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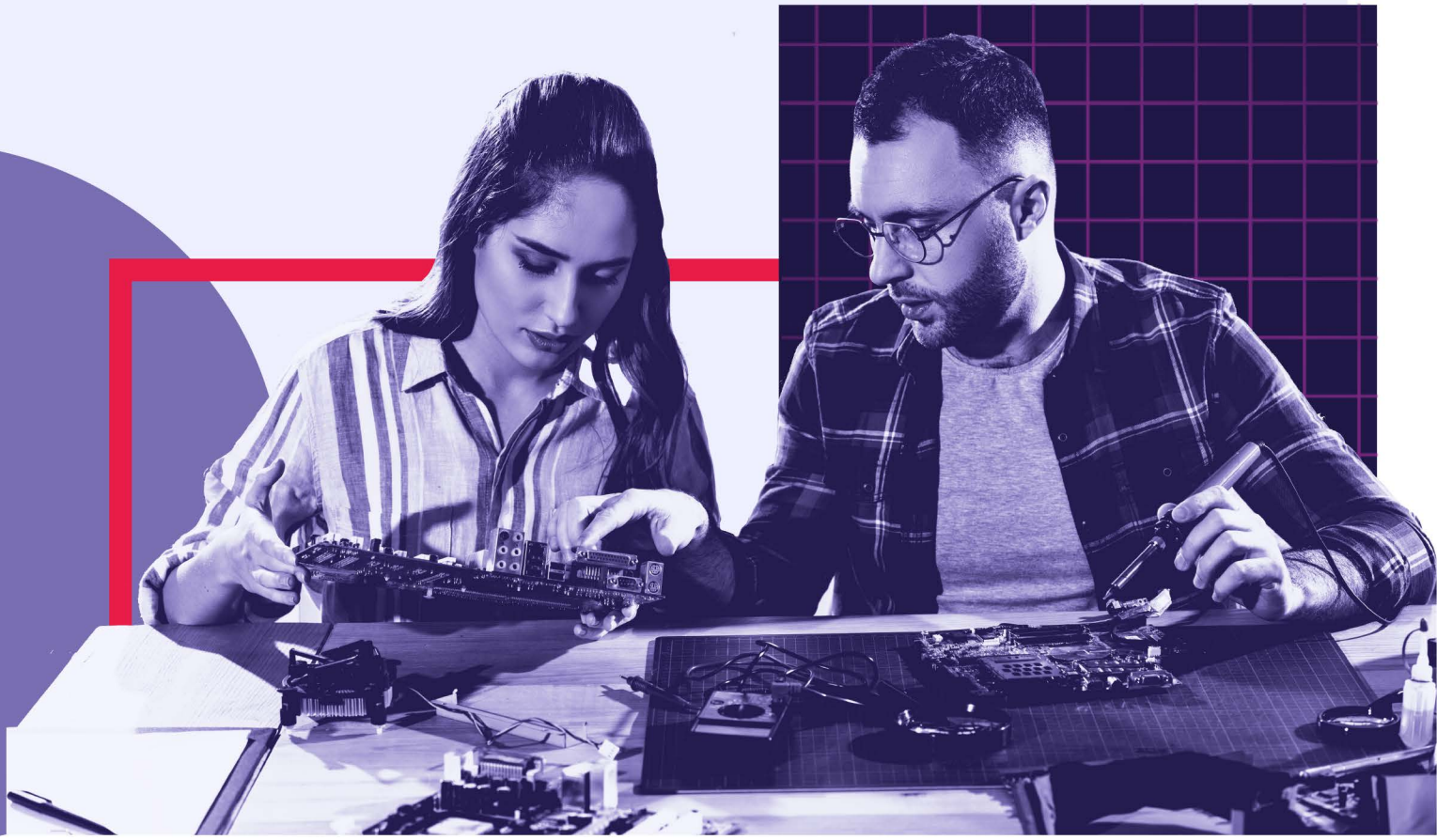
Semiconductor Patent Portfolio Profitability through Reverse Engineering



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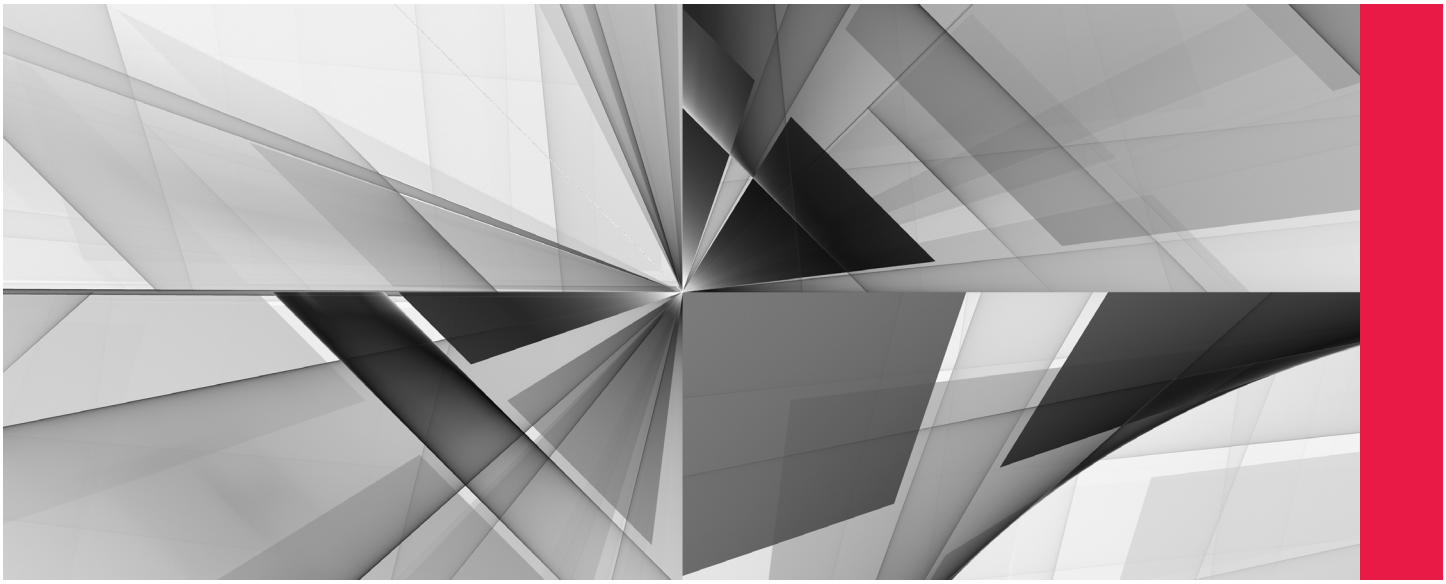

Semiconductor Patent Portfolio Profitability through Reverse Engineering

Semiconductor companies hold untapped profitability in their intellectual property (IP) portfolio—by examining patents through proven methodologies, leaders have an opportunity to create new revenue streams by enforcing an asset's fair value. Patent holders often question the merit of pursuing asset rights, a common perception being the pursuit will not produce a significant return. Advancements in reverse engineering (RE) have made it possible to scale patent enforcement, enabling companies to create new revenue opportunities, effectively monetizing patented holdings.

Semiconductor Patents are Uniquely Valuable

The foundation of almost every technological device is hidden in a maze of microprocessors built on an array of semiconductors. Many of these components are patented, but the holders of the intellectual property rights may be unaware of the product's use or the extent to which the manufacturer has leveraged a license.

In today's competitive market, the owner of a semiconductor system, hardware, or circuit patent must find ways of delivering the highest value from owned assets. While accepting existing earnings from IP saves on costs in the short-term, there is a significant opportunity cost of failing to evaluate patent portfolios. Companies not only face the certainty of diminishing returns in perpetuity, but the enforcement of patent current value goes beyond monetary implications through to brand reputation. This is especially true for those with older, yet valid assets, as transistor density has doubled every 18 months for the past 60 years, resulting in printed circuit boards (PCB) being implemented on integrated circuits (IC). Any product using a patented invention today is likely doing so with an embodiment that could be 50 times smaller than the design disclosed at the time of the invention.

The cost of finding proof is another hurdle—reverse engineering and extracting the circuit in an IC with transistor sizes measured in nanometers can be exorbitant given the time and expertise required. Not all systems miniaturize at the same rate and the different claim elements could be at different levels of the system (e.g., consumer product, PCB, package, or transistor circuit), requiring further investment.

A patent's value is directly related to whether the invention is being used and by whom, how widely is it being used, if it is reasonably detectable—and the cost of proving that usage.

For example, an IC manufacturer seeks to determine if a competitor is using one of the manufacturer's patents. The patent holder must first identify potentially infringing products or applications and then narrow the possibilities to the most likely offending components. The IC manufacturer would then have to conduct a costly teardown of the product or application at issue to understand the disputed item's functionality.

The teardown process requires identifying anything from high-level functional blocks to individual transistors. Patent holders should be able to identify every claim element in the device under review and show how each claim is implemented in a manner consistent with the substance of the patent. Without a thoughtful, methodical approach, this endeavor could be unnecessarily time-consuming, exceedingly expensive, and fail to yield the desired result. Properly calculating a patent's value to justify this effort is, therefore, a critical consideration.

A New Approach to Patent Valuation

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Making these determinations is a particularly unique challenge for semiconductor companies that typically cannot track these patent assets or use, resulting in undervalued IP. Applying a static set of rules for determining value does not account for the pace of change or any potential increase in value over time.

To maximize opportunities, companies should periodically evaluate a patent's worth and potential to the business as it changes over time. This includes evaluating patent portfolios to determine: (1) assets that are valuable enough to monetize through licensing, litigation, or selling; (2) high-potential patents that are undervalued; and (3) patents that are too costly to keep, or are reaching a point of diminished returns.

Tracking Patent Portfolios to Maintain Value

A patent's value to a company can change with business objectives. Whether the business should allow a patent to lapse to limit further investment or to divest it to others who would find it more useful is an important calculus. Companies must therefore constantly cull their patent portfolios to recognize diminished present value or the potential for reduced return. Segregating patents based on market relevance, enforceability, infringement detectability, resale potential, and other factors will enable organizations to determine whether patents are worthy of continued investment.

Given the duration of protection for semiconductors and the accelerated growth rate of the industry, it is likely that semiconductor components will be implemented into an IC. Delaying the usage of a patented item or failing to understand how the asset is ultimately applied could make it harder to detect, especially as the patent's relevance declines. To maintain the value of its IP, a patent holder should always know who is using the invention, the specific products involved, and how widely it is being used.

The Ultimate Goal is Evidence of Infringement That Adds Value

The true opportunity in determining the value of IP is in the ability to enforce its value. The true opportunity in determining the value of IP is in the ability to enforce its value. Without evidentiary proof of a patent holder's claim, companies will not be able to collect revenue owed nor demand fair value for future use.

Consider Philips, a company renowned for its extensive patent portfolio, covering a range of items from medical equipment to streaming media. The company has an entire division—Philips Intellectual Property and Standards—focused on protecting and licensing its growing list of 64,500 patents (which increased by over 1,000 in 2019). It generates significant value from this portfolio by closely monitoring its assets.

Most companies do not have Philip's model of dedicated resources to keep track of intellectual property, nor is this a necessity to fully monetize patent portfolios. Advancements in technology enable today's companies to reap the benefits of having a division without committing to such a material investment.

Companies can avoid a narrow concentration on just RE, which can be prohibitively expensive—and often unsuccessful—and result in a reluctance to pursue potential patent monetization in the future. Semiconductor leaders need to approach this process holistically by partnering with experts who understand both the technical and legal nature of semiconductor inventions, are adept at leveraging digital tools to comprehensively track them, and can cost-effectively value patents based on verifiable proof.

Empower Your Portfolio with Proven Processes

The IC chipset is so uniquely intricate, complex, and miniaturized that obtaining evidence of use is difficult without proper recordkeeping and tracking. Outside IP providers with industry expertise in semiconductor patent monetization utilize proven processes that reduce expenditure and allow semiconductor companies to discover revenue opportunities for existing patents.

These vendors can design tests, experiments, lab procedures, teardowns, high-level printed circuit board extractions and RE methodologies, material characterization, construction analysis, and circuit extraction, among other procedures, to substantiate a patent's elements. This collaboration can also help semiconductor companies identify other users of owned inventions and, most importantly, provide patent-focused evidence.

Case Study: Leading Semiconductor Manufacturer

Patent Renewal Analysis

A leading semiconductor manufacturer with a portfolio of more than 70,000 patent assets wanted to identify opportunities to optimize portfolio maintenance cost. The company had shortlisted a set of over 3,500 patents, covering technology domains such as microprocessors, semiconductor manufacturing, electronic circuits, and IC design, for which the maintenance fee schedule was due. The client partnered with UnitedLex to analyze and identify patents that it could abandon to save on renewals. The UnitedLex team adopted a structured approach to analyze these patents across multiple parameters—including market relevance, enforceability, and technology activity—and identified relatively low-value assets that the company could abandon.

Outcome: UnitedLex marked approximately 35% of those assets under review in the "less recommended" category as other preferred alternatives were in wide use, or the technology was obsolete or due to changes in the client's business strategy, proposing that the client allow these patents to lapse. This saved nearly $10M in annuities.

Driving Efficiency Throughout the IP Lifecycle

In a fast-changing, hyper-competitive world, advancements in technology challenge the thinking of what is possible more frequently than realized. This evolving landscape requires organizations to build smart IP portfolios that enable them to both defend their current portfolios and capitalize on proactive licensing revenue strategies, maximizing the potential for value capture.

UnitedLex helps technology companies and leading law firms unlock and protect their IP assets' value. We have supported the world's leading companies in more than 250 patent litigation matters and achieved over $3B in favorable client settlements and jury verdicts in the past 10 years.

UnitedLex

About UnitedLex

With more than 3,000 legal, engineering, and technology professionals globally, UnitedLex enables legal organizations to thrive in the Digital Age.

Over the past 15 years, we have successfully delivered eDiscovery, Source Code and Document Review, IP Monetization, and Contract Management Improvement services to over 25% of the Global 500, 30% of the Fortune 50, and 50% of the Am Law 100.

Contact UnitedLex to learn more about transforming your Intellectual Property function and our broader programs for Digital Legal Transformation.

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