


Talking tactics

 *Business strategies for the modern organization*



IN SUMMARY

- Technology firms place a high value on their patents and licenses, but how much are they really worth? Reverse engineering is used by firms to deconstruct an existing product to understand how it was built, how it works and what it is made of
- This article looks at how reverse engineering is used to support IP and business strategies, and considers how this applies for mergers and acquisitions by taking several case studies as examples

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Mike Thumm of Chipworks looks at how reverse engineering is used by technology companies to understand the real value of their patents, and those of acquisition targets

In multi-million or billion dollar mergers and acquisitions, how do the parties involved know what they are getting for the consideration they are giving up? What due diligence is performed? In transactions involving technology companies where the majority of the value may be attributed to Intellectual Property (IP), including patents, how can value be determined?

Licensing of technology and/or patents has become big business in recent decades. Companies like IBM and Texas Instruments annually report licensing income of hundreds of millions of dollars. All technology companies face licensing issues, usually significant in the context of their business. How do these companies ensure they have strong licensing positions? If they wish to improve or change their licensing position or landscape, how do they approach this and how do they determine what it will cost or what it will return? How do they know they are obtaining value for their assets in licensing situations?

These questions are increasingly on the minds of business executives around the world.

Patents – A common theme

In these transactions patents play a key role. With more and more patents being

filed and issued every year in all jurisdictions around the world and with the values of corporate transactions increasing, the importance of patents in these transactions is also increasing. With more at stake the potential cost of a wrong answer is rising.

IP executives are devoting more time and energy to understanding the value of patents and other intangibles. They are looking for facts to support sound decisions and IP strategies that support their company's business strategies. IP executives need Competitive Intelligence (CI) to understand evolving or disruptive technology in the market place. Reverse Engineering (RE) is a valuable tool to help build this understanding.

This article will explore some of the ways RE is used to support IP and business strategies. It will also provide case study examples. In particular it will examine the use of RE to support IP strategies and strategies for mergers and acquisitions. The article will focus primarily on the electronics and semiconductor industries, but the same trends apply to other industries where technological innovation is a key growth driver, such as pharmaceuticals and biotechnology.

What is RE and is it legal?!

RE is a method of obtaining CI. It allows you to understand others' products. The reverse engineer takes an existing product and disassembles it in order to understand how it was built, how it works and what it is made of. The approach is almost forensic in nature. In the semiconductor and electronics industries, RE includes four basic activities:

- Product teardowns, to identify *what* devices are used
- System analysis, to identify *how* devices are used
- Circuit analysis, to identify how devices *work*
- Process analysis, to identify how devices are *built* and what they are made of

Is RE legal? The short answer: Yes. In the case of semiconductors, RE is protected in the United States by the Semiconductor Protection Act, which allows RE "...for the purpose of analysis, evaluating or teaching..." It clearly states that the use of reverse engineering is a legal and ethical activity in the semiconductor industry. Many other countries have similar legislation. However, in a few cases, such as software, the RE situation may sometimes be clouded by copyright considerations. (Ludlow, 2006)

IP strategies

Every company should have an IP strategy aligned with and driven by its business strategy. Here are a few types of common strategies:

- IP is the foundation of their business model. Some companies develop IP and then license it. Rambus and Qualcomm are two prominent examples in the semiconductor and electronics industries.
- An offensive IP strategy uses patent assets to generate licensing royalty revenue to support operating income – IBM and Texas Instruments take this approach.
- A defensive IP strategy uses patents to prevent competitors from freely operating in their market space or as a counter measure should a competitor or other party target them for patent infringement.

No matter the strategy it is imperative for the IP executive to have a thorough understanding of the company's patent portfolio. You need to know:

- Which are your strong patents?
- Which markets are covered?
- Are any important market segments not covered?
- Are present and future competitors' products covered?

- Where are the gaps or weaknesses in the portfolio?

In preparing this portfolio assessment it often becomes clear that there are areas that should be bolstered. One way this can be accomplished is through the internal development of new inventions. This approach is generally used if the following factors exist: it is part of the company's plans, the company has the required core capabilities, and there is time. In cases where these factors do not exist, purchasing patents is an option.

Buying patents

When purchasing any asset some degree of due diligence is required. The amount of due diligence is usually predicated on the price to be paid. For patents that can be acquired for a few thousand dollars each the due diligence is usually fairly minimal. Where patents are priced at seven or more figures, due diligence becomes much more rigorous. In addition to the legal due diligence of things like ownership, who is licensed, etc., there should be some support for the price or the value. A valuable patent is one whose claims cover technology actually being used. Industry estimates show that 3 – 5% of patents are valuable – the other 95% cover technology that has not been commercialized!

Patents cannot protect your own company's products or services. They do not give you a license to produce your own product – they only give you a right to exclude someone else from using your patented technology. Some patents prevent another company from producing and selling a product or products. Is that valuable to your company? Can it generate licensing income or provide leverage to help generate a favourable cross license? Value is most compellingly proven by RE investigations that show the use of your patented technology – usually by generating a claim chart.

Case I

A major semiconductor and electronics company identified a competitor who they believed would aggressively attempt to assert patents against them in the near future. They performed a patent portfolio analysis. When matching their patent portfolio against their competitor's products, they realized they had no patents relevant to some of their competitor's product lines where they didn't directly compete. They then went shopping for patents and identified many possible candidates. Internal

due diligence weeded out many with little value. We attempted to support the more promising candidates through RE analysis. We obtained the relevant competitor products, performed RE and attempted to apply the patents in question. As it turned out a few, but not all, of the patents were infringed by the competitor's products. The company was therefore able to make a more informed decision about which patents to acquire and how much to pay for them.

Case 2

A telecommunications company was approached by a semiconductor company asserting patent infringement and demanding significant royalties. This semiconductor company had no competing products but had previously performed relevant research and filed patents. The telecommunications company had nothing to fight back with. To reply, they went shopping for patents with specific application to the aggressor's key products. They identified a promising patent, had RE performed and were able to document infringement. Instead of having to pay royalties, the smaller telecommunications company was actually able to receive a payment from the larger semiconductor company. The key was to be able to document infringement through RE, purchase the appropriate patent for a reasonable price and then demonstrate the use of the patent in the aggressor's key high revenue products.

The above are just two examples of where RE has been used to demonstrate value in the process of purchasing patents. In both cases, RE provided the facts that proved to be extremely valuable in important negotiations.

Selling patents

Many of the same factors apply to companies or individuals selling patents. Patent value is enhanced when demonstrated with claim charts produced with RE results.

Companies who regularly review their portfolios often find they have patents that no longer support the IP or business strategy. Increasingly, companies are looking to sell these patents and recoup some of the costs they have incurred. They really have two choices: sell them at the going rate for a patent, or; invest a little more in the patent, prove it is being infringed through RE, demonstrate its value to interested buyers, and command a higher price. The latter option is a means to increasing the return on the portfolio.

Case 3

A major industrial conglomerate decided to exit the semiconductor business. This left them with an orphan portfolio – a portfolio of patents no longer required as part of their IP or business strategy. Rather than simply shopping the patents without any indication of value they decided to investigate whether there might be any infringement of the patents. We performed market research across different companies and product lines, identified some potential infringing products, purchased the products, performed RE and in many cases documented infringement. With this evidence of infringement the portfolio now attracted interest from a range of buyers who could easily evaluate the portfolio's value. The orphan portfolio was sold for more than it would have – and at a significant multiple over the cost of the RE. The investment in RE produced a positive ROI.

Buying and selling of patents is a growing phenomenon. There are in excess of 50 patent brokers operating today. The past few years have seen on-line and live auctions created to serve the market place as additional means to exchange patents for consideration. The key, of course, is to know what you are buying or selling and to know its value – objectively. In the quest for objective valuation, the infringement evidence that RE provides is indispensable.

Evidence in licensing negotiations

The world of electronics and semiconductors IP is a tangled, chaotic thicket of patents – no one can develop or design a semiconductor device without using the technology claimed by literally hundreds of thousands of patents. To assure freedom to operate, most large manufacturers have extensive cross licenses with their competitors or key technology developers. These cross-licenses usually include an equalizing payment going in one direction but occasionally no payments change hands.

Whether a first-time cross license or a renewal, if a company's business and IP strategies are operating effectively the company will be ready for the negotiation. The key to being prepared is to have documented evidence of infringement of your patents by the other company's products (ideally across many product lines) and for the documentation to be strong and concrete. Documentation of infringement can come in many forms – claim charts based on data sheets, marketing materials, etc – but none is

stronger than that based on RE. RE puts you in a strong position at the very start of the negotiations. If the negotiations fail and litigation is required you are well prepared, and equally important, you can act quickly and decisively.

Case 4

A major Japanese semiconductor manufacturer began preparing for licensing renewal negotiations *three years* in advance. Among other initiatives, it undertook RE of hundreds of the competitor's products and was able to find infringement on many of its patents. It also used the RE results to modify its patents then in the process of being issued, so that when they issued there would be a better infringement case. By the time of the negotiations the semiconductor company was able to present a case of multiple infringements – all backed by solid evidence. This put them in a strong licensing position and they were able to achieve their desired result.

Mergers and acquisitions

Over the past several years, the global business marketplace has seen a flood of mergers and acquisitions. In 2006, U.S. firms alone spent \$422 billion on mergers and acquisitions. The technology sector has been active, with about 150 private equity deals worth \$31 billion in 2006. (Bringardner, 2007).

Intangible assets now comprise over 85% of the market capitalization of companies, and as a result IP is an increasingly important consideration in all business transactions. As U.S. IP attorney Ron Laurie says, "Now IP is starting to wag the dog." (Brookings Institute, 2003 and Bringardner, 2007).

When it comes to major business transactions, such as mergers or acquisitions, prudent acquirers review the patent portfolio in light of their business and IP strategies. This may be a determining factor in the acquisition. Moreover, their due diligence includes evaluating the patents. The value of the patents can significantly affect the value of the deal to the acquirer. And the best evaluation is an audit that includes incontrovertible infringement evidence.

Case 5

Two Asian semiconductor manufacturers each purchased divisions of a company. The patents were jointly owned by the divisions, so they became the subject of a "patent draft". One of the Asian companies

directed their due diligence towards discovering which of the patents best covered an existing aggressor's product. They investigated all the patents, had RE performed on some of the aggressor's products, applied the patents and identified infringement. The resulting "scouting report" directed their selections for the patents they selected in the draft. Drafting the right patents turned around the negotiations with the aggressor. Instead of paying a large amount in royalties, they collected!

Conclusions

Executives in innovation-driven industries are increasingly on the line to consider the value of IP in business transactions. With the volume and value of deals rising, the risks of being wrong have never been higher. Executives must navigate a sea of claims – in white papers, press releases, marketing literature and in patents themselves – about the value of their IP. In this sea, facts are like lifeboats. It is no surprise then that executives are increasingly turning to the story that *products* tell about the innovations and technology they employ.

RE is indispensable in telling this story. The cases discussed here are a small selection from the annals of RE. They follow a common pattern. The best practice companies let their business strategies drive their IP strategies, they review their patent portfolios and optimize them to support their IP strategies, and they carefully evaluate the IP portfolios of acquisition candidates. And finally, they judiciously employ RE to get the facts. This investment in facts more than pays for itself – both in dollars and in achieving business strategies. 🌐

Sources

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