



SMARTER PERSPECTIVE: TECHNOLOGY PATENTS

Best Practices for Valuation, Assertion and Monetization of Technology Patent Assets

By Gillian McColgan

There was a time, not so long ago, when tangible assets comprised the vast majority of a company's total value. A business' equipment, real estate and other holdings were indeed its strongest suits in securing access to working capital and ensuring liquidity. While this remains the case today for most small- and medium-sized companies, we find that among large corporations, intangible assets including intellectual property (IP) now hold the lion's share of value.

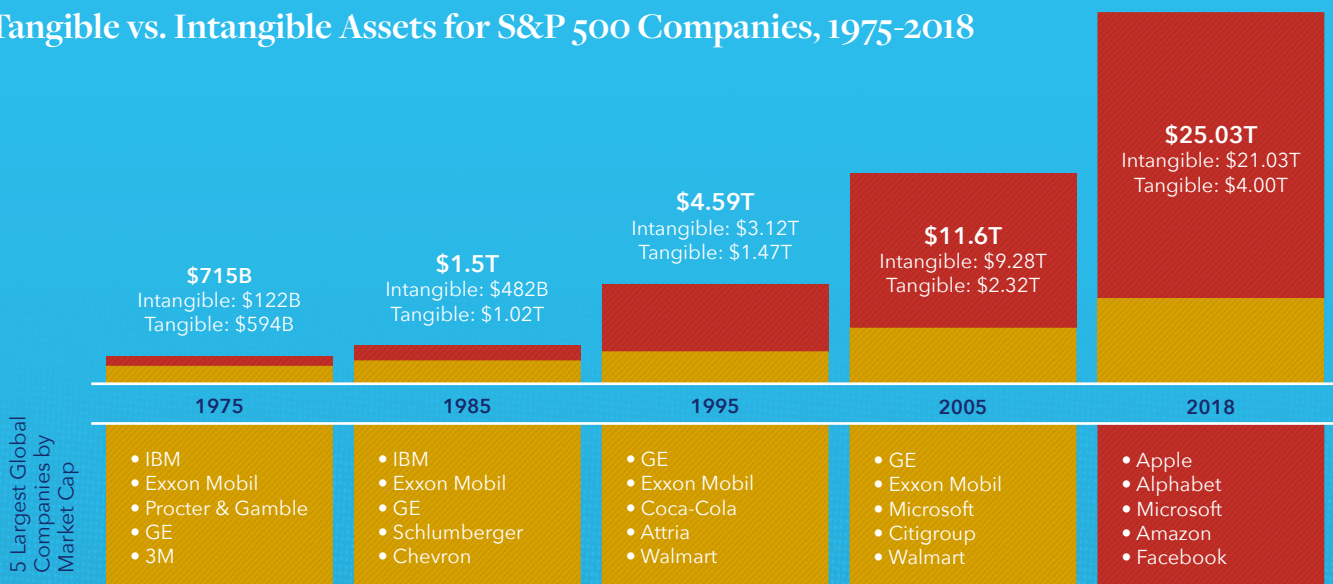
While this evolution has clearly occurred on a global basis, a look at data presented in the 2019 Intangible Assets Financial Statement Impact Comparison

Report, published by Aon and Ponemon Institute and the associated charts below provide further insight into the extent of this shift in the balance of value. According to the report, 84% of the total value of S&P 500 companies in 2018 was attributable to intangible assets. Tangible assets comprised the remaining 16%.

One case in the last decade illustrates, perhaps better than any other since that time, the significance of this transition of value from tangible to intangible assets. Nortel, an early tech innovator which at its peak had a market cap of close to \$300 billion, filed for bankruptcy protection in early 2009. As part of that bankruptcy proceeding, the Nortel

patent portfolio was auctioned off and ultimately purchased by a consortium of six technology companies in 2011. This illustrious group included Apple, RIM, Microsoft, Sony, EMC and Ericsson. The price paid for the portfolio, which contained 6,000 patents and patent applications covering wireless, wireless 4G, data networking, optical, voice, internet, service provider, semiconductors and other patents, was astonishing to market onlookers at the time. At \$4.5 billion, the final cash price was more than three times the amount of industry experts' pre-auction estimates and far outweighed the \$3.34 billion paid for all of the company's other assets and business lines combined.

Tangible vs. Intangible Assets for S&P 500 Companies, 1975-2018



In the mid 1990's, companies' intangible asset values started to exceed the value of their PP&E. This trend has continued with vigor alongside the digital transformation that continues to take place globally.

Source: Aon and Ponemon Institute

Total Value of Intangible Assets in the U.S.

Assets that can be protected by Intellectual Property

Intellectual Property	B2B Rights	Brand
Assets created of the mind <ul style="list-style-type: none"> • Patents • Trademarks • Know-How • Copyrights • Trade Secrets 	Rights of value generated between businesses <ul style="list-style-type: none"> • Broadcast Rights • Franchise Agreements • Licensing Agreements • Sponsorship Agreements • Marketing Rights • Use Rights • Royalty Agreements • Mortgage Servicing Rights 	Value associated with consumer perception <ul style="list-style-type: none"> • Brand Equity • Social Media Influence
Hard Intangibles	Intangible Assets ~\$20-25T	Public Rights
Intangible assets that generally tend to sit on balance sheets as a specific line item at some level <ul style="list-style-type: none"> • Goodwill • Software Licenses • Internet Domains 		Rights of value that are generally in public interest or government handled <ul style="list-style-type: none"> • Drilling Rights • Planning Permission/Zoning • Wireless Spectrum Rights • Carbon Emission Rights • Import Quotas • Water Rights • Air Rights
Data	Non-Revenue Rights	Relationships
Stored information generally on computer systems <ul style="list-style-type: none"> • Software Code • Data (Other) • Databases • Customer Lists • Video/Audiovisual Material • Proprietary/Privileged Information 	Intangible assets that do not tend to affect any revenue generation <ul style="list-style-type: none"> • Noncompetition Agreements • Standstill Agreements 	Value associated with people to people or corporation to corporation networks <ul style="list-style-type: none"> • Customer Relationships • Supplier Relationships

Intangible asset value among companies in the U.S. is estimated at between \$20 and \$25 Trillion dollars. Of the eight types of intangible assets shown in the illustration above, five are intellectual property (IP) related. Source: Aon and Ponemon Institute

Our core team at Hilco IP Merchant Banking (HIPMB) is the very same team that was brought in by Nortel prior to its bankruptcy filing to evaluate and properly value its various patents. During that exhaustive process, we determined that although the company itself was in distress at the time, its patent portfolio most certainly was not. The resulting valuation that we were able to place on that portfolio, and the supporting technical, legal and market justification for that determination, directly impacted the record sale price received at auction.

In any discussion pertaining to patents, it is essential to first understand that they are a "negative right," meaning that as a patent owner, you have the right to exclude others from using your/your company's proprietary innovations. Patents protect inventions and patented inventions must be unique, useful and contain full instructions on their creation. Inventors must file and application to a national Patent Office where it's validity will be assessed by technical experts, with each nation having its own specific set of eligibility criteria. Successful applications result

in a granted patent with a protective term of 20 years. A patent owner must be able to clearly demonstrate from an objective, technical engineering perspective, that another party is using its innovation and is therefore required to pay a royalty for such use. HIPMB specializes in assessing the value of patent holdings. We hold the firm opinion that these valuations, themselves, must be accompanied by a level of comprehensive technical diligence comparable in scope to that which would be applied in reverse engineering of a potential infringer's products to validate that their implementations do, in fact, violate the subject patents.

While obtaining patents that legally establish ownership of technology is a critical first step, this is only the beginning of a company's patent journey. All too often, businesses that aggressively seek and obtain patents, for example, are far less focused or disciplined in establishing a formal plan and executing on that plan to both maintain control of, and leverage the true potential of those assets.

It has never been more essential than it is today for technology companies to commit to proactively protecting and growing their businesses by engaging in the steps that enable them to understand the full content and potential of their patent portfolios and make informed product, technology and investment decisions. Doing so can unlock the true value of these assets, revealing untapped collateral that can be used for investment in, or acquisition of, cutting edge technologies. This previously hidden value can also be put to work to generate new revenue streams via patent monetization and/or divestiture efforts. Lastly, leveraging these assets can strategically strengthen a business and expand opportunities through endeavors such as mergers, joint ventures and subsidiary creation. In our many years providing patent advisory and related services across the technology landscape, we have seen that businesses that embrace this philosophy and undertake such efforts are far better prepared to create strategies that enable them to both combat competitive threats against their patents and drive significant revenue from those assets in the future.

Consider the current COVID-19 crisis in which social distancing and lockdown requirements have impeded the profitability and growth of so many otherwise successful businesses worldwide. While companies across virtually every sector and industry continue to struggle, those with intangible IP assets such as patents and thorough portfolio monetization strategies are able to leverage those assets during this period to offset revenue loss via proactive licensing, sale, strategic alliance, as well as through infringement assertion efforts.

Companies would be well advised to seek proven expertise in developing a comprehensive and tailored patent protection and management strategy. Such an effort should include detailed plans for 1) managing the costs of patent development and maintenance; 2) leveraging the patent portfolio to support regional and global business strategies; 3) benchmarking the portfolio and patenting strategy relative to the market and competitors and;

4) determining the most effective patent monetization strategy. To be considered for engagement, firms should have proven technical analysis capabilities in areas including engineering, finance, and portfolio management. Firms should also follow recognized best practices in the areas of patent mining, market analysis, standards and infringement analysis, reverse engineering and lab services. We address each of these in detail below.

Patent Mining	Market Analysis	Standards Analysis
<p>A comprehensive patent mining effort includes reviewing and assigning scores to each patent or "family" based on rigorously developed, industry accepted metrics:</p> <p>This is directed and targeted via:</p> <ul style="list-style-type: none"> Operational plans for product support, monetization (licensing or divestiture), litigation and defensive efforts Current encumbrances, standard essentiality, technology areas, or relative to competitors <p>And should use a proven workflow process in combination with:</p> <ul style="list-style-type: none"> Expert review, analysis Surveys Machine learning algorithms, commercially available tools and databases 	<p>Conducting thorough competitive intelligence will inform and place context around owned IP to help drive associated business decisions including policies, innovation trends, R&D spend, M&A activity, monetization, and technology transfer strategy.</p> <p>This effort may be structured by:</p> <ul style="list-style-type: none"> Region or country Targets and addressable products <p>And should both define addressability levels for each segment and look for technology adjacencies</p>	<p>Thoroughly evaluating patents to determine whether or not they are essential to industry standards is critical.</p> <p>This effort should include:</p> <ul style="list-style-type: none"> Assessment of declarations made to standards bodies by inventors and companies Discovery of undeclared patents with obligations under general declarations or declarations for parent publications Creation of a list of essential patents and correlation of their standards and technology areas to markets Assignment of scores to each patent or family based on rigorously developed, industry accepted metrics Use of proven workflow process in combination with: <ul style="list-style-type: none"> Subject matter experts, Commercially available tools and databases, Surveys, Expert review and analysis

The Key Deliverable		
The key deliverable of this effort is an annotated scorecard, complete with pivot tables.	The key deliverable of this effort is an estimate of the market size for patented technology over time.	The key deliverable of this effort is a report containing results of the analysis and technology market model.

Infringement Analysis	Reverse Engineering	Lab Services
<p>An ongoing commitment to identification of potentially infringing products is central to protecting and growing a patent portfolio. Acquiring samples of subject products, themselves, may be advantageous under certain circumstances and can significantly aid in this process.</p> <p>Efforts here should include the following components:</p> <ul style="list-style-type: none"> Research and collection of publicly available documentation Reverse engineering as needed to gather evidence of infringement Mapping of each claim limitation to a feature of a product or service with cited evidence of use (EoU) Preparation of EoU charts (Claim Charts) for assertion, litigation and/or defensive purposes Reverse engineering photos and data 	<p>Determining the precise process involved in manufacturing or developing a certain product or feature for the purposes of ensuring successful assertion, requires thorough analysis conducted by highly qualified technology and engineering experts.</p> <p>Both hardware and software reverse engineering involve:</p> <ul style="list-style-type: none"> Identification and acquisition of infringing products Thorough teardown of those acquired products <ul style="list-style-type: none"> Photography and cataloging of each product and its components Identify component functionality and manufacturer Determine Bill of Materials (BOM) for the product by component Circuit analysis Component analysis including X-rays, Scanning Electron Microscopy (SEM) and Transmission Electron Microscopy (TEM) 	<p>The ability to test, deconstruct, examine and document the findings associated with specific subject devices and technology is often critical in determining and demonstrating infringement.</p> <ul style="list-style-type: none"> Lab facilities operated and utilized for these purposes should be capable of performing comprehensive product teardowns for: <ul style="list-style-type: none"> Wireless: Lab emulation and in-field testing: cellular (3G, 4G, 5G), Wi-Fi (802.11x), Bluetooth, location services and others Device Testing: Functional tests, Circuit probing Semiconductors: Component extraction, process analysis, package analysis, circuit analysis

The Key Deliverable		
The key deliverables of this effort are a report containing claim charts listing each claim limitation, cited evidence, and reference to any corresponding portion of the specification as well as reverse engineering photographs and data. The Infringing product, if acquired, should also be provided.	The key deliverable for this effort is a comprehensive report which includes photographs and detailed descriptions of relevant components and features.	The key deliverables for these efforts will vary and are contingent upon the type of analysis performed and data collected.

As specialists in all aspects of semiconductor and communications engineering, Hilco IP Merchant Banking (HIPMB) is a leader in patent-related due diligence including engineering, finance, and portfolio management. With more than 30 years of experience in telecommunications and wireless technologies, our highly experienced team of engineers and technologists has designed networks. We cut our teeth on 1, 2, 3 and 4G and understand at a deep, technical level where 5G is now headed and how it operates. When we perform diligence on patents for valuation purposes or undertake reverse engineering efforts for assertion, in many cases we actually know the individuals and teams who created the hardware and software that we are tearing down. Few in the industry can say the same.

Our semiconductor team built its experience at Broadcom, Agere, LSI, Lucent and AT&T Bell Labs. Our telecommunications team, as referenced earlier, built its experience at Nortel. We

bring all of this knowledge and insight to bear in the work we do on behalf of our clients. In fact, over the course of just the past three years, HIPMB engineers have reverse engineered approximately 250 distinct smartphones, 75 consumer devices and 850 semiconductor chips. We have prepared technical materials for use in patent validity proceedings in the US, UK, Germany and China, have acted as expert witnesses in numerous patent infringement litigation cases, and have provided litigation support to numerous clients. Our work has included the review of patents for standards submissions and delivery of essentiality declarations to multiple standards bodies. Additionally, we have conducted investment diligence on several major patent portfolios that have come to market. Beyond this, our commitment and success is further validated by our own principal investing activities and our work on behalf of leading private equity investors, hedge funds, IP litigation funding firms, investment banks, restructuring and law firms.

Developing a sustainable and monetizable portfolio of high-value patent assets requires data-driven insights on portfolio health, market dynamics and fiscal impact. Whether your business is at the beginning of its patent journey or is well down the road with a sizable portfolio in hand, we can provide guidance and extensive expertise. From technical diligence exercises to large scale due diligence valuations and law firm/litigation assistance in both assertion and defense cases, we continue to be actively engaged by numerous businesses and firms throughout the pandemic period. We also remain in close touch with our many contacts, past clients and partners across Asia, Europe and the Americas. Please reach out to us today if we can be of assistance. We are here to help and welcome the opportunity to leverage our experience and relationships on behalf of your company or organization.



GILLIAN MCCOLGAN IS THE CTO OF HILCO IP MERCHANT BANKING.

Previously, Ms. McColgan was CTO of Marquis Technologies. Prior to Marquis, Ms. McColgan was the CTO of the Rockstar Consortium, where she led the reverse engineering and technical functions, generating assertion packages in support of roughly 100 licensing engagements across four distinct market areas. Ms. McColgan also led Rockstar's Market Analysis function. Prior to joining Rockstar, Ms. McColgan was with Nortel Networks for 25 years in a variety of roles in Europe and North America, the last of which was as CTO of the IP business where her responsibilities included supporting the bankruptcy auction process. Ms. McColgan, in the course of her career, has held senior R&D, Business Analysis, and Product Management positions across wireless, optical, and data networking businesses. Contact Gillian McColgan at 312.690.6931 or gmccolgan@hilcoglobal.com.

Hilco IP Merchant Banking (HIPMB)

HIPMB is a leading provider of Intellectual Property advisory services, integrating IP expertise and technical experience, with established business and market acumen. Our goal is to empower you to protect and grow your business by helping you understand the content and potential of your patent portfolio to make informed IP and technology investment decisions. We accomplish this by working closely with you to mine your portfolio, identify your best patent assets, improve your portfolio through continuation practice and identify products infringing your patents. We can further assist you in leveraging your assets through the reverse engineering of infringing products, demonstration of infringement with solid evidence of use by mapping out the specific details of infringement, as well as by supporting your licensing and litigation efforts. This not only provides a return on your IP investment by generating additional revenue, but strengthens your portfolio through industry recognition of its value.