The PDMA Handbook of New Product Development, 2nd Edition (Rosenau, M.D. et al. eds.; New York: Wiley & Sons, 2004).

Intellectual property (IP) represents a valuable asset for any organization—be it a commercial company, a research university, or a government laboratory. In addition to the value that the technologies, software, and other inventions in the IP portfolio bring to the owner's processes, products, and/or services, they also might have value to other (noncompeting) organizations in new applications.

Where many otherwise successful organizations fail is in not understanding and tapping into the value of their IP portfolio as related to out-licensing and other commercialization options. Rather than licensing their patents to companies outside their core business areas, these companies allow the patents to sit idle, racking up maintenance fees even when (in some cases) they no longer offer value internally.

Depending on the organization's IP portfolio, much revenue can be generated by out-licensing. Texas Instruments, Zenith, and Dow Chemical licensed their unused patents to generate more than $100 million in royalty revenues.[1] However, revenue of this magnitude does not simply walk through the door; rather, it results from a proactive IP management process. The proactive IP management process involves analyzing all inventions before patenting, deciding whether to pursue patenting and out-licensing, and then—for those technologies with sufficient market potential—implementing a marketing effort to identify a potential licensee interested in negotiating an agreement.

As illustrated in Exhibit 1, proactive IP management has many advantages that justify the investment required. Although a passive or reactive approach to IP management might appear to require fewer resources, the revenue generated by this approach invariably is less than with proactive IP management. In addition, a reactive approach often results in patenting every new invention, regardless of its commercial value. A small investment in analyzing technologies before patenting ensures that the resources required to protect the IP—ranging from $15,000 to $25,000 plus maintenance fees—are directed to those technologies that offer sufficient value.

This article focuses on the first step of the proactive IP management process—screening the IP portfolio to find the patents and inventions that are worthy of further analysis—outlining a proven methodology for efficient and effective IP portfolio screening.

Portfolio Screening: An Overview

IP portfolio screening involves examining each invention quickly to make a preliminary determination of its commercial value. This value determination is used to decide which technologies should be selected for more in-depth assessment. The in-depth assessment is used to determine more accurately a technology's market potential and value and to decide whether to incur the expenses associated with marketing it to prospective licensees. In other words, portfolio screening is the first step to ensuring that resources are not wasted on out-licensing niche technologies with limited commercial potential but rather strategically directed at the major, perhaps previously unforeseen, revenue (or other benefit) opportunities.

The goal of portfolio screening is to make a reasonably accurate preliminary value judgment while expending minimal time and cost. Spending too much time uses more resources than necessary to make a good decision about whether to pursue in-depth assessment. Spending too little time yields information insufficient to reduce the risk of making a bad decision. That risk includes wasting resources assessing a technology that does not have sufficient market potential as well as disregarding a patent or invention disclosure with good (albeit not readily obvious) potential by not passing it along for assessment.

This paper presents the "Getting to the Best First" screening methodology, which involves conducting enough research to make an informed decision without expending resources unnecessarily. The methodology has been successfully implemented by the author and Deloitte LLP's National Partner Bruce W. Burton at a Fortune 200 company, one of the Big Three automotive companies, and a major research university (see Case Study

1. Jain, A.K., "Intellectual property: Smart management," *Silicon India* (March 1999).

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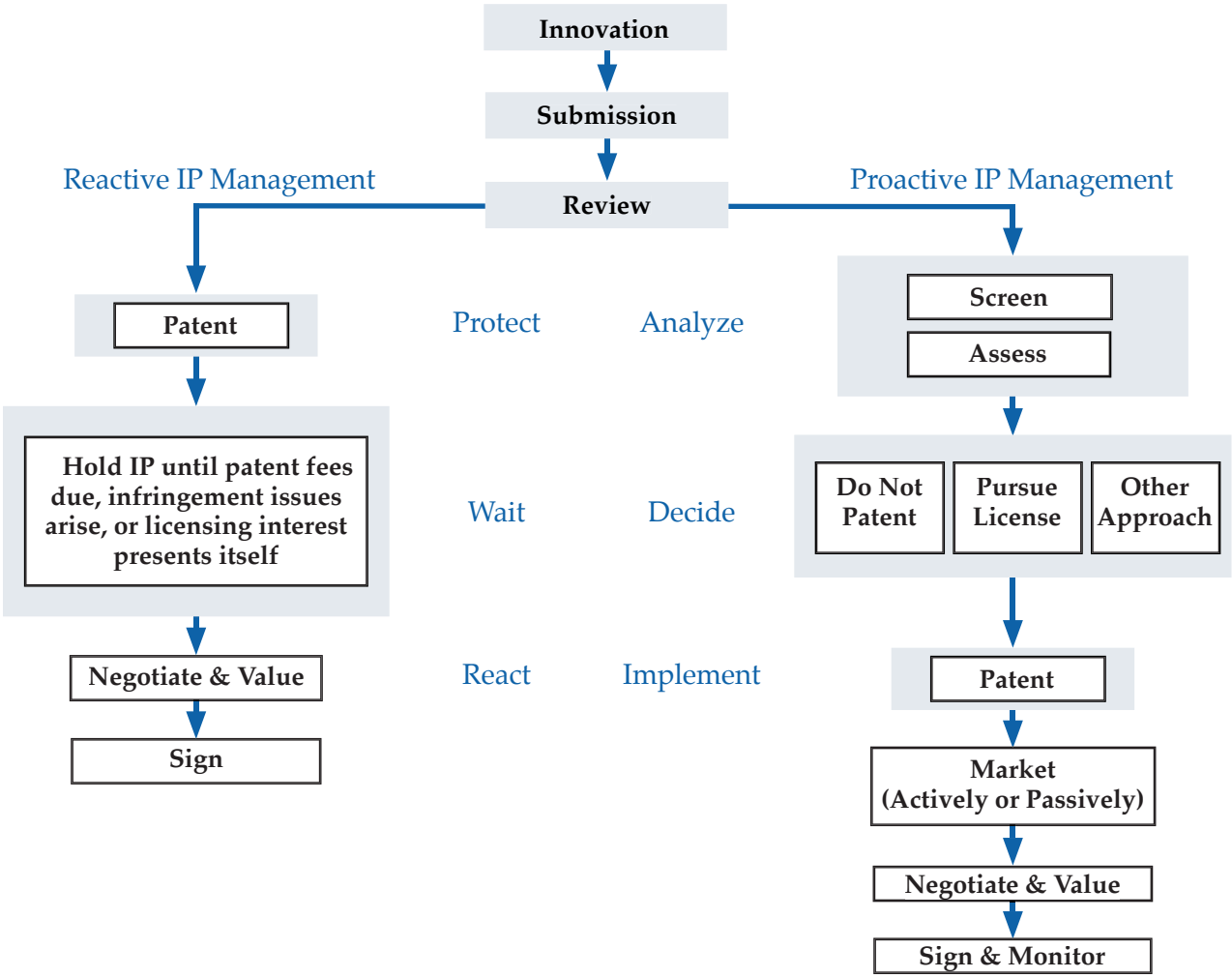
Exhibit 1. Proactive vs. Reactive IP Management



Advantages of Reactive IP Management

- No expenditure of resources other than patent fees until a license is requested; resources then required to negotiate agreement.

Advantages of Proactive IP Management

- Patent fees reduced by patenting only high-value innovations.
- Technologies introduced when market window is open.
- Better chances of license to better licensees.
- IP with significant value in secondary applications/markets uncovered.
- Useful information provided to researchers, increasing commercial value of future innovations.
- License revenue increased through better understanding of market value and greater competition.

sidebar). In addition, "Getting to the Best First" can be either applied to a backlog of hundreds of patents and invention disclosures in an IP portfolio or used on an ongoing basis to ensure that each technology's commercial potential is exploited when its value is highest.

The "Getting to the Best First" approach to IP portfolio screening involves five steps:

1. Establish Evaluation Criteria
2. Organize Patents/Disclosures
3. Assign to Screener
4. Evaluate Patents/Disclosures
5. Assign Ratings

A key concept tied in with this five-step process is the time limit: 1 to 4 hours per patent once the evaluation criteria have been set and the patents/disclosures organized. Experience has shown that spending an average of 2 hours per patent/disclosure is ideal. In 2 hours, the screener can consider the patent abstract, review all claims, and conduct a little additional research to determine whether the potential appears to be sufficient to warrant an in-depth assessment. Within a 1-hour limit, only the patent title and first claims can be considered, missing the opportunity to conduct any outside research that might be easy to find quickly and would provide key value information. Conversely, the value added by doubling the screening time to 4 hours usually is not worth the extra expense. The decision to recommend assessment after 4 hours of research rarely is different from the decision after a 2-hour screening.

It is important to remember that the screening process is not meant to be a substitute for in-depth assessment. Rather, the goal is to identify those technologies whose market value looks promising and could be better understood with an in-depth assessment.

Step 1: Establish Evaluation Criteria

To ensure that the potential value of each patent/disclosure is determined consistently and according to sound economic and other principles related to the company's goals, a set of evaluation criteria should be established. Determining the company's goals—and the evaluation criteria that reflect them—is an important first step, as it helps ensure that later resources are allocated to the appropriate technologies. For example, if the main goal is to generate royalty revenue, then the evaluation criteria will weigh heavily the technology's IP protection and potential applications. If the goal is to reduce the tax burden and/or increase goodwill, then inventions with value for not-for-profit organizations should be identified for possible donation.

The company's goals also will be influenced by whether the screening is for a large backlog of technologies or as part of ongoing proactive IP management. When dealing with a backlog, the company might want to achieve rapid out-licensing successes to demonstrate the value of the program. Once a well-run, consistent proactive program has been established, the focus might shift to fulfilling the revenue potential over the full life-cycle of the IP. Consequently, the evaluation criteria used in screening will change over time.

Depending on the company's goals, the following evaluation criteria might be considered:

- *Market size:* Innovations might be rated according to whether their out-licensing will generate more than a specific amount of revenue.
- *Technology readiness:* Because a patent/disclosure may be only at the concept stage and years away from generating revenue, the company might want to set a threshold on how much additional investment it is willing to make to bring the technology to the point of licensing.
- *Market sectors:* In many cases, companies might out-license technologies only to those applications that are outside of their core market area, which allows revenue generation without giving competitors access to the technology. For example, an automotive company might consider only nonautomotive applications/markets for its patents to avoid cannibalization of its existing market base.
- *Goodwill:* Beyond the financial rewards provided by out-licensing efforts, a company also might benefit from the positive public relations and improved reputation resulting from out-licensing or donating technologies with a medical, environmental, or other philanthropic benefit.
- *Credibility:* In some organizations, boosting creativity and enthusiasm among researchers is an important goal. In these cases, showing inventors the many ways their technology can be used may yield better long-term results than simply seeking the most revenue.

The company determines which of these (or other) factors are of greatest importance and sets the threshold limits for each criteria accordingly.

Step 2: Organize Patents/Disclosures

Bringing all of the company's IP elements together into one consolidated, functional, and categorized portfolio/database greatly facilitates proactive IP management:

- *Consolidated:* Basic patent/invention information, organization-specific information, and tracking information are integrated into a single, centralized database.
- *Functional:* Customized database fields are used to enable efficient sorting, searching, screening, and tracking of patents/disclosures.
- *Categorized:* Categorizing the technology brings related IP together and allows the company to see how its core capabilities affect its IP portfolio.

The organized IP portfolio database can be linked to the existing patent docketing system, or it can be set up as a separate database. Complicated software is not required. In many cases, the portfolio database could be created within a simple spreadsheet program. In addition to this electronic database, each patent/disclosure should have a file folder containing whatever printed background information is available (e.g., invention disclosures, issued patents, filed patent applications, published or unpublished papers,

presentations). This information might be used by the screener during Step 4, depending on the time available, and surely will be referred to if the patent/disclosure is selected for in-depth assessment.

As indicated above, the details of the organized portfolio database are contained in customized fields. A good starting point for creating the database fields is the existing citation information, and additional fields can be created as necessary:

- **USPTO data**
  - Patent number
  - Inventor name
  - Assignee
  - Issue date
  - File date
  - Abstract
  - Claims (at least one)
  - USPTO class
  - Forward references
  - Referenced patents
- **Company data**
  - Internal categorizations
  - Licensing status
  - Maintenance fee payment schedule
  - Associated intellectual assets, including contact information
- **Technology category**

Other fields that will be filled in during and after the screening include technology class, technology cluster, 1–10 rankings of various analysis factors, the high-medium-low commercialization rating, and the disposition decision. These items are included in the discussion below.

Assigning the Technology Category

The technology category might be based on the USPTO or WIPO classification codes, or customized categories can be created (e.g., advanced materials, avionics, electronics, medical devices). The category is helpful in determining which screener should evaluate a patent/disclosure (Step 3). Later, as the screener gains a better understanding of an innovation, more specific, market-based classes and clusters will be identified (Step 4).

Only broad categories are used at this point, and they are determined usually by looking at only the patent/disclosure title. Given that the goal of screening is to select technologies for in-depth assessment, categories are assigned quickly at this point. The more time spent assigning the broad category to a patent/disclosure, the less time that the screener has available to pursue the value-added research.

Although automated systems exist for categorizing technologies according to keywords in their title, a "manual" process conducted by internal staff or external consultants is much more effective. These individuals are able to recognize what the technology truly is, while natural language processors can miss subtle differences in the titles. For example, a patent titled "Method and System for Creating an Approach to a Position on the Ground from a Location above the Ground" would provide no word match for avionics or control systems. Granted, a software-based organization tool could be used on the "first pass," but this automated categorization must be reviewed by a technically savvy expert.

Step 3: Assign to Screener

Each category of patents/disclosures is assigned to the screener(s). Experience has shown that the most effective screeners are outside experts or consultants, but in some cases company personnel might be used. Regardless of whether they are internal or external to the company, screeners must exhibit several qualities in order to ensure that the screening process is efficient and effective.

Obviously the screener should have sufficient technical expertise to understand the capabilities of the invention. At the same time, the screener also must have the business experience necessary to understand the market need for the technology. It is essential that the screener be able to move past what a technology currently does to what it can do for a new user/market, and more importantly, whether such a market exists (i.e., is technology is solving an identifiable problem). Screeners cannot simply enjoy technology for its own sake; rather, they must be able to look for its practical applications.

In addition to this technical and business expertise, the screener must have the creative focus to find new uses for a technology outside of the company's product focus. In some cases, applications for a technology might be immediately obvious. In others, the application might be far afield of the original use. By considering what a technology enables, the creative screener recognizes that, for example, a medical device technology designed to deliver inhalant drugs (i.e., what it does) is better understood as a technology that fluidizes the flow of particles (i.e., what it enables). As a result, the screener sees that the technology could be used to fluidize coal along a production line, apply fertilizer to plants in hydroponic farming, or distribute colored grains in detergent and spices into dry foods.

The technical expertise, business experience, and creative spirit described above must be accompanied by an open mind to have insight into new fields for the technology. For example, having the CEO evaluate a residential plumbing company's patents likely will result in the technology's potential being limited to the fixtures market. Instead, an advanced materials expert may identify that the low-cost ceramics used for a sink may have applications in the jewelry, housewares, power distribution, appliances, and electronics markets. Screeners from external consultants or other outside experts often provide better screening results than company personnel.

Some might attempt to achieve this broad insight by having multiple reviewers examine the technology category collectively, brainstorming about new products and markets. However, this "panel approach" has drawbacks. Experience has shown that the costs to assemble a large, unfocused panel can be quite high, and the results are less likely to be

beneficial. Rather, a single reviewer with the appropriate background can identify appropriate market opportunities faster and most cost-effectively than a panel—even a panel of targeted experts. Again, it is important to remember the goal of screening: efficiently and cost-effectively to make the decision to pursue in-depth assessment. The benefits provided by a brainstorming panel can be sought if the patent/disclosure is selected for assessment.

Step 4: Evaluate Patents/ Disclosures

Screeners use the criteria established in Step 1 to evaluate the technologies in their assigned category in a consistent manner. If internal screeners are being used, the company might consider excluding (or otherwise conceal) the inventor's identity and/or corporate division. These factors often carry political weight that can adversely affect the screening process. The screening should obtain an objective evaluation of each technology's value potential, and companies should guard carefully against revealing any information to the screeners that might preclude their objectivity. In fact, companies may find that using external experts as screeners is an ideal way to address this issue. (See Step 3: Assign to Screener for more information about selecting the best screener.)

Also, it is important to remember in this step the time limit discussed above. Although much more information on the technology undoubtedly is available—easily taking up hours or even days of research—the screener keeps in mind the goal of finding just enough information to make an informed decision about pursuing further commercialization efforts. Technologies that are selected for commercialization will receive a in-depth assessment, during which a more thorough search will be performed in order to obtain a more complete picture of the market structure and players. The 2-hour timeframe is enough for the screener to review the patent abstract and claims, conduct additional research, and analyze the results.

Review Patent/Disclosure

Screeners begin their evaluation by reading the abstract and claims of the patent (or the invention disclosure) to gain an understanding of the technology. Once screeners understand what the technology is and what its benefits are, they can begin to determine what it enables and identify possible new applications. In some cases, it might be necessary for the screener to conduct a brief interview with the inventor, clarifying the technology's capabilities and confirming that the disclosure information is current. The information also will be useful if the patent/disclosure is selected for in-depth assessment.

Conduct Research

Once screeners understand a technology, they conduct basic research to determine how well the various evaluation criteria are met. Depending on the criteria, the following information will be useful:

- What IP protection is in place
- Whether a deadline for patenting the invention has been set or has already passed (in the case of an unpatented invention disclosure)
- Competing companies/ organizations
- Competing technologies/ patents

Sources for this and other useful information include patent databases; industry and other news archives; trade associations for relevant industries; corporate databases and company Web sites; and market research databases, such as OneSource *(www.onesource.com)*, CorpTech *(www.corptech.com)*, Science Citation Index *(http://www.isinet.com/isi/products/citation/sci/)*, and others.

The keywords used in the research focus on the technology's capabilities rather than on the product in which it currently is being used. In considering the new applications/ markets for the technology, the screener only needs to determine whether it is a well-explored field with many players and whether the technology appears to offer a solution to an identifiable, defined need or problem.

The following is an example of the level of detail obtained in conducting the research to screen a timing device to be used while exercising. A 1-hour search is sufficient to retrieve several key pieces of information. For instance, to be competitive with other related devices, the product will need to be sold for between $20 and $50 each. The other devices offer more features but are more complex; therefore, this patent might fill a niche market. The search also would show that although the product made with the patent might be offered to individual customers online, mostly it would be used as a promotional item (e.g., a gift for subscribing to sports magazine or buying home exercise equipment). More detailed information—specific differences between the features of existing products and the patent, who the leading distributors of promotional items are, whether to license the patent to the manufacturers of such promotional items or to the distributor that sells them to Sports Illustrated, Bowflex, NordicTrack, and the like—will be obtained if the patent is selected for in-depth assessment.

Analyze the Results

Once the research has been gathered, the screener spends the last portion of the 2-hour limit analyzing the data. In conducting the analysis, the screener considers several factors, including (but not limited to) the following:

- IP strength
- Size, structure, and significance of the market
- Level to which the technology is currently developed
- State of the art relative to competing technologies
- Ease of implementation the technology might have in a commercial manufacturing or other process
- Relevant timing for commercialization

Although the analysis factors seem similar to the evaluation criteria established in Step 1, they serve a different purpose. The evaluation criteria are used to

make a business decision: How do we prioritize our resources? Which patents do we want to pursue further for commercialization? What benefits will doing so provide to the company? The analysis factors are used to determine objectively the patent/disclosure's commercial potential and identify any issues that might exist.

Each analysis factor is considered separately and according to a quantitative ranking (e.g., on a 1–10 scale). Considering the analysis factors individually is important because a single factor could be a showstopper. For example, a technology might be useful in a market that is a good size, be easy to implement, and have a ready customer base, but there could be significant IP issues (e.g., the patent is about to expire, foreign patent protection does not exist, a provision patent deadline is approaching, a patent application was not filed before disclosure). Since these IP issues will prevent a licensee from developing a commercially viable product, the technology likely would receive a low rating (see Step 5).

The analysis factors themselves as well as the quantitative ranking scale will directly relate to the company's goals/evaluation criteria. For example, if a company is mostly concerned in licensing technologies that will generate $10 million per year in royalty revenue by the second year, then timing and market are the major analysis factors of interest. For example, a score of 10 in timing would apply for 2 years to market, and a score of 5 might apply for a 5-year timeframe. Exhibit 2 presents examples of analytical factors and how they might be broken down into a ranking scale.

Step 5: Assign Ratings

Screeners supplement the analysis with their own knowledge of the new market/industry to rate the commercial potential each individual patent/disclosure or IP cluster. This rating serves as the connection between the 1–10 quantitative rankings and the qualitative evaluation criteria developed in Step 1. One of five ratings may be assigned:

- *High:* Review suggests that the commercial marketplace would be interested in the technology and thus pursuit of commercialization (i.e., in-depth assessment) is recommended.
- *Medium-high:* Review suggests that the technology's potential is favorable. In-depth assessment is recommended if resources are available.
- *Medium-low:* The technology's potential does not appear to be particularly favorable, although readily available information cannot confirm this judgment. Conduct in-depth assessment only if resources are available once the high and medium-high technologies have been assessed.
- *Low:* Commercial interest in the technology appears to be limited. An in-depth assessment is not recommended; consider abandoning the patent when maintenance fees are due.
- *Monitor:* Although the technology's potential appears favorable, its stage of development and/or the readiness of the market suggests that commercialization should be postponed. The technology's R&D and/or the market to which it would be applied should be monitored.

Refine Category into Class/Cluster

As discussed in Step 2, a patent/disclosure is first assigned to a broad technical category based on what it does or is. The screener, who has become more familiar with the technology, now can refine the classification according to what the technology enables. For example, technologies broadly categorized as "medical devices" could be further divided into "drug delivery" or "diagnostics" classes. Similarly, some technologies categorized as "advanced materials" may be more specifically classified as "adhesives" or "films."

Within each class, the screener groups closely related technologies into clusters of patents/disclosures based upon their potential application. A cluster includes one or more technologies that combined provide a unique asset that can be further developed/used as a single unit. Although they often combine the technologies of a single inventor or invention team, clusters should not be restricted according to the inventor, corporate division, or other "artificial" similarity. Rather, the similarity of importance is the capability that the innovations provide.

The screener adds these class and cluster assignments to the organized IP database. The screener also prepares a very brief (2- to 3-sentence) description of the technology. The class/cluster assignments and technology descriptions will aid the decision makers as they consider the entire portfolio.

Deliver Information to Decision Makers

All of the evaluation, analysis, and rating information is delivered to the decision makers in a standard report format. In particular, the 1–10 rankings of the analysis factors should be easy to review. Doing so makes it easy for the decision makers to see how the evaluator arrived at the high-medium-low rating. Furthermore, as with the class and cluster assignments, the 1–10 rankings of the analysis factors as well as the high-medium-low commercialization ratings are entered into the organized IP database.

The Disposition Decision

After all of the screening reports have been submitted, the company's decision makers consider the whole IP portfolio. They take into consideration the quantitative rankings for the analysis factors as well as the ranking of commercial potential and determine the disposition for each individual technology or cluster:

- *Assessment:* Generally speaking, all of the high and some or all of the medium-high technologies receive an in-depth assessment so that an appropriate commercialization strategy can be developed. (Note that such a strategy might include donation to a not-for-profit organization for a tax write-off.) If resources are so limited as to preclude assessment of all high

Exhibit 2. Sample Rankings of Analysis Factors

Note: This is merely an example. Companies should modify the factors and scales to reflect their specific goals, strategy, and evaluation criteria.

IP Strength*

10 No public disclosures, no similar patents and no likely patentability or enforcement issues; globally patentable.

9 No public disclosure, some similar patents, perhaps minor patentability or enforcement issues; globally patentable.

8 Public disclosure, loss of foreign coverage, but still domestic patentability; U.S. patentable.

6–7 U.S. stat bar concerns (<3 months remaining), no other patentability issues; U.S. patentable.

3–5 Closely related patents or other patentability or enforcement issues, or critical stat bar issues; possibly U.S. patentable.

1–2 Major stat bar issues, clear public disclosure over 1 year ago, protection highly unlikely or major patentability or enforcement issues.

* This factor is particularly important when the screening is examining invention disclosures before patenting.

Market Potential

10 The market is large and unsegmented or multiple significant markets exist and the technology is targeted to fit an identified need.

8–9 The market is large but in large segments; technology is less "end-stage."

6–7 The market is medium sized and might be fragmented; the technology is a component early in the manufacturing process, rather than a final product in itself.

5 The market is reasonably sized, more fragmented; the technology is a smaller part of a final salable product.

3–4 The market is small and/or very fragmented; the technology is narrowly applicable to a few markets, with low margins of profitability.

1–2 No identifiable market.

Level of Development

10 Ready to go to market without further development (not necessarily ready to sell to end-users of finished product).

8–9 Working advanced generation prototype but needs some more development to convince users of its useful potential.

6–7 Working prototype.

4–5 Inefficient but functional prototype.

3 Reduced to practice to demonstrate concept, but no working prototype.

1–2 Concept with no reduction to practice.

Ease of Implementation

10 No new equipment needed, minimal switching costs.

8–9 New equipment/training is necessary, but the cost is worth the benefit.

6–7 New equipment necessary, and state of the art may be perceived to be "good enough" such that there will be resistance to change.

4–5 Transformation of standard operating procedures necessary to implement the new technology and company perceives it may not be worth the switching costs. Further development might help alleviate the concern.

2–3 Very high barrier to changeover or replacement; current technology is too well entrenched, there are suitable substitutes, or the industry is notorious for sluggish acceptance.

1 New factories, new training, large capital costs in general required to incorporate the technology, requires prohibitive amount of effort to change or the current technology is superior and is perceived to be so for years to come.

Timing

9–10 Very timely, demonstrated market need, market is ready for the technology.

7–8 Less timely, some market need identified.

5–6 Market is present and may accept the technology, but there is no strong pull or the market has viable substitutes available.

3–4 Technology is a little behind (past prime timing) or ahead of the cutting-edge curve (ahead of prime timing).

1–2 Technology is obsolete or too far ahead of the market being able to utilize its benefits; far too risky for the market to consider.

and medium-high technologies, the quantitative rankings of the analysis factors serve as a useful means for prioritizing these technologies.

• *Passive marketing:* Passive marketing—that is, listing IP in public online databases—is ideal for patented technologies with medium-low ratings, medium-highs that are awaiting assessment, and highs while the assessment is being conducted or while other marketing efforts are planned and implemented. These Internet listings provide a low-cost means for making a patent available to those looking for technology solutions. The listing may be posted on the company's Web site or in external online technology databases. One example of an external database is yet2.com, which provides succinct descriptions of technologies that are available for licensing. Note that passive marketing should be pursued only for those technologies with IP protection. Public disclosure of unpatented technologies starts the 1-year "stat bar" clock for applying for patent protection and eliminates the opportunity to pursue foreign patent rights.

• *Abandon/Return to inventor:* If a low-rated patent is no longer valuable to the company's core business and does not show potential in other applications/markets, then the company might consider abandoning its IP rights, saving patent maintenance fees. Some companies or other organizations give the rights to such technologies to the inventor. In addition, the company should consider making the screening information available to the inventor as it might inform future research, increasing the commercial potential of other inventions or later developments on the subject invention.

• *Other:* Various other action options might be considered for the disposition decision. In some cases, the R&D progress for the technology is monitored until the timing is better for securing IP protection and/or marketing the technology for new applications. Sometimes IP issues need to be resolved. For example, the company might be facing issues of ownership for jointly developed technologies. Regardless of the situation, issues with the "Other" technologies should be resolved—or at least revisited—within 6 to 12 months. Such a timeframe is necessary because taking longer to resolve/revisit the issues may result in losing IP protection or market opportunity.

Next Step: The In-Depth Assessment

Once the IP portfolio screening process has been completed and the IP with high and medium-high potential identified, the next step is to assess those technologies to confirm that pursuit of commercialization is warranted and to develop a strategy to guide future commercialization efforts (e.g., patenting if needed, marketing the patented technology to potential licensees). In conducting the in-depth assessment, the company will obtain detailed market research from a variety of information sources: the inventor, the literature, patent databases, and industry experts.

The assessment information greatly supplements the findings gathered during the 2-hour screening. Whereas a screening is completed in 2 hours with the information and analysis summarized in a 1-page report, the assessment may take up to 25 hours to perform for a 10-page (or longer) analysis. This additional information allows the company to determine much more accurately whether moving forward with commercialization is appropriate.

Yet one cannot underestimate the value of the screening. Not only does screening the IP portfolio provide an efficient, cost-effective method to identify those technologies worthy of the resources required for an in-depth assessment, but the screening also informs the in-depth assessment. Experts who served as screeners or identified during the screening research can be called upon during the assessment.

Implementing the "Ongoing" Methodology

As indicated above, the "Getting to the Best First" methodology can be applied to a backlog of dozens or even hundreds of patents, or its principles can be implemented on an ongoing basis. Once screened, the new disclosures are added—usually on a monthly basis—to the prioritized list of patents/disclosures from the backlog screening effort to be assessed according to their high-medium-low rating. On a quarterly or semiannual basis, the prioritized list is re-evaluated to ensure that it reflects the company's strategic priorities.

Finally, a word about the timing of securing IP protection. In the ongoing situation, the company screens invention disclosures before they are patented or copyrighted. Screening technologies before expending resources on IP protection can save an average of ten per cent of the total cost of the patent portfolio. For instance, Dow Chemical saved $40 million over a 10-year period by reducing patent maintenance fees.[2] Of course, as discussed earlier, because patenting or other IP protection is not initiated immediately, enabling details about the innovation are not disclosed publicly.

Summary

The "Getting to the Best First" screening methodology is a fast, easy, and cost-effective way to begin to understand the value of the IP portfolio and the first step in extracting that value. The benefits of the process lie in its proactive, efficient, effective nature:

• *Proactive:* Taking a proactive approach to IP management yields more and better licenses and results in a better allocation of resources than reactive IP management.

• *Efficient:* Limiting the screening to 2 hours and using individual screeners rather than large panels ensure that a sound commercialization decision can be made with a limited expenditure of resources.

• *Effective:* Focusing on what the patent/disclosure enables (rather than simply what it does or is) and

2. Bukowitz W, Williams R, 1999. *The Knowledge Management Fieldbook*. London: Financial Times/Prentice Hall.

selecting screeners with the appropriate technical expertise, business experience, creativity, and insight allow the best new applications/markets for the patent/disclosure to be identified.

In addition to these benefits, the "Getting to the Best First" methodology provides an organized patent database that makes it easy to identify the company's IP assets. And information obtained during screening can help increase the commercial value of future R&D efforts.

Case Study: University of Illinois at Urbana–Champaign

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In March 2001, the University of Illinois at Urbana–Champaign joined in a statewide initiative to enhance economic development in Illinois. As Mike Fritz came on board as head of the University's Office of Technology Management (OTM), he was charged with implementing a proactive mandate: to find commercialization opportunities for the University's technology.

The IP portfolio at the University had mostly been untapped. Although it ranked 4th among universities in terms of research spending in 2001, the University ranked 26th in patents issued and 25th in licensing income. Clearly the technical successes of professors' and students' research were not being used to generate licensing and other commercialization successes for the University. In fact, OTM was facing a backlog of 730 patents and invention disclosures whose value was undetermined.

To use its limited budget most effectively, the OTM turned to Deloitte's Intellectual Asset Management (IAM) Practice for help. Calling upon its internal IAM experts as well as outside consultants—particularly Fuentek, LLC—the Deloitte team screened the University's 730-technology portfolio in 3 months.

Implementing the "Getting to the Best First" Methodology

Generally speaking, the Deloitte team followed the "Getting to the Best First" methodology as described in the accompanying paper. However, a difference was that a team approach was used in evaluating patents/disclosures (Step 4).

As an institution of higher learning, the University was eager to have its students benefit from the screening effort. Therefore, 16 interns were brought into the project, forming four four-person teams that included students from technical fields, business, law, and library information science. Each team focused on a single technical area: life sciences, engineering, software, and biomedical and received upwards of 200 patents/disclosures each.

After receiving training on the screening methodology from the Deloitte team, each intern team divided its technologies among the four members and proceeded to gather market and IP information. Once a week, each member would present several technologies to the team, which gave the other team members the chance to ask questions and served as a quality assurance (QA) check. Each team would deliver 5 to 10 technologies, including the recommended high-medium-low rating, to the Deloitte team for review and QA.

The Deloitte team then sent many of the patents/disclosures and the interns' screening reports to one of fifteen industry experts, according to their area of technical expertise. These expert reviewers' subject area experience was complemented by their acumen in technology commercialization. Spending no more than 30 minutes per patent/disclosure, these experts reviewed the materials, provided their opinion, corrected any misinterpretations that the interns might have made, and suggested adjustments to the high-medium-low rating as necessary.

This expert feedback was given to the student interns, and they then selected the appropriate action: pursue partnership (i.e., conduct assessment), passive marketing, return to inventor, no action, or other. The Deloitte team reviewed the expert feedback and action recommendation before submitting it to the OTM for the final disposition decision. It should be noted that technologies rated as high were not automatically recommended for pursuing partnership: 10% of high patents/disclosures required issue resolution, and one high technology was recommended for return to the inventor. Similarly, nearly 20% of those technologies rated as low were recommended for passive marketing.

Results

The University's OTM reviewed the screening results and then determined the disposition for each of the 730 patents/disclosures. The OTM continued working with the Deloitte team in implementing these dispositions. The OTM–Deloitte team conducted 155 in-depth assessments of highly rated patents/disclosures; in some cases the assessments examined multiple technologies that had been clustered together. These assessments ensured that marketing resources were effectively allocated to those technologies with the best chances of achieving the University's goals. Of the 155 technologies/clusters assessed, 63 were selected for active marketing efforts. The results (as of August 2003) were 26 licenses signed or pending, which are generating licensing fees and royalties for the University, and 10 new start-up businesses. Examples of these successes are presented below.

Out-Licensing Example

University researchers had developed a material technology to be used on roads, highways, parking lots, and other paved surfaces. Prior to the Deloitte team's screening effort, the University had received a licensing offer for the technology. However, because the OTM had never sought interest from other licensees, which would have created a sense of competition and urgency, the technology's value was unknown and the deal stagnated. Then the interested company was sold, and the deal fell apart.

The Deloitte team's screening and subsequent commercialization efforts reinvigorated the interest in Interlayer Stress-Absorbing Composite (ISAC). Upon receiving a high rating and pursue partnership recommendation, ISAC received an in-depth assessment and active marketing, during which new potential licensees were identified. The OTM received half a dozen serious bids to license the technology. Amid this new sense of urgency, the buyer of the company originally interested in ISAC made a new licensing offer—at twice the original offer. With assistance from the Deloitte team, the University's OTM negotiated a final deal with the company worth 1.5 times the new offer (i.e., three times the original offer).

Summary: Proactive screening identified this as a high-potential technology. In-depth assessment identified potential licensees. Active marketing created a sense of urgency and competition, increasing the licensing fees and royalties well above the offer received under reactive IP management.

Focused R&D Example

University researchers had developed an advanced composite material that was rated high during the screening, although it needed additional development before companies would consider it for some applications. To ensure that the technology would meet the licensees' needs, product-focused R&D was needed. The Deloitte team conducted an in-depth assessment, identifying R&D partners and potential licensees. A briefing was held, bringing together the many companies and research organizations that had interest in the technology. The result was a list of commercialization-focused research projects for the inventors to consider for funded research efforts. OTM and the inventors selected the projects based on the resulting market potential.

Summary: Proactive screening and follow-on research helped ensure that future R&D would meet market needs, increasing the chances for licenses later. Furthermore, involving the inventors in the IP management process helped them understand the importance of IP protection.

Hybrid Licensing Example

During the screening process, a microparticle fabrication method developed at the University was found to have significant benefits for medical applications, receiving a medium-high rating and recommendation for pursuit of partnership. In addition to possible outside interest, the inventors expressed interest in forming a start-up company based on the technology. The OTM–Deloitte team conducted an in-depth assessment and began marketing the technology. As a result, an innovative "hybrid" licensing approach was recommended: (1) licensing to existing companies for near-term applications and (2) licensing one particular aspect/application of the technology to a start-up or existing company for further development.

The inventors and the OTM leveraged information from the assessment to develop a business plan and consider establishing a start-up. In addition, the OTM–Deloitte team identified a Korean company that is interested in a license for near-term applications.

Summary: Proactive screening revealed the inventors' interest in a start-up. In-depth assessment and marketing identified an innovative approach to licensing. Active marketing found licensees around the world.

Lessons Learned

The use of intern teams accomplished the University's goal of educating students in technology management. Furthermore, the OTM was able to identify those interns particularly well suited to technology management and invite them to join the office throughout the year on a work-study basis. Immersing the students in a full-time project during the summer gave them the experience and expertise they needed to be effective part-time screeners during the year. Bringing in interns as part-time screeners from the beginning likely would not have yielded such effective ongoing support.

The team approach also was useful for the University in that the 730-technology backlog needed to be screened in 12 weeks. This is a very short timeframe, so a large number of people needed to be involved. Using interns allowed the University to leverage its costs to provide summer internship opportunities for its students.

It should be noted that the use of student interns in a corporate or government environment might not be considered to be efficient. For example, at the University, each patent/disclosure received 4 hours of review by the interns plus 1 to 2 hours of review by the Deloitte team and outside experts. While the use of interns was ideal given the University's education goals, a company might be better served by calling upon trained professionals with appropriate experience as screeners.