

Patent Activity in Bankrupt Technology Firms: An Empirical and Case-Based Study

Grant E. Moss

Emory University, Goizueta Business School

Masters of Business Administration Candidate

June 1, 2010

Turnaround Management Association, 2010 Carl Marks Student Paper Competition

Abstract: Intellectual property is a considerably valuable asset for technology companies, but managers often do not fully appreciate and extract value from those assets. In order to determine the perceived value of patents in the context of bankrupt technology firms, I analyzed the patent portfolios of 100 firms with the purpose of developing a better understanding of the management of intellectual property in times of distress. The result is that there is no clear prescription for effectively managing intellectual property, but a limited number of firms did creatively extract value from their intellectual property.

Contents

I. INTRODUCTION	3
II. UNDERSTANDING THE CHARACTERISTICS OF DISTRESSED FIRMS	4
III. PATENT ACTIVITY IN TECHNOLOGY FIRMS.....	6
A. <i>Overview of Intellectual Property</i>	6
B. <i>Joining the Patent Race</i>	8
IV. ANALYSIS OF BANKRUPT TECHNOLOGY FIRMS.....	12
A. <i>Data</i>	12
B. <i>Analysis of Data</i>	14
1. No Patents	16
2. Patents remained active	17
3. Patents abandoned or expired.....	17
4. Patents ultimately transferred to IP acquisition company	20
V. PATENT-BASED TRANSACTION ANALYSIS.....	22
A. <i>Growing Market for IP-based Transactions</i>	22
B. <i>Bankrupt Specific Opportunities - Rise of the §363 sale</i>	28
C. <i>Case Studies</i>	30
1. <i>Metricom, Inc.</i>	30
2. <i>Comdisco, Inc.</i>	36
3. <i>High Voltage Engineering Corporation</i>	38
VI. CONCLUSION.....	41
VII. AUTHOR BIO.....	43
VIII. APPENDIX.....	44

I. INTRODUCTION

Technology firms are faced with numerous challenges including low barriers to entry, high level of competition, large capital requirements to support research and development, rapid technical obsolescence and management inexperience, among other factors. Further, technology firms, especially in the start-up phase, have difficulty obtaining attractive financing due to the limited amount of assets that creditors can use as security for debt. If a firm can adequately balance liquidity needs with market timing, then the firm has a chance of success. The purpose of this paper is to evaluate the value of a firm's intellectual property ("IP") in distressed situations and explore methods of monetizing those assets.

Companies invest billions annually in R&D to differentiate themselves from their competitors and ultimately to offer a superior product in terms of quality, cost or feature superiority. The result of such efforts can include tangible products or intangible assets such as IP. IP is a significant contributor to firm value. It not only provides a defensible competitive advantage but also takes many forms and offers various levels of protection and rights including patents, copyrights, trademarks, etc. By some accounts, intangible assets can account for as much as 70% of the market value of firm. The problem for many firms is implementing a plan to successfully turn this substantial market value into cash to meet the needs the firm.

II. UNDERSTANDING THE CHARACTERISTICS OF DISTRESSED FIRMS

Researchers are constantly proposing reasons why firms fail; however, the answer is relatively simple. Bankruptcy occurs when firms lack sufficient capital to cover the obligations of the business (Boardman et al. 1981).¹ While this seems like an obvious conclusion, the fact that tens of thousands of companies file for bankruptcy each year proves that generating sufficient capital to cover the obligations of a business is truly challenging. Additionally, an unknown number of firms simply have trouble successfully executing their business strategy. Ultimately, the reasons a firm struggle are numerous: inefficient management, overdiversification, insufficient finances and poor timing of products compared to the market.²

In the case of technology companies, the success of R&D programs and the subsequent timing and effectiveness of product releases can be paramount to the livelihood of the company. Firms must invest in sufficient resources to execute their business strategy; however, if the demand for their product changes suddenly, then “[m]isalignment with the environment may expose firms to a liability of obsolescence (Barron et al. 1994).³” Additionally, technology firms face a “commitment to an expensive, dedicated production facility (Ghemawhat 1991) or a specific technology regime (Christensen 1997) [that] can lock a firm into a competitive position from which it may be very difficult to deviate.⁴ Finally, firms invest capital with the goal of developing both a sustainable business model and a set of competitive advantages that remains

¹ Thornhill, Stewart and Amit, Raphael. *Learning About Failure: Bankruptcy, Firm Age, and the Resource-Based View*. Organization Science. INFORMS Vol. 14, No. 5, September–October 2003, pp. 497–509

² Website - <http://www.turnaround.org/assistance/industryrenewal.aspx>

³ Thornhill, Stewart and Amit, Raphael. *Learning About Failure: Bankruptcy, Firm Age, and the Resource-Based View*. Organization Science. INFORMS Vol. 14, No. 5, September–October 2003, pp. 497–509

⁴ *Ibid.*

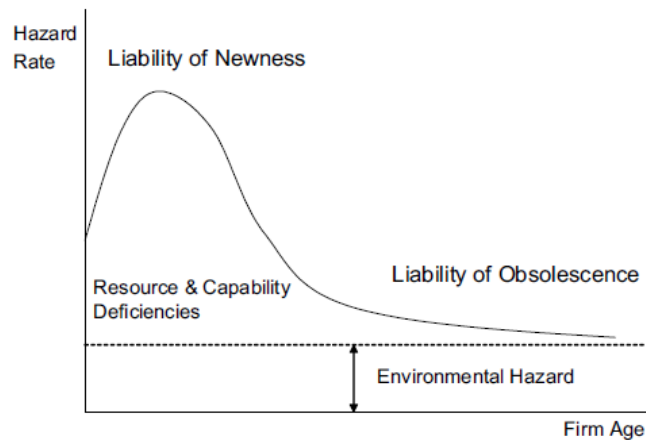
not easily replicated by competitors. Competitive advantage can be derived from a firm's resources and capabilities to the extent that they are valuable, rare, inimitable, and organized to be exploited (Barney 1991).⁵

The factors that contribute to the failure of technology firms are intensified because this industry is driven in large part by start-up firms. Thournhill and Amit describe this complexity. If firms fail because of an inability to adapt to changing competitive circumstances, this represents a significantly different process of failure than that articulated by the liability of newness. As presented in Figure 1, age is not the prime determinant of mortality, despite the strong correlative evidence that age is a strong predictor of failure.⁶ The high mortality rate among young firms, and the lower exit rates among older firms, is consistent with a model of resource deficiencies early in life and rigidity later. This interpretation extends both the resource-based view and the population ecology perspective on firm failure dynamics. When it comes to meeting the ever-changing needs of competitive environments, younger firms are typically more nimble compared to older firms.

⁵ *Ibid.*

⁶ *Ibid.*

Figure 1 Firm Age and Mortality Risk



These challenges further require an evaluation of the sources and uses of a firm's capital in order to determine if a company has the internal strength and alignment to survive challenging times. From a tactical perspective, managers must have a creative eye for unlocking value from a firm's assets.

III. PATENT ACTIVITY IN TECHNOLOGY FIRMS

A. *Overview of Intellectual Property*

IP refers to creations of the mind: inventions, literary and artistic works, and symbols, names, images, and designs used in commerce. IP is divided into two categories: Industrial property, which includes inventions (patents), trademarks, industrial designs, and geographic indications of source; and Copyright, which includes literary and artistic works such as novels, poems and plays, films, musical works, artistic works such as drawings, paintings, photographs and

sculptures, and architectural designs.⁷ The focus of this paper will be patents. A patent is an intellectual property right granted by the Government of the United States of America to an inventor “to exclude others from making, using, offering for sale, or selling the invention throughout the United States or importing the invention into the United States” for a limited time in exchange for public disclosure of the invention when the patent is granted.⁸

Companies and individuals are turning more attention to the potential value of patents. From 1980 to 2009, the number of issued U.S. patents rose at a compounded annual growth rate of 14.9%, as illustrated in the Table 1. Further, from 1998 through at least 2009, the U.S. Patent Office issued over 150,000 patents per year.⁹

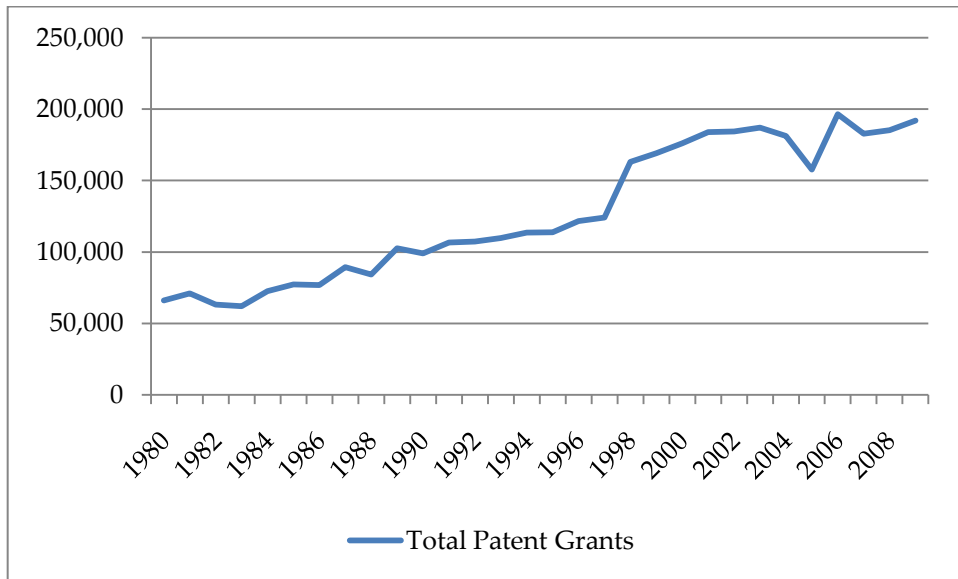


Table 1

⁷ <http://www.wipo.int/about-ip/en/>

⁸ U.S. Patent and Trademark Website - <http://www.uspto.gov/patents/index.jsp>

⁹U.S. Patent and Trademark Website - www.uspto.gov

Companies must invest significant resources in engineering and legal resources needed to file for and maintain a patent, with the average cost of obtaining patent protection ranging from \$10,000 to over \$100,000.¹⁰ If the U.S. Patent Office ultimately issues a patent, the company must then pay significant fees throughout the life of the patent, which lasts 20 years from the date of filing the patent application. In the United States, the patent owner must also pay maintenance fees approximately every 4 years after the patent is granted, as illustrated in Table 2.¹¹

Date of Fees Due (from issuance)	Small Entity	Large Entity
3.5-year	\$980	\$490
7.5-year	\$2,480	\$1,240
11.5-year	\$4,110	\$2,055

Table 2

Further, if a company determines that international patent protection is needed, the additional maintenance fees in the respective countries can be substantial.

B. Joining the Patent Race

Numerous studies have attempted to characterize the relationships between corporate performance, research and development and patent activity. For example, a strong correlation

¹⁰ Lloyd, Mike. Tell Me Again-Why Should I Spend Money On Filing Patents? *les Nouvelles*, pp. 37-41. March 2010

¹¹ The U.S. Patent Office breaks maintenance fees into two categories, "Large Entity" and "Small Entity". According to the U.S. Patent Office, a "small entity" can include: a person, a small business concern, or a nonprofit organization. A business that is considered a "small entity" meets the following two criteria: (a) Whose number of employees, including affiliates, does not exceed 500 persons; and (b) Which has not assigned, granted, conveyed, or licensed (and is under no obligation to do so) any rights in the invention to any person who made it and could not be classified as an independent inventor, or to any concern which would not qualify as a non-profit organization or a small business concern under this section. - Title 13: Business Credit and Assistance, § 121.802 - <http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr;sid=fc905b5662aa1609c60fd775083b5ec3;rgn=div8;view=text;node=13%3A1.0.1.1.16.1.272.50;idno=13;cc=ecfr>

between R&D expenditures and patents exists (Trajtenberg [1990]).¹² The logic is simple; companies invest in developing new technologies and processes to develop advantages over their competitors. Research by consulting firm Booz Allen Hamilton suggests that there is “no relationship between R&D spending and the primary measures of economic or corporate success, such as growth, enterprise profitability, and shareholder returns”.¹³ Further, Booz Allen Hamilton found that “patents don’t always lead to profits”.¹⁴ Booz Allen Hamilton does suggest that “at the spending levels represented by the Global Innovation 1000, companies can maximize their return on innovation through better processes for ideation, project selection, development, and commercialization.”¹⁵ Apple’s Steve Jobs understood this idea in 1996. According to the Booz Allen Hamilton report, Jobs led an extensive review of Apple’s R&D efforts. Ultimately, Jobs cut a large percentage of Apple’s projects, focusing on those with the greatest potential and ultimately produced many well-known products including the iMac, iBook, iPod and iTunes.¹⁶

With the value of patents in question, why would a firm pursue such an asset? The reasons vary considerably, but they include clarification and validation of research capabilities, ego and reputation enhancement, defense against infringement claims and fundraising. Firms also

¹² Blonigen, Bruce A. and Taylor, Christopher T. *R&D Activity and Acquisitions in High Technology Industries: Evidence from the U.S. Electronic and Electrical Equipment Industries*.

¹³ Jaruzelski, Barry, et. al. *The Booz Allen Hamilton Global Innovation 1000: Money Isn’t Everything*. Strategy+business Issue 41, Winter 2005.

¹⁴ Article titled *No Relationship Between R&D Spending and Sales Growth, Earnings, or Shareholder Returns*. October 11, 2005. www.boozallen.com

¹⁵ Jaruzelski, Barry, et. al. *The Booz Allen Hamilton Global Innovation 1000: Money Isn’t Everything*. Strategy+business Issue 41, Winter 2005.

¹⁶ Jaruzelski, Barry, et. al. *The Booz Allen Hamilton Global Innovation 1000: Money Isn’t Everything*. Strategy+business Issue 41, Winter 2005.

pursue patents as an offensive asset used to reap financial gains through licensing or sale. Authors Gans and Stern (1997) explored the patent race and described that the relationship between R&D intensity and licensing/acquisition activity may be theoretically ambiguous. The research proposes two firms that compete in a patent race – an incumbent firm and an entrant firm.

Gans and Stern find that if the new entrant wins the patent battle and when the resultant expected licensing fee (or acquisition cost) is small, the incumbent considers the entrant's research as an imperfect substitute for its own research; i.e. the incumbent's and entrant's research activities are strategic substitutes. In contrast, when the expected licensing fee is large, they are strategic complements, which is consistent with the traditional literature on patent races.¹⁷

To better quantify the competitive example described above, Booz Allen Hamilton also compared innovation trends in the top 1,000 global firms based on their spending on the R&D process to financial performance. One aspect of Booz Allen Hamilton research was the relationship between market capitalization growth, sales growth, and the number of patents held by the firm. The table below presents these variables for numerous diverse industries and is sorted by “Sales Growth; <40 Patents”. This data is critical for the context of this report in many ways. First, the industries that are represented (highlighted) are consistent with the direction of this paper, which focuses on technology companies. Second, the study provides two sets of data based on the number of patents held by a company.

¹⁷ Blonigen, Bruce A. and Taylor, Christopher T. *R&D Activity and Acquisitions in High Technology Industries: Evidence from the U.S. Electronic and Electrical Equipment Industries.*

The Booz Allen Hamilton data is consistent with the bankruptcy / patent data that I reviewed. In the data that I reviewed, the average number of patents held across all firms is 41.2. In the Booz Allen Hamilton study, four of the top six relevant industries (highlighted in yellow) with companies with fewer patents typically garnered more sales growth across relevant industries; however, the trends in the market cap growth are split.

Industry	1999 - 2004			
	Market Cap Growth; <40 Patents	Market Cap Growth; > 40 Patents	Sales Growth; <40 Patents	Sales Growth; >40 Patents
Health	8.40%	1.50%	14.10%	5.50%
Telecom	-8.70%	-14.80%	12.90%	4.00%
Aerospace	15.60%	11.60%	11.80%	6.70%
Computing & Electronics	-3.60%	3.10%	11.50%	5.30%
Software & Internet	-8.40%	7.50%	11.00%	19.50%
Technology	7.00%	2.60%	8.40%	5.60%
Chemicals & Energy	10.70%	-12.40%	7.80%	4.70%
Industrials	9.10%	1.60%	6.40%	3.30%
Auto	12.70%	1.00%	6.30%	6.50%
Consumer	2.00%	4.70%	4.50%	7.30%

Table 3

In addition to organic growth, R&D activity is a good predictor for future transactions. One researcher finds that acquisition or licensing activity may be important in determining firm survival and growth.¹⁸ The data used to examine the relationship between R&D intensity and acquisition activity was from over 200 firms in the U.S. electronic and electrical equipment industry from 1985 to 1993. The results show a strong negative correlation between R&D intensity and acquisition activity; in other words, low R&D firms in these industries are more likely to participate in the acquisition market.¹⁹ One reason for a firm's decision for a R&D-

¹⁸ *Ibid.*

¹⁹ *Ibid.*

focused company not to make acquisitions is because of an internal pride of their own research. As such, I have seen firsthand that industry-leading companies have explicitly said that they do not review external submissions of new technology or products, period.

IV. ANALYSIS OF BANKRUPT TECHNOLOGY FIRMS

A. Data

In order to understand the importance of patents in bankrupt companies, I analyzed the patent portfolios of a number of technology companies. These companies had filed for Chapter 11 bankruptcy and had in common the following characteristics: A) company had assets worth \$100 million or more at the time of filing, measured in 1980 dollars, and B) company was required to file 10-K's with the SEC.²⁰ The original data set included over 880 bankruptcy filings. Table 4 below provides descriptive statistics for the firms that I analyzed.

	(in millions\$)			
	Average	Median	Minimum	Maximum
Total Assets, Current\$	\$ 3,227	\$ 777	\$ 259	\$ 125,055
Total Liabilities, Current\$	\$ 1,746	\$ 211	\$ -	\$ 43,481
Total Equity, Current\$	\$ -	\$ -	\$ -	\$ -
Total Sales, Current\$	\$ 1,472	\$ 398	\$ 0	\$ 46,371
No. of Months in Bankruptcy	11	9	-	43
U.S. Patents	42	1	-	2,213

Table 4

Based on a careful analysis of each company's Standard Industrial Classification Code (SIC codes), I was able to remove all companies that were not relevant to the "technology only" screen. As a result of filtering the universe of cases captured in the UCLA database, 100 unique

²⁰ LoPucki, Lynn. Bankruptcy Research Database as of April 13, 2010. UCLA.

bankruptcy filings fit the abovementioned criteria. Further, I sorted the remaining companies based on whether or not the company emerged from bankruptcy. Table 5 below summarizes the various SIC codes and the number of companies that either emerged from bankruptcy or those that did not.

SIC CODE	SIC CODE DESCRIPTION	Emerge	Not Emerge	Total
3357	Drawing and Insulating of Nonferrous Wire	1		1
3571	Electronic Computers	1		1
3577	Computer Peripheral Equipment, Not Elsewhere Classified	1		1
3620	Electrical Industrial Apparatus		1	1
3663	Radio and Television Broadcasting and Communications Equipment	1		1
3672	Printed Circuit Boards	2	1	3
3679	Electronic Components, Not Elsewhere Classified		2	2
3691	Storage Batteries	1		1
3695	Magnetic and Optical Recording Media	2		2
3861	Photographic Equipment and Supplies		1	1
4812	Radiotelephone Communications	7	7	14
4813	Telephone Communications, Except Radiophones	18	18	36
4822	Telegraph and Other Message Communications		1	1
4833	Television Broadcasting Stations	1	2	3
4841	Cable and Other Pay Television Services	7	1	8
4899	Communication Services, Not Elsewhere Classified	2	3	5
4931	Electric and Other Services Combined	1	1	2
7372	Prepackaged Software	3	3	6
7373	Computer Integrated Systems Design		1	1
7374	Computer Processing and Data Preparation and Processing Services	1		1
7375	Information Retrieval Services		2	2
7377	Computer Rental and Leasing		1	1
7379	Computer Related Services, Not Elsewhere Classified	1	2	3
7389	Business Services, Not Elsewhere Classified	1	2	3
	Total	51	49	100

Table 5

The second step in preparing the data for this project was to define a relevant timeframe. Approximately 86% of the bankruptcy filings occurred between 1997 and 2006. Therefore, the

14% of data before 1997 and after 2006 was eliminated from this study. The distribution of the number of firms that filed bankruptcy over the period under review is provided in Table 6. Without question, a majority of the bankruptcy filings were made in 2001 and 2002, consistent with the fall-out from the .dotcom bust.

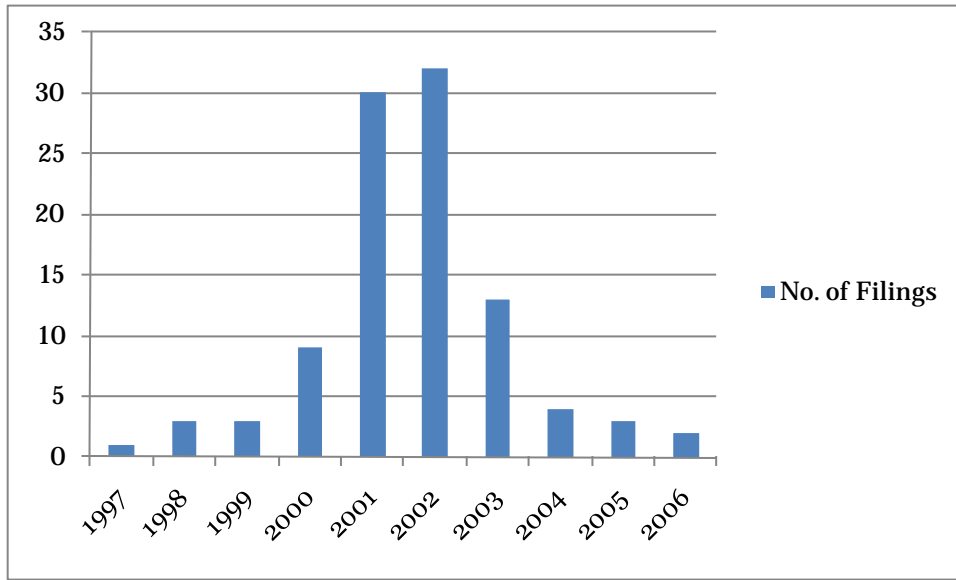


Table 6

The final step of the research process was to identify the patent assets of these companies. Databases such as Delphion and the U.S. Patent Office allow for the search of patents and patent applications based on assignee name. This database and search process allowed me to match which companies that filed for bankruptcy actually owned any U.S. patents.²¹

B. Analysis of Data

The analysis of bankrupt firms and their patent portfolios yields an indication of the perceived benefit of a patent. Table 7 summarizes the breakdown of bankrupt companies that owned

²¹ Caveats to this phase of the research process must be disclosed; not all companies that own patents actually assign the rights to the companies. Therefore, those companies may have inadvertently been overlooked as a patent owner.

patents and does not differentiate if the company emerged from bankruptcy²². The data thus far does not provide any conclusive evidence regarding a company’s likelihood to pursue a strategy of patenting their innovations. In this sample, companies have about a 50/50 chance of owning at least one issued U.S. patent.

	No. of Firms
Patents	52 (52.0%)
No Patents	48 (48.0%)
Total	100

Table 7

In order to get a better understanding of the value of a patent portfolio to a bankrupt company, I further filtered the data by distinguishing between companies that emerged from bankruptcy and those that did not, summarized in Table 8.

	Emerged	Not Emerged	Total
Patents	28 (54.9%)	24 (49.0%)	52 (52.0%)
No Patents	23 (45.1%)	25 (51.0%)	48 (48.0%)
Total	51	49	100

Table 8

Based on the data above, the presence of a patent portfolio by a bankrupt company appears to position a company slightly better to emerge from bankruptcy and salvage value for creditors and shareholders. Management and reorganization professionals need to understand this

²² In order to remain consistent, “emerging from bankruptcy” is defined as a company that has at least one operating company that emerged from bankruptcy under the confirmed plan. According to the UCLA guidelines for their bankruptcy database, the basic principle is to count a company as emerging if it is an operating company that, if it refiled, should fairly be counted as a refiling. A company acquired by another at confirmation is included if it is maintained as a separate business, even if the acquirer contributes capital or credit enhancements. The reasoning is that the emerging company is as much a “stand alone” company as one that received an infusion of capital from a new investor – at confirmation or immediately after. Alternatively, no company emerges if the assets are integrated into an existing business of the acquirer or merger partner, during bankruptcy or pursuant to the plan, unless the merger partner is small in relation to the company. Additionally, conversions and §363 sales of all or substantially all assets are considered liquidations because no plan of reorganization is confirmed, which 22% of the subject companies pursued. – LoPucki, Lynn. Bankruptcy Research Database as of April 13, 2010. UCLA.

relationship. Too often, these stakeholders do not understand the value of patents, and certainly do not understand the complex process of extracting this value. The obvious question now remains; how specifically have the stakeholders of these bankrupt firms realized value from this IP? What decisions must be made? What are the costs? The benefits?

1. No Patents

Not all technology companies decide to invest in patenting products or methods of providing a service. This decision may be based on the cost of obtaining such protection or may be based on a more altruistic belief that innovation should be open to all. Additionally, technology companies are often resellers of third-party products. Thus, they do not need patent coverage and may be covered by indemnification agreements. In this sample, approximately 48% of companies did not have any identifiable patents.

	Emerged	Not Emerged	Total
No Patents	23 (47.9%)	25 (52.1%)	48 (48.0%)
Total	51	49	100

Table 9

One observation from the companies that did not have any identifiable patents is that there was a heavy concentration of these companies among two similar SIC Codes, 4812 – Radiotelephone Communications and 4813 – Telephone Communications, Except Radiophones. These 28 companies represent 55% of all of the companies that filed for bankruptcy protection without any patents.

2. Patents remained active

As mentioned earlier, the cost of maintaining a patent can be substantial. Based on a random sampling of patents owned by each of the firms, approximately 28% of the firms did not allow any of their patents to expire. The commitment of management to maintaining the value of the patent portfolio is apparent. Table 10 below summarizes the number of companies that kept the patents alive and the status of the companies following bankruptcy.

	Emerg	Not Emerg	Total
Patent Remained Active	16 (57.1%)	12 (42.9%)	28 (28.0%)
Total	51	49	100

Table 10

3. Patents abandoned or expired

As a company approaches an ultimate bankruptcy filing, management often decides to cease the payment of the maintenance fees. After working with numerous distressed or bankrupt companies, a few important reasons emerge, including cost savings, lack of understanding of IP and a shift of management goals.

Table 11 below summarizes the number and status of firms that let at least one patent expire. Companies that *did* emerge from bankruptcy were more likely to let the patents expire. In total, 19% of firms sacrificed the value of their IP assets in order to save money in the short-term.

	Emerg	Not Emerg	Total
Patents Abandoned or Expired	12 (63.2%)	7 (36.8%)	19 (19.0%)
Total	51	49	100

Table 11

The following section analyzes the patent accumulation trends of two randomly selected firms from the dataset, Applied Magnetics and Recoton. The firm Applied Magnetics, an independent manufacturer of magnetic recording heads, head-gimbal assemblies and headstack assemblies, successfully emerged from bankruptcy; whereas Recoton, a consumer electronics accessories manufacturer, did not emerge from bankruptcy^{23,24}. The tables below illustrate two aspects of each firm's patent portfolio. First, the red line indicates the cumulative number of patents the company held through the estimated expiration of the last patent. The blue bar lines indicate the number of patents that expired each year. Based on this analysis, Applied Magnetics and Recoton let 36% and 54% of their patents expire prematurely as a result of failure to pay maintenance fees, respectively.

²³ (Applied Magnetics) Website - <http://www.allbusiness.com/company-activities-management/financial-performance/6381049-1.html>

²⁴ (Recoton) Website - <http://investing.businessweek.com/businessweek/research/stocks/private/snapshot.asp?privcapId=299475>

Applied Magnetics (emerged from bankruptcy)

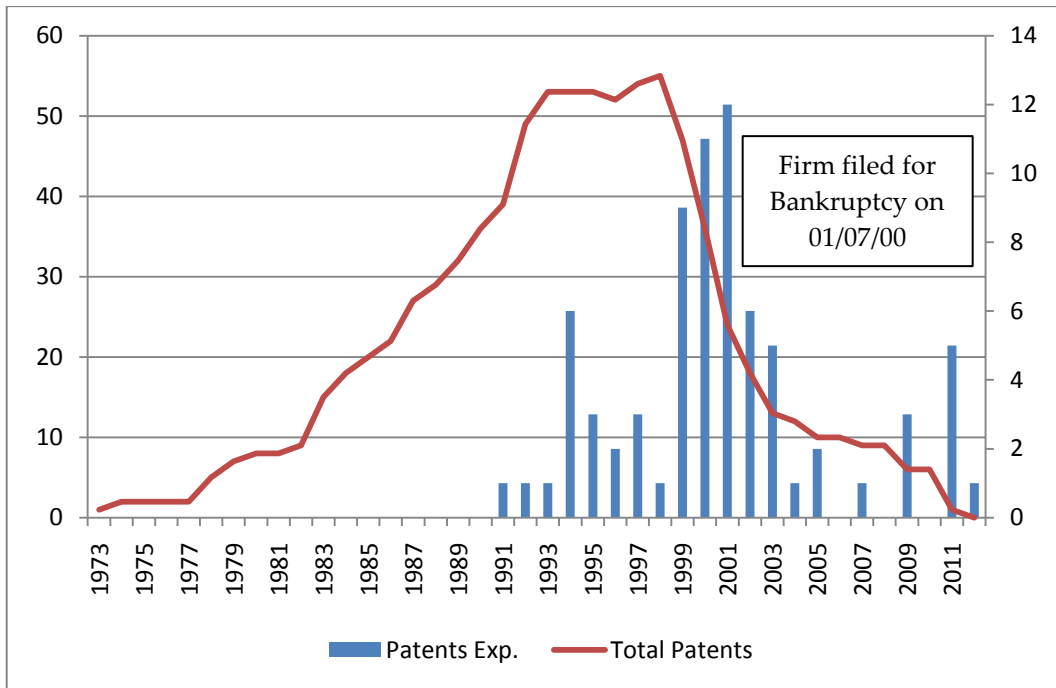


Table 12

The intent of Applied Magnetics' management in the graph above indicates that the management of Applied Magnetics decided to make a wholesale cut to their patent portfolio to conserve cash. Applied Magnetics emerged from bankruptcy after 22+ months, in November 2001, as Innovative Micro Technology, Inc., albeit with a much smaller patent portfolio.²⁵

Understanding Recoton's strategy regarding their patent portfolio is more difficult, which may be one of the causes that led to their ultimate bankruptcy. The graph below does indicate that Recoton did let many of their patents expire prior to bankruptcy. However, decision to cut the patent portfolio relative to the timing of the bankruptcy is not as strong as in the case of Applied Magnetics.

²⁵ LoPucki, Lynn. Bankruptcy Research Database as of April 13, 2010. UCLA.

Recoton (did not emerge)

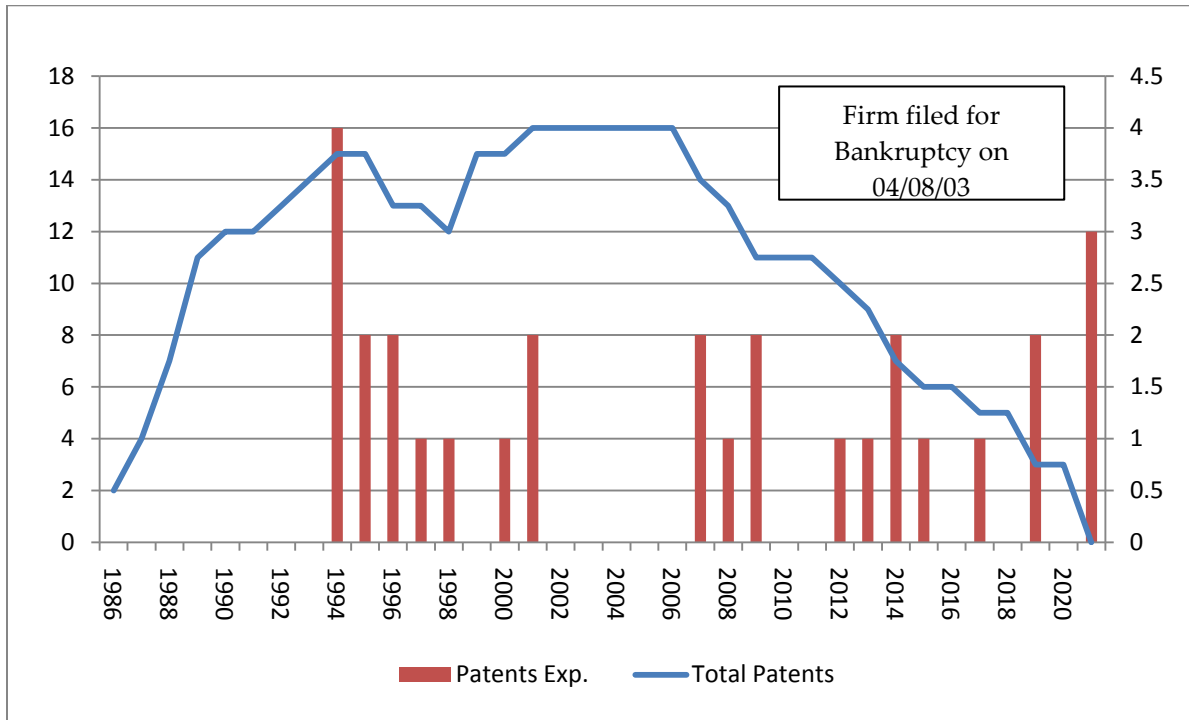


Table 13

4. Patents ultimately transferred to IP acquisition company

The last category of management action is probably the most important to shareholders and stakeholders. How many companies ultimately made money from their patent assets? Table 14 below summarizes the number of firms that ultimately transferred a portion of their assets to an IP acquisition company. Companies that *did* emerge from bankruptcy did not appear to transfer any assets to IP acquisition companies; however, only 5% of the firms that *did not* emerge ultimately transferred their patents assets to an IP acquisition company.

	Emerged	Not Emerged	Total
Patents Transferred to IP Company	0 (0.00%)	5 (100.0%)	5 (5.0%)
Total	51	49	100

Table 14

Table 15 below summarizes six transactions whereby the patents of the five bankrupt companies referenced in Table 14 were eventually transferred to IP acquisition companies. The ultimate reason for the acquisition of these assets is unknown. In some cases, the IP acquisition companies felt that industry participants were selling products that potentially infringed the newly acquired patents and could extract value from these assets through developing enforcement licensing programs

No.	Date of Bankruptcy	Bankrupt Firm	IP Acquisition Co.	Date of IP Transfer	No. of Patents	Post-Transfer IP Activity
1	4/4/2001	World Access, Inc.	Wi-Lan	5/29/2009	4	Unknown
2	7/2/2001	Metricom, Inc.	WiAV	4/29/2008	2	Yes
3	7/2/2001	Metricom, Inc.	Wi-Lan	3/2/2010	2	Yes
4	7/16/2001	COMDISCO,INC.	Zamora Radio, LLC	4/25/2008	1	Yes
5	12/31/2001	DTI Holdings, Inc.	AUCTNYC 11 LLC (Intellectual Ventures)	10/25/2007	1	Unknown
6	2/8/2005	High Voltage Engineering Corp.	PLR Transfer Holdings, LLC (Intellectual Ventures)	6/30/2007	2	Unknown

Table 15

The following section provides an in-depth analysis of the IP transaction market and details of the transactions with Metricom, Comdisco, and High Voltage Engineering.

V. PATENT-BASED TRANSACTION ANALYSIS

A. *Growing Market for IP-based Transactions*

Over the last ten years, creative transactions solely involving IP have risen dramatically. The transactions range from the buying and selling of patents to securitizing royalty streams from licensed patents or brands.²⁶ Additionally, patent owners seek licensing arrangements with industry participants. Detailed information on the marketplace for IP transactions is not widespread, so this section will shed factual and anecdotal light on the activity to date, particularly patent sales and licensing efforts.

The patent transaction marketplace has three (3) primary participants: buyers, sellers and intermediaries that match the buyers and sellers. The sellers include public and private companies, individual inventors, investment firms, etc. Next, the buyers include operating companies and patent investment firms, often referred to as *non-practicing entities* (NPEs) or IP acquisition companies. NPEs actively acquire patents for a variety of “offensive” and “defensive” reasons. NPEs with an offensive strategy acquire patents to enforce the patent rights by identifying companies that have potentially infringing products through filing a patent infringement lawsuit. Alternatively, defensive NPEs typically acquire patents on behalf

²⁶ On May 26, 2006, a consortium of three private equity firms, The Carlyle Group, Bain Capital and Thomas H. Lee Partners, which collectively acquired Dunkin’ Brands for \$2.425 billion, closed a \$1.7-billion securitization of substantially all of the revenue-generating assets of Dunkin’ Brands Inc. Dunkin’ Brands is an industry-leading quick service restaurant franchisor, which franchises the Dunkin’ Donuts, Baskin-Robbins and Togo’s brands in the United States and throughout the world. This innovative form of securitization required Dunkin’ Brands to contribute its existing assets to several bankruptcy-remote special purpose vehicles and obligates Dunkin’ Brands to contribute all future revenue generating assets to these various entities. The securitization consisted of the issuance of \$1.5-billion of senior fixed rates notes, \$100-million of subordinated fixed rate notes and a \$100-million variable funding senior notes revolving facility and the proceeds of the securitization will be used to repay debt incurred in connection with the leveraged buyout of Dunkin’ Brands. -<http://www.paulweiss.com/resources/news/Detail.aspx?news=1290>

of a consortium of operating companies in order to mitigate the threat of patent-related litigation.

Over the last few years, numerous organizations have emerged to advise clients on evaluating, marketing and commercializing patents. Many of these firms offer buy- and sell-side services as well as valuation, strategic consulting and patent landscape mapping services. In general, there are numerous approaches to marketing patents for sale including private marketing, public auctions and online exchanges. There are benefits and costs to each approach that must be considered on a case-by-case basis, especially to determine which option is most appropriate for the IP owner.

Over the last 5+ years, the patent sale market has been active with a flood of patent sales. Due to the unprecedented interest in acquiring patents, the value and frequency of such transactions grew significantly. A majority of patent transactions are confidential, making comparability of such transactions almost impossible. However, some companies do provide information on individual transactions, especially if disclosure is required by a regulatory organization or bankruptcy court. Below are examples of the value of a bankrupt firm's patent portfolio.

- Commerce One Inc. held a fire sale in the U.S. Bankruptcy Court for the Northern District of California in 2004, auctioning off not only the company but also the company's intellectual assets, including 39 Web services patents.²⁷ Ultimately, Novell

²⁷ Article titled *Commerce One Patents Auctioned Off* dated December 8, 2004 - <http://www.eweek.com/c/a/Web-Services-Web-20-and-SOA/Commerce-One-Patents-Auctioned-Off/>

acquired the company and patents under the guise of the company JGR Acquisition Inc. for \$15.5 million.²⁸

- Bankrupt Nortel Networks Corp. could make as much as \$1.1 billion by selling its technology patents, Bloomberg's BusinessWeek reported on Wednesday [May 26, 2010]. Peter Conley of MDB Capital Group LLC told the news magazine the intellectual property is worth between \$750 million and \$1.1 billion. A patent lawyer in Virginia agreed with that assessment, as long as any deal includes Nortel's LTE patents, Bloomberg said.²⁹

2009 marked a new direction in the patent monetization landscape as larger buyers are slowing their acquisitions and more NPEs are stepping in to acquire and license patents to operating companies. As mentioned previously, the nature of these transactions are typically confidential; however, a limited amount of data has been collected for actual transactions from 2002 – 2008.

Table 16 below was prepared by patent brokerage firm ThinkFire.³⁰

²⁸ Article titled *Novell discloses it bought e-commerce patents* dated May 3, 2005 - <http://www.nytimes.com/2005/05/02/technology/02iht-novell.html>

²⁹ Article titled *Nortel Patents Could Generate \$1.1B* dated May 27, 2010 - <http://www.billingworld.com/news/2010/05/nortel-could-generate-more-than-one-billion-dollars-by-selling-patents.aspx>

³⁰ The Patent Transaction Market at a Crossroads. IAM Magazine, Issue 34

Factor	Overall
Years covered	2002-2008
Number of Transactions	309
Total Gross Deal Proceeds	\$573m
Maximum Cost / U.S. Issued and worldwide	\$12m
Mean Cost / U.S. Issued and worldwide	\$383k
Median Cost / U.S. Issued and worldwide	\$110k

Table 16

NPEs generally drive the direction of the patent transaction marketplace. It is estimated that investments in NPEs grew to between \$6 billion and \$8 billion between 2000 and 2008, providing a large pool of capital to fund offensive legal actions against operating companies, among other reasons. Further, NPE litigation has grown 300% over the last decade. Since 2006 alone, NPE litigation filings have increased 50%.³¹ This trend has been fueled by a significant increase in the number of patents awarded over the last several decades. Additionally, financial investors speculate on potentially massive returns compared to the relatively modest cost of purchasing patents on the open market (where the median price for a patent is approximately \$100,000 and the mean is approximately \$400,000).³² As the tables below illustrate, the NPE threat is a significant risk for operating companies.³³ Despite the slight drop in lawsuits filed by NPEs in 2009, I believe that the number patent lawsuits filed by NPEs will continue to rise.

³¹ Website - http://www.rpxcorp.com/svc_problem.html

³² Website - <https://www.patentfreedom.com/research-lot.html>

³³ Website - http://www.rpxcorp.com/svc_problem.html

Patent Lawsuits Involving NPEs, 1998 - 2009³⁴

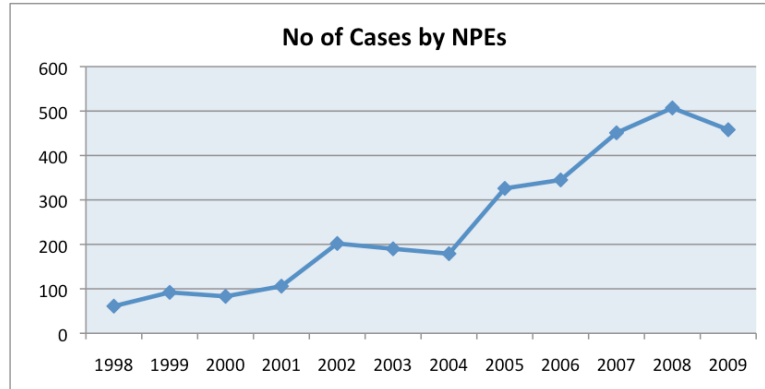


Table 17

Table 18 below summarizes the firms that have been defendants in the most patent infringement lawsuits filed by NPEs as of January 1, 2010.³⁵ It should be no surprise that the most targeted firms are also the most recognizable industry leaders.

No.	Company Name	2004	2005	2006	2007	2008	2009	Total
1	Apple	4	3	3	12	13	21	56
2	Sony	4	7	5	10	12	17	55
3	Dell	4	3	8	10	8	17	50
4	Microsoft	3	5	6	12	13	10	49
5	HP	6	3	5	10	11	13	48
5	Samsung	5	4	8	14	11	6	48
7	Motorola	1	6	4	12	14	9	46
8	AT&T	2	2	6	17	10	7	44
9	Nokia	2	7	3	10	9	11	42
10	Panasonic	6	8	4	6	5	11	40
11	LG	-	7	3	12	9	8	39
12	Verizon	3	3	3	14	7	7	37
13	Toshiba	5	5	4	9	5	8	36

³⁴ Website - <https://www.patentfreedom.com/research-lot.html>

³⁵ Website - <https://www.patentfreedom.com/research.html>

No.	Company Name	2004	2005	2006	2007	2008	2009	Total
14	Sprint Nextel	2	3	3	11	8	7	34
15	Google	3	1	3	10	7	9	33
16	Acer	2	3	4	7	8	7	31
16	Time Warner	2	6	6	9	5	3	31
18	Deutsche Telekom	-	5	2	12	5	5	29
19	Kyocera	3	6	3	5	5	6	28
19	Palm	1	3	3	5	10	6	28
21	Cisco	-	3	-	13	6	5	27
22	Fujitsu	3	1	3	3	7	8	25
22	IBM	4	1	3	6	2	9	25
24	Intel	1	9	2	1	7	4	24
24	RIM	-	3	2	3	11	5	24
24	HTC	-	-	3	5	10	6	24

Table 18

As an example of this type of business model, Erich Spangenberg of the IP consultancy firm IP Navigation Group described his transition from his legal career at Jones Day to his entry into the patent-monetizing business. His first move was buying Firepond, a small Minnesota software company that had fallen on hard times. By the time Spangenberg showed up, all the company had in its possession, he said, were "some really cool chairs, some flat screen TVs, and patents." Once Spangenberg took control of the remaining assets, "We started an aggressive licensing program." According to patent defense company PatentFreedom, entities connected to Spangenberg have sued more than 500 companies for patent infringement since 2005.³⁶

³⁶ Article titled *Patent Litigation Weekly: Spangenberg Speaks, Says Sue First, Ask Questions Later* dated March 21, 2010 - <http://www.law.com/jsp/cc/PubArticleCC.jsp?id=1202458625096>

B. *Bankrupt Specific Opportunities - Rise of the §363 sale*

Despite the potential for reorganization under Chapter 11 of the U.S. Bankruptcy Code, a company that has filed for bankruptcy protection often will not experience a true restoration from the point of view of its owners. Instead, by one means or another, the company's assets often are sold or become controlled by a new party or group. One of the most common procedures leading to this result is a sale of a company's assets under Section 363(b) of the Bankruptcy Code.

Sometimes, despite the best efforts of its leaders and turnaround consultants, a company's going concern value remains at risk or declines while it is in Chapter 11. Brian Sagi, CEO of Cerian Technology Ventures, LLC, wrote about the 363 Sale process as follows:

Sales that are part of a debtors' reorganization can take a very long time, introducing much uncertainty for the buyer. To generate much needed cash, companies in Chapter 11 bankruptcy (also called "debtor in possession") may sell business units, assets, and intellectual property. The "363 sale," so called after Section 363 of the U.S. Bankruptcy Code, is a common way for companies to conduct such sales while in bankruptcy proceedings, and outside of the debtor's reorganization plan. Fortunately, 363 sales, which can be completed in as little as 60 to 90 days, now are widely recognized by courts as necessary tools for selling key property in order to generate cash for the business. They are a common way for debtors to sell intellectual property, technology, and other assets whose value does not preserve well under financial distress.

A 363 sale typically starts with an initial bidder, also called a stalking horse, that submits an offer for the acquisition of the debtor's business or intellectual property. The offer is accompanied by a draft asset purchase agreement (APA) detailing the conditions of the sale. With offer in hand, the debtor submits bidding procedures for the bankruptcy court's approval. The resulting court order set up rules for the continuation of the sale process: how bidders are qualified; the time qualified bidders have to submit "higher and better" bids topping the stalking horse's offer; breakup fees to compensate the stalking horse for its investment of time and effort; and other customary provisions such as the minimum amount by which a bid must exceed the stalking horse bid, the amount and term of deposit that must accompany a bid, and any modifications the buyer is requesting to the stalking horse APA. The debtor then sends a notice of the sale process, waits for the bids to arrive, and holds an auction or auction-like process to determine the best and highest bid. Typically, a sale transaction can consummate within six to eight weeks of the stalking horse's initial bid. Sales out of a bankruptcy process convey high quality of title. The buyer will be furnished with an order, signed by a bankruptcy judge, attesting to their ownership of the assets free and clear of any liabilities (save for the liabilities the buyer specifically assumes in the APA).³⁷

³⁷ Article: *Intellectual Property Acquisitions: Unprecedented Opportunities* - http://www.lesi.org/Upload/lesnouvelles2010/lesNouvellesPDF03-10/Intellectual_Property_Acquisitions_Unprecedented_Opportunities.pdf

C. Case Studies

1. Metricom, Inc.

Metricom was incorporated in Delaware in May 1992 as a successor to a company of the same name which itself was incorporated in California in December 1985. Metricom designed, developed and marketed mobile wireless data access products and services. Metricom's services were marketed under the brand name Ricochet, which provided subscriber-based, wireless data communications for users of portable and desktop computers and hand-held computing devices.³⁸

Metricom faced a dire financial position. From 1996 through 2000, Metricom consistently operated at a growing net loss, thus eroding equity at an increasing rate. As with many technology firms, investment in R&D is a critical expense in order to keep up with ever-changing trends. During this time period, Metricom invested over \$130 million, or 170% of sales in four of the five years and the remaining year's R&D requiring 95% of sales. Table 19 below summarizes Metricom's income statement for 1996 to 2000.

³⁸ Metricom Inc. - HISTORY & DEBT Financial Information Services, Mergent dated February 20, 2001

	Year Ended December 31,				
	1996	1997	1998	1999	2000
Total Revenue	\$ 7,154	\$ 13,439	\$ 15,859	\$ 18,525	\$ 11,846
COGS	14,181	26,091	40,537	27,011	121,122
Gross Margin	\$ (7,027)	\$ (12,652)	\$ (24,678)	\$ (8,486)	\$ (109,276)
Research & Develop.	13,435	12,769	26,907	33,019	44,476
Selling, General & Admin	16,755	19,599	21,350	19,004	65,145
Operating Loss	\$ (41,352)	\$ (56,997)	\$ (82,140)	\$ (65,226)	\$ (239,359)
Net Interest	2,007	(2,331)	(2,024)	(1,066)	51,212
Net Loss	\$ (39,345)	\$ (59,328)	\$ (84,164)	\$ (66,292)	\$ (188,147)
<i>R&D/Sales</i>	<i>188%</i>	<i>95%</i>	<i>170%</i>	<i>178%</i>	<i>375%</i>

Table 19

On July 2, 2001, Metricom filed for bankruptcy protection. The company sought Chapter 11 bankruptcy protection in U.S. Bankruptcy Court in San Jose, California. According to the filing, Metricom has about \$900 million in assets but more than \$1 billion in claims from more than 5,000 creditors.³⁹

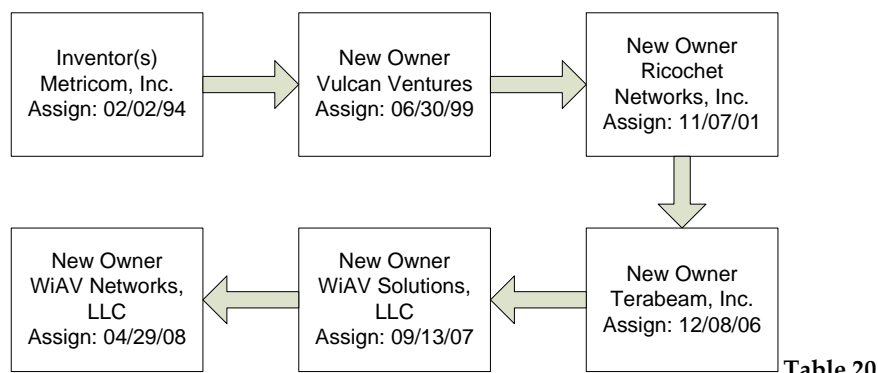
a) WiAV Networks, LLC Transaction

Approximately two years before Metricom filed for bankruptcy, the company assigned 2 patents to Vulcan Ventures Inc. which started a multi-year chain of events that led to current ownership by WiAV Networks, LLC.⁴⁰ The amount of money that Metricom received for the patent is unknown. WiAV Solutions, LLC is in the business of developing advanced digital wireless technologies and also acquires, develops, licenses and enforces patents.⁴¹ WiAV is a privately-held company based in Vienna, VA. Table 20 summarizes the transfer of ownership of U.S. Patent No. 6,480,497.

³⁹ Article titled *Metricom files for bankruptcy protection* dated July 2, 2001 - <http://news.cnet.com/2100-1033-269362.html>

⁴⁰ U.S. Patent and Trademark Office - www.uspto.gov

⁴¹ Website - <http://wiavsolutions.com/>



Since acquiring the IP in 2007, WiAV has actively managed the Metricom IP. On July 7, 2009, WiAV Networks filed a patent infringement lawsuit against over 60 companies including Acer, Apple, Belkin Inc., Brother, Canon, Cisco Systems, Dell, Epson, Gateway, Hewlett Packard, Linksys, Motorola, Nintendo, Nokia, Palm, Panasonic, Sharp, Sony, Toshiba and Xerox in the Eastern District of Texas, Texarkansa Division.⁴² The lawsuit alleged that these companies infringed U.S. Patent No. 6,480,497 for a *Method and Apparatus for Maximizing Data Throughput in a Packet Radio Mesh Network* and 5,400,338 for a *Parasitic Adoption of Coordinate-Based Addressing by Roaming Node*. The alleged infringing products include portable computer devices, wireless communication devices, wireless networking devices, notebook cards, USB adapters, wireless routers, video game consoles and portable video game consoles, mobile workstations, printing and imaging products and portable computer products.⁴³

Given the private nature of most IP-based transactions and licensing events, understanding the value that WiAV Networks realized from developing a licensing program is tough to quantify.

⁴² Source: Complaint

⁴³ Article titled *Recent patent infringement cases filed in the Eastern District of Texas* dated July 8, 2009 - <http://www.setexasrecord.com/news/219904-recent-patent-infringement-cases-filed-in-the-eastern-district-of-texas>

As of early May, 2010, 12 companies were “dismissed” from the lawsuit. While it is difficult to tell the exact reason why these companies were dismissed, I am assuming that the 12 companies settled with WiAV, summarized in Table 21.

<u>Company</u>	<u>Termination of Suit</u>	<u>Company</u>	<u>Termination of Suit</u>
Apple Inc.	1/19/2010	Lenovo Holding Company, Inc.	1/5/2010
Brother Industries, LTD.	9/14/2009	Lenovo Holding Company, Inc.	1/5/2010
Brother International Corporation	9/14/2009	Sharp Corporation	11/13/2009
Buffalo Technology (USA), Inc.	1/5/2010	Sharp Electronics Corporation	11/13/2009
Franklin Wireless Corporation	8/24/2009	Sony Corporation	1/29/2010
Futurewei Technologies, Inc.	1/19/2010	Sony Corporation of America	2/1/2010
HP Development Company LLC	8/19/2009	Sony Electronics Inc.	2/1/2010
Huawei Technologies Co., Ltd.	1/19/2010	Toshiba America Information Systems, Inc.	11/9/2009
Lenovo (United States), Inc.	1/5/2010	Toshiba America, Inc.	11/9/2009
Lenovo (United States), Inc.	1/5/2010	Toshiba Corporation	11/9/2009
Lenovo Group, Ltd.	1/5/2010	Xerox Corporation	11/12/2009

Table 21

In an effort to better understand the potential value of the patents after WiAV acquired the assets and filed suit against numerous industry participants, a brief background on the economics of such a program will be useful. In order to file such a suite, WiAV would need to identify companies that are selling products or offering services that are performing all elements of at least one of the independent claims of an asserted patent. Once a legal and technical argument is successfully made, the plaintiff must also put forth a compelling argument for the amount of “damages” that the patent owner suffered. The valuation of damages related to IP infringement is part art and part science.

As discussed above, the economics of patent licensing is often a function of the cost to defend the lawsuit compared to cost to settle the lawsuit. In order to estimate the value that WiAV generated from the licensing program, I have prepared a data table considering a range of settlement values and number of settlements. Based on the actual number of settlements (12) and range of settlement values, the estimated net proceeds that WiAV has generated range from \$6 - \$48 million, as summarized in Table 22.

		Settlement Value (in \$000)							
		\$ 500	\$ 1,000	\$ 1,500	\$ 2,000	\$ 2,500	\$ 3,000	\$ 3,500	\$ 4,000
No. of Settlements	2	\$ 1,000	\$ 2,000	\$ 3,000	\$ 4,000	\$ 5,000	\$ 6,000	\$ 7,000	\$ 8,000
	4	\$ 2,000	\$ 4,000	\$ 6,000	\$ 8,000	\$ 10,000	\$ 12,000	\$ 14,000	\$ 16,000
	6	\$ 3,000	\$ 6,000	\$ 9,000	\$ 12,000	\$ 15,000	\$ 18,000	\$ 21,000	\$ 24,000
	8	\$ 4,000	\$ 8,000	\$ 12,000	\$ 16,000	\$ 20,000	\$ 24,000	\$ 28,000	\$ 32,000
	10	\$ 5,000	\$ 10,000	\$ 15,000	\$ 20,000	\$ 25,000	\$ 30,000	\$ 35,000	\$ 40,000
	12	\$ 6,000	\$ 12,000	\$ 18,000	\$ 24,000	\$ 30,000	\$ 36,000	\$ 42,000	\$ 48,000
	14	\$ 7,000	\$ 14,000	\$ 21,000	\$ 28,000	\$ 35,000	\$ 42,000	\$ 49,000	\$ 56,000
	16	\$ 8,000	\$ 16,000	\$ 24,000	\$ 32,000	\$ 40,000	\$ 48,000	\$ 56,000	\$ 64,000
	18	\$ 9,000	\$ 18,000	\$ 27,000	\$ 36,000	\$ 45,000	\$ 54,000	\$ 63,000	\$ 72,000
	20	\$ 10,000	\$ 20,000	\$ 30,000	\$ 40,000	\$ 50,000	\$ 60,000	\$ 70,000	\$ 80,000

Table 22

The analysis provides interesting insight into the value that Metricom shareholders and creditors *could have* received if they proactively managed their IP. Instead, Metricom invested over \$130 million in R&D between 1996 and 2000, yet claimed no intangible assets on the balance sheet for the same time period.

b) Wi-LAN Transaction

In addition to the transaction with WiAV, Metricom initiated a chain-of-events that resulted in at least two issued U.S. patents being transferred to Wi-LAN.⁴⁴ Wi-LAN is a technology innovation and licensing company focused on a wide range of communication and consumer electronics products. Wi-LAN has licensed its intellectual property to over 230 companies worldwide. The table below summarizes the transfer of ownership of the U.S. Patent Nos. 5,515,369 and 6,647,053.

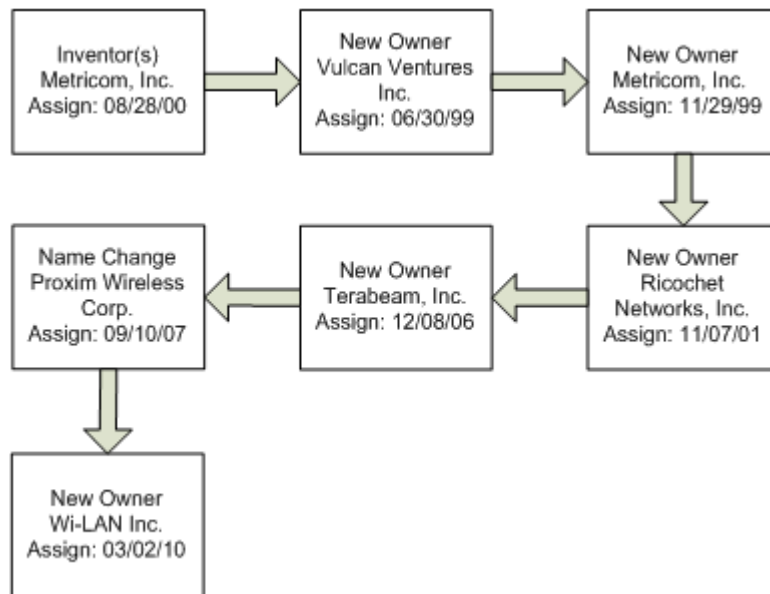


Table 23

On April 7, 2010, almost one month after Wi-LAN acquired the Metricom IP, Wi-LAN filed a patent infringement lawsuit against over 20 companies including Texas Instruments, Dell, Intel, Motorola, Apple and Sony in the Eastern District Court of Texas for the alleged infringement of U.S. Patent No. 5,515,369 titled *Method for frequency sharing and frequency punchout in frequency hopping communications network*. In the complaint, Wi-LAN states that the companies infringe

⁴⁴ U.S. Patent and Trademark Office - www.uspto.gov

their patent because they make “products with wireless capability compliant with the Bluetooth standards.” The only question remaining asks whether Wi-LAN can make a compelling argument that the Metricom and Bluetooth technologies are the same. Wi-LAN is asking the court for damages for past and present infringement, as well as attorney’s fees and pre-and post-judgment interest.⁴⁵

2. Comdisco, Inc.

Comdisco, Inc. was founded in 1969. The company was incorporated in Delaware in 1971 and based in Rosemont, Illinois. Comdisco provided technology services worldwide to help its customers maximize technology functionality, predictability and availability. The company offered leasing to key vertical industries, including semiconductor manufacturing and electronic assembly, healthcare, telecommunications, pharmaceutical, biotechnology and manufacturing. Through Comdisco Ventures group, the company provided equipment leasing and other financing and services to venture capital backed companies. In fiscal year 2001, the company's operations were organized into three groups: Leasing, Services and Comdisco Ventures group. In the first quarter of fiscal 2001, the company sold substantially all of the assets previously included under the Services group and auctioned other assets as well.

In response to significant liquidity and credit rating issues arising in the third quarter of fiscal year 2001, newly elected senior management of the company conducted an evaluation of the company's business, operations, financial condition and results of operations. As a result of

⁴⁵ Article titled *Texas Instruments and Dell Do Not Infringe Wi-LAN “Bluetooth” Patent* dated April 14, 2010 - <http://www.prlog.org/10627380-texas-instruments-and-dell-do-not-infringe-wi-lan-bluetooth-patent.html>

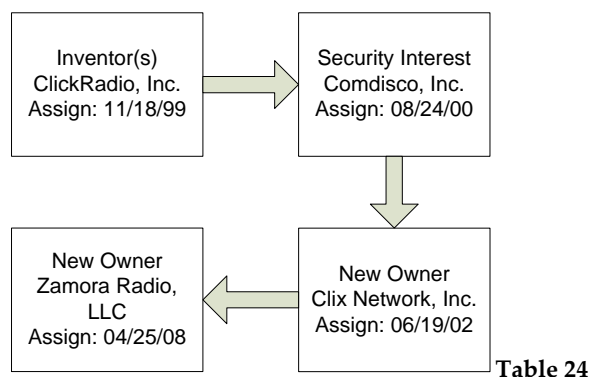
such evaluation, the company determined to draw down approximately \$880 million under its credit lines, ceased funding new transactions in its Comdisco Ventures group and significantly reduced funding for new leases and remarketing transactions in its Leasing business. In addition, the company began the process of selling the company either as a whole or in parts. On July 16, 2001, the company and fifty of its domestic U.S. subsidiaries filed voluntary petitions for relief under Chapter 11 of the United States Bankruptcy Code. On November 15, 2001, the company completed the sale of its Availability Solutions business to SunGard Data Systems Inc.⁴⁶

Comdisco's Patent Portfolio

Comdisco invested in the R&D process to ultimately own numerous U.S. patents. Approximately one year after Comdisco filed for bankruptcy, the company assigned U.S. Patent No. 6,108,686 titled *Agent-based on-line information retrieval and viewing system*, among others, to Clix Network, Inc. and ultimately to Zamora Radio, LLC in 2008.⁴⁷ Table 24 below summarizes the transfer of ownership among relevant parties.

⁴⁶ Comdisco 10-K - 2002

⁴⁷ U.S. Patent and Trademark Office - www.uspto.gov



On April 9, 2009, Zamora Radio filed a patent infringement lawsuit against 12 online media companies including AOL, Yahoo!, RealNetworks, Rhapsody, Pandora and Slacker in the Southern District of Florida. The lawsuit alleges that the Plaintiff’s are infringing U.S. Patent No. 6,349,339 titled *System and Method for Utilizing Data Packets*. Since the lawsuit was filed, Zamora Radio “terminated” Slacker, Inc. on August 17, 2009 and Yahoo! Inc. on February 10, 2010 from the suit. The amount of any settlements to date, if any, is unknown.

3. High Voltage Engineering Corporation

High Voltage Engineering Corporation (“HVEC”) owned and operated a diversified group of three industrial and technology based manufacturing business segments. The Company’s businesses focused on designing and manufacturing high quality, applications engineered products which are designed to address specific customer needs. The Company’s customers ranged from Original Equipment Manufacturers to end-users in a variety of industries including process automation, metal and steel, water and wastewater treatment, petrochemicals, pulp and paper, marine and cable, oil and gas extraction and transportation,

semiconductor fabrication, chemicals, construction, agriculture, materials handling, and for scientific and educational research.⁴⁸

In early January 2003, HVEC completed a corporate restructuring in which certain of the Company's subsidiaries, including Vivirad-High Voltage Corporation, VHV Holding, Inc., Charles Evans & Associates, Inc., Stewart Warner Instrument Corporation and Maxima Technologies, Inc., were ultimately merged with and into the HVEC.⁴⁹ On February 9, 2005, HVEC filed for Chapter 11 bankruptcy protection.⁵⁰

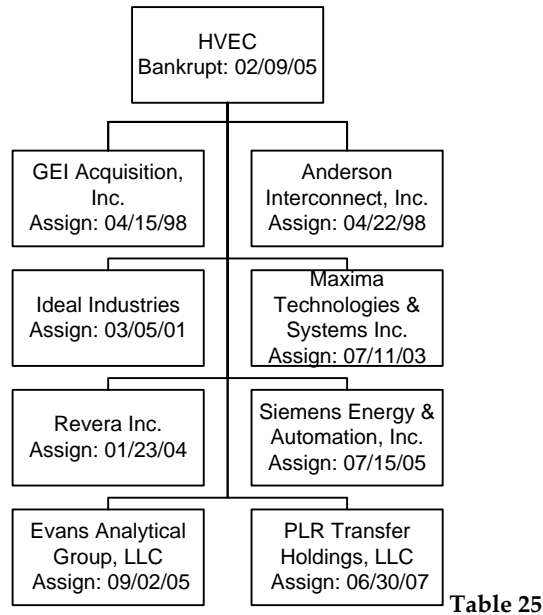
Through my research, I identified 44 U.S. patents that were once owned by HVEC. From 1998 to 2007, HVEC transferred the ownership of numerous patents to at least 8 different organizations. Many of these entities are operating companies with product offerings similar to the HVEC patents. The table below summarizes the transfer of ownership with the entity name and the execution date of the assignment.⁵¹

⁴⁸ High Voltage Engineering Corporation 10-K – April 2, 2002

⁴⁹ High Voltage Engineering Corporation 10-Q/A – January 25, 2003

⁵⁰ Article titled *High Voltage Engineering files for Chapter 11* dated February 9, 2005 - <http://pittsburgh.bizjournals.com/pittsburgh/stories/2005/02/07/daily22.html>

⁵¹ U.S. Patent and Trademark Office - www.uspto.gov



The transaction that I will focus on relates to the assignment *PLR Transfer Holdings, LLC* (“PLR”) on June 30, 2007. PLR appears to be a private company with very little public information to shed light on the ownership or operation of the firm. However, many similarities exist between PLR and an IP acquisition company named Intellectual Ventures (“IV”). IV was founded by Nathan Myhrvold and Edward Jung in 2000, both C-level executives at Microsoft. IV invests in innovations and technologies across a broad spectrum of industries – everything from computer hardware to biotechnology, from consumer electronics to nanotechnology.⁵² IV now claims to be one of the top patent filers in the U.S. and owns approximately 27,000 patents.⁵³ To finance these IP acquisitions, published reports indicate that IV has raised billions from companies such as Microsoft, Intel, Sony, Nokia, Apple, Google, eBay and others. The companies that invest in

⁵² Website - <http://avancept.com/iv-report.html>

⁵³ Article titled *Trolls demanding tolls* dated September 10, 2009 - http://www.economist.com/businessfinance/displaystory.cfm?story_id=14416641

IV likely get some level of rights to their patents, but the details of such arrangements are unknown in the public domain.

Much is unknown about IV and the strategy that they will pursue with their vast war chest of IP. According to published reports, IV plans to group all acquired patents into clusters of similar technology and then license the patents to potential users or infringers of each technology cluster. The goal is to derive more value than would likely be attained from the licensing of any individual patent.⁵⁴

According to a January 2010 report by Avancept, LLC, IV invests in patents through a substantial network of shell companies. Avancept believes they found some 1,110 shell companies associated with IV. As part of their research, they found many corporate similarities with shell companies set up in both Delaware and Nevada.⁵⁵ The Delaware address, *2711 Centerville Road Suite 400, Wilmington, DE 19808*, is consistent with the new owner of the HVEC patents, PLR. At this point, it is unknown how IV or any other entity has monetized these assets, if at all.

VI. CONCLUSION

This paper has offered insight into the lifecycle of a technology firm's patent portfolio following bankruptcy. While the outcome varies, one conclusion is that firms do not exhibit much proof that the patent portfolios are being efficiently managed in order to derive maximum value for

⁵⁴ Website - <http://avancept.com/iv-report.html>

⁵⁵ Ewing, Tom. *A Study of: The Intellectual Ventures Patent Portfolio in the United States*, 2nd Edition. January 2010.

shareholders and creditors. The market for technology-driven IP is robust and offers a creative method to rehabilitate the operations of a distressed firm. Further, a thought arises: can management avoid bankruptcy with a more critical eye to extracting value from IP by eliminating non-core research assets and partnering with professional that can create significant cash flow from IP?

VII. AUTHOR BIO

GRANT E. MOSS (grant_moss@bus.emory.edu) is pursuing his MBA at Emory University – Goizueta Business School and is currently a Director at patent brokerage firm IPinvestments Group. With substantial experience in managing patent acquisitions and developing and implementing licensing programs, Mr. Moss is highly skilled at evaluating and extracting value from intellectual property. In addition to transaction-related engagements, Mr. Moss has conducted numerous valuations of royalty streams from licensed intellectual property for potential acquisitions, developed reasonable royalty rate analyses, and provided litigation-related consulting services. Additionally, Mr. Moss graduated from Georgia State University with a Bachelor of Science Degree in Finance. He was a founding member of the Emerging Leaders Network (part of Georgia BIO) and a member of the Licensing Executives Society (LES) and the Technology Association of Georgia (TAG). Mr. Moss previously worked as an Associate at IPAC, LLC, and worked with InteCap, Inc. (now part of CRA International) and Sedona Corporation.

VIII. APPENDIX

Company Name	SIC Code	SIC Description	No. of U.S. Patents	Date Filed	Case Number
EMERGED FROM BANKRUPTCY					
<u>NO IMPACT ON PORTFOLIO</u>					
Superior Telecom, Inc.	3357	Drawing and Insulating of Nonferrous Wire	112	03/03/03	03-10607
Silicon Graphics, Inc.	3571	Electronic Computers	718	05/08/06	06-10977
Loral Space & Communications Ltd.	3663	Radio and Television Broadcasting and Communications Equip	1	07/15/03	03-41710
Exide Technologies	3691	Storage Batteries	2	04/15/02	02-11125
Komag, Inc.	3695	Magnetic and Optical Recording Media	116	08/24/01	01-54143
Covad Communications	4813	Telephone Communications, Ex. Radiophones	18	08/07/01	01-10167
Mpower Holding Corp.	4813	Telephone Communications, Ex. Radiophones	1	04/08/02	02-11046
Leap Wireless International Inc.	4813	Telephone Communications, Ex. Radiophones	16	04/13/03	03-03470
Global Crossing Ltd.	4813	Telephone Communications, Ex. Radiophones	1	01/28/02	02-40188
Adelphia Business Solutions, Inc.	4813	Telephone Communications, Ex. Radiophones	3	03/27/02	02-11389
XO Communications, Inc.	4813	Telephone Communications, Ex. Radiophones	1	06/17/02	02-12947
Worldcom, Inc.	4813	Telephone Communications, Ex. Radiophones	135	07/21/02	02-13533
SpectraSite Holdings, Inc.	4899	Communication Services, Not Elsewhere Classified	2	11/15/02	02-03631
USInterNetworking, Inc.	7372	Prepackaged Software	1	01/07/02	02-50215
Peregrine Systems, Inc.	7372	Prepackaged Software	5	09/22/02	02-12740
Redback Networks Inc.	7389	Business Services, Not Elsewhere Classified	94	11/03/03	03-13359
<u>ALLOWED PART OF PORTFOLIO TO EXPIRE</u>					
Genicom Corporation	3577	Computer Peripheral Equipment, Not Elsewhere Classified	45	03/10/00	00-01383
ViaSystems Group Inc.	3672	Printed Circuit Boards	17	10/01/02	02-14867
DDI Corp.	3672	Printed Circuit Boards	18	08/20/03	03-15261
Applied Magnetics Corporation	3695	Magnetic and Optical Recording Media	76	01/07/00	00-10066
WebLink Wireless, Inc.	4812	Radiotelephone Communications	15	05/23/01	01-34275
Arch Wireless Inc.	4812	Radiotelephone Communications	4	11/09/01	01-47330
NTL, Inc.	4813	Telephone Communications, Ex. Radiophones	1	05/08/02	02-41316
Williams Communications Group, Inc.	4813	Telephone Communications, Ex. Radiophones	5	04/22/02	02-11957
York Research Corp.	4931	Electric and Other Services Combined	2	12/20/01	01-16361
Lason, Inc.	7374	Computer Processing and Data Preparation and Processing Serv	1	12/05/01	01-11488
Globix Corp.	7379	Computer Related Services, Not Elsewhere Classified	1	03/01/02	02-10647
Liberate Technologies	7372	Prepackaged Software	25	04/30/04	04-11299
<u>NO ISSUED U.S. PATENTS</u>					
Viatel Inc.	4812	Radiotelephone Communications	0	05/02/01	01-01599
Focal Communications Corporation	4812	Radiotelephone Communications	0	12/19/02	02-13709
Horizon PCS Inc.	4812	Radiotelephone Communications	0	08/15/03	03-62424
IWO Holdings, Inc.	4812	Radiotelephone Communications	0	01/04/05	05-10009
McLeodUSA Incorporated (2005)	4812	Radiotelephone Communications	0	10/28/05	05-63230
CTC Communications Group, Inc.	4813	Telephone Communications, Except Radiophones	0	10/03/02	02-12875
McLeodUSA, Inc.	4813	Telephone Communications, Except Radiophones	0	01/31/02	02-10288
ICG Communications, Inc.	4813	Telephone Communications, Ex. Radiophones	0	11/14/00	00-04238
Teligent Inc	4813	Telephone Communications, Ex. Radiophones	0	05/21/01	01-12974
Startec Global Communications Corporation	4813	Telephone Communications, Ex. Radiophones	0	12/14/01	01-25013
FLAG Telecom Holdings, Ltd	4813	Telephone Communications, Ex. Radiophones	0	04/12/02	02-11732
RCN Corporation	4813	Telephone Communications, Ex. Radiophones	0	05/27/04	04-13637
Choice One Communications, Inc.	4813	Telephone Communications, Ex. Radiophones	0	10/05/04	04-16433
ITC DeltaCom, Inc.	4813	Telephone Communications, Ex. Radiophones	0	06/25/02	02-11848
Granite Broadcasting Corporation	4833	Television Broadcasting Stations	0	12/11/06	06-12984
CAI Wireless Systems, Inc.	4841	Cable and Other Pay Television Services	0	07/30/98	98-01765

Company Name	SIC Code	SIC Description	No. of U.S. Patents	Date Filed	Case Number
<u>DID NOT EMERGE FROM BANKRUPTCY</u>					
<u>TRANSFERRED PATENTS TO IP ACQUISITION COMPANY</u>					
World Access, Inc.	4813	Telephone Communications, Ex. Radiophones	4	04/04/01	01-14633
DTI Holdings, Inc. / Digital Teleport	4813	Telephone Communications, Ex. Radiophones	1	12/31/01	01-54369
Metricom, Inc.	4822	Telegraph and Other Message Communications	50	07/02/01	01-53291
Comdisco, Inc.	7377	Computer Rental and Leasing	2	07/16/01	01-24795
High Voltage Engineering Corporation (2004)	3620		44	02/08/05	05-10787
<u>NO IMPACT ON PORTFOLIO</u>					
Polaroid Corp	3861	Photographic Equipment and Supplies	2213	10/12/01	01-10864
Globalstar LP	4812	Radiotelephone Communications	63	02/15/02	02-10499
Iridium LLC (and six subsidiaries)	4812	Radiotelephone Communications	17	08/13/99	99-45005
Winstar Communications, Inc.	4813	Telephone Communications, Ex. Radiophones	4	04/18/01	01-01430
Adelphia Communications Corp.	4841	Cable and Other Pay Television Services	5	06/25/02	02-41729
CellNet Data Systems, Inc.	4899	Communication Services, Not Elsewhere Classified	12	02/04/00	00-00844
Xpedior, Inc.	7372	Prepackaged Software	1	04/20/01	01-14424
Clarent Corp.	7372	Prepackaged Software	4	12/16/02	02-33504
PSINet	7373	Computer Integrated Systems Design	6	05/31/01	01-13213
At Home Corp	7375	Information Retrieval Services	10	09/28/01	01-32495
Exodus Communications, Inc.	7379	Computer Related Services, Not Elsewhere Classified	1	09/26/01	01-10539
Genuity Inc.	7379	Computer Related Services, Not Elsewhere Classified	21	11/27/02	02-43558
<u>ALLOWED PART OF PORTFOLIO TO EXPIRE</u>					
Read-Rite Corp.	3679	Electronic Components, Not Elsewhere Classified	299	06/17/03	03-43576
Geotek Communications, Inc.	4812	Radiotelephone Communications	4	06/29/98	98-01375
Orbcomm Global, LP	4812	Radiotelephone Communications	3	09/15/00	00-3636
Pathnet Telecommunications, Inc.	4813	Telephone Communications, Ex. Radiophones	1	04/02/01	01-1223
Verado Holdings, Inc.	7375	Information Retrieval Services	3	02/15/02	02-10510
divine, inc.	7389	Business Services, Not Elsewhere Classified	1	02/25/03	03-11472
Recoton Corp.	3679	Electronic Components, Not Elsewhere Classified	41	04/08/03	03-12180
<u>NO ISSUED U.S. PATENTS</u>					
ACT Manufacturing, Inc.	3672	Printed Circuit Boards	0	12/21/01	01-47641
Paging Network, Inc.	4812	Radiotelephone Communications	0	07/24/00	00-03098
Convergent Communications, Inc.	4812	Radiotelephone Communications	0	04/19/01	01-15488
MobileMedia Communications, Inc.	4812	Radiotelephone Communications	0	01/30/97	97-00174
GST Telecommunications, Inc.	4813	Telephone Communications, Ex. Radiophones	0	05/17/00	00-01982
Star Telecommunications Inc.	4813	Telephone Communications, Ex. Radiophones	0	03/13/01	01-00830
RSL Communications, Ltd.	4813	Telephone Communications, Ex. Radiophones	0	03/19/01	01-11457
e.spire Communications, Inc.	4813	Telephone Communications, Ex. Radiophones	0	03/22/01	01-00974
Rhythms NetConnections, Inc.	4813	Telephone Communications, Ex. Radiophones	0	08/01/01	01-14283
Global TeleSystems, Inc.	4813	Telephone Communications, Ex. Radiophones	0	10/11/01	01-11280
Network Plus Corp.	4813	Telephone Communications, Ex. Radiophones	0	02/05/02	02-10341
International Fibercom, Inc.	4813	Telephone Communications, Ex. Radiophones	0	02/13/02	02-02143
Logix Communications Enterprises Inc.	4813	Telephone Communications, Ex. Radiophones	0	03/01/02	02-32105
Velocita Corp.	4813	Telephone Communications, Ex. Radiophones	0	05/30/02	02-35895
Allegiance Telecom Inc.	4813	Telephone Communications, Ex. Radiophones	0	05/14/03	03-13057
Touch America Holdings Inc	4813	Telephone Communications, Ex. Radiophones	0	06/19/03	03-11915
AT&T Latin America Corp.	4813	Telephone Communications, Ex. Radiophones	0	04/11/03	03-13538
Asia Global Crossing, Ltd.	4813	Telephone Communications, Ex. Radiophones	0	11/17/02	02-15749

METRICOM INCORPORATED

Symbol: (C000003039)

Source: Worldscope

Scaling Factor : Millions USD

Currency: USD

5 YR BALANCE SHEET	12/31/2000	12/31/1999	12/31/1998	12/31/1997	12/31/1996
Assets					
Cash And ST Investments	508.65	499.34	19.14	14.17	62.07
Cash	326.64	0.02	#N/A	9.78	15.25
ST Investments	182.01	499.32	#N/A	4.39	46.83
Receivables (Net)	2.41	2.39	1.45	2.28	1.13
Total Inventories	31.69	0.59	3.05	3.01	3.12
Other Current Assets	11.48	3.12	1.52	1.12	1.74
Current Assets - Total	554.23	505.43	25.16	20.59	68.06
Other Investments	18.17	0.00	0.06	0.30	3.15
Property, Plant & Equipment - Net	666.43	34.27	5.56	25.88	26.78
Property Plant & Equipment - Gross	715.42	70.55	42.35	40.30	33.61
Accum. Depreciation	48.99	36.28	36.79	14.43	6.83
Other Assets	14.74	6.95	3.69	4.34	3.82
Deferred Charges	8.10	#N/A	#N/A	#N/A	#N/A
Tangible Other Assets	6.64	#N/A	#N/A	#N/A	#N/A
Intangible Other Assets	#N/A	#N/A	#N/A	#N/A	#N/A
Total Assets	1,253.56	546.65	34.47	51.10	101.80
Liabilities & Shareholder's Equity					
Accounts Payable	89.12	9.65	5.06	3.14	5.52
ST Debt & Current Portion of LT Debt	0.88	4.52	0.04	5.00	0.00
Accrued Payroll	11.30	1.50	5.69	0.61	1.45
Dividends Payable	1.61	1.50	0.00	0.00	0.00
Other Current Liabilities	26.07	9.64	4.98	4.85	3.35
Current Liabilities - Total	128.96	26.81	15.76	13.61	10.32
Long Term Debt	244.67	0.39	55.10	45.00	45.00
Long Term Debt Excluding Capitalized Leases	241.61	0.00	55.10	45.00	45.00
Capitalized Lease Obligations	3.06	0.39	0.00	0.00	0.00
Deferred Income	0.55	0.32	0.00	0.00	0.00
Other Liabilities	0.00	0.00	0.68	1.13	0.77
Total Liabilities	374.19	27.52	71.54	59.74	56.09
Shareholder's Equity					
Preferred Stock	614.98	573.33	0.00	0.00	0.00
Common Equity	264.40	-54.20	-42.26	-13.82	43.31
Common Stock	0.03	0.03	0.02	0.01	0.01
Capital Surplus	783.25	283.76	191.18	135.47	133.30
Other Appropriated Reserves	61.87	#N/A	#N/A	#N/A	#N/A
Retained Earnings	-583.35	-337.99	-233.46	-149.30	-89.97
Unrealized Gain(Loss) On	2.60	0.00	0.00	0.00	-0.04
Total Liabilities & Shareholders' Equity	1,253.56	546.65	34.47	51.10	101.80

METRICOM INCORPORATED

Symbol: (C000003039)

Scaling Factor : Millions USD

Source: Worldscope

Currency: USD

5 YR INCOME STATEMENT	12/31/2000	12/31/1999	12/31/1998	12/31/1997	12/31/1996
Net Sales or Revenues	11.85	18.53	15.86	13.44	7.15
Cost of Goods Sold	121.12	22.62	24.16	26.47	14.98
Depreciation, Depletion & Amortization	20.46	4.72	9.21	8.37	4.14
Gross Income	-129.74	-8.81	-17.50	-21.39	-11.96
Selling, General & Admin Expenses	109.62	56.42	50.25	31.99	29.39
Operating Expenses - Total	251.21	83.75	83.61	66.83	48.51
Operating Income	-239.36	-65.23	-67.75	-53.39	-41.35
Extraordinary Charge - Pretax	0.00	0.00	14.39	3.61	0.00
Non-Operating Interest Income	62.81	4.82	1.92	1.82	3.32
Earnings Before Interest And Taxes (EBIT)	-176.55	-60.41	-80.23	-55.18	-38.04
Interest Expense On Debt	42.30	5.88	3.94	4.15	1.31
Interest Capitalized	30.70	0.00	0.00	0.00	0.00
Pretax Income	-188.15	-66.29	-84.16	-59.33	-39.35
Net Income Before Extra Items/Preferred Div	-188.15	-66.29	-84.16	-59.33	-39.35
Extr Items & Gain(Loss) Sale of Assets	0.00	0.00	0.00	0.00	0.00
Net Income Before Preferred Dividends	-188.15	-66.29	-84.16	-59.33	-39.35
Preferred Dividend Requirements	57.21	38.23	0.00	0.00	0.00
Net Income Available to Common	-245.36	-104.53	-84.16	-59.33	-39.35

METRICOM INCORPORATED

Symbol: (C00003039)

Scaling Factor : Millions USD

Source: Worldscope

Currency: USD

FINANCIAL RATIOS ANALYSIS

PROFITABILITY	12/31/2000	12/31/1999	12/31/1998	12/31/1997	12/31/1996
Return On Total Equity	-233.45	#N/A	#N/A	-402.37	-63.62
Return On Assets	-20.07	-21.50	-190.73	-74.07	-40.98
Return On Invested Capital	-21.91	-23.05	-274.62	-85.75	-44.97
Cash Earnings Return On Equity	-150.01	#N/A	#N/A	-296.58	-56.94
Cash Flow To Sales	-1,330.93	-326.36	-381.91	-325.39	-492.17
Cost of Goods Sold To Sales	1,022.47	122.08	152.31	196.94	209.39
Gross Profit Margin	-1,095.21	-47.55	-110.35	-159.19	-167.19
Operating Profit Margin	-2,020.59	-352.10	-427.19	-397.25	-578.03
Net Margin	-1,588.27	-357.85	-530.70	-441.46	-549.97
ASSET UTILIZATION	12/31/2000	12/31/1999	12/31/1998	12/31/1997	12/31/1996
Assets Per Employee	1,615,412.37	1,248,052.51	111,180.65	235,497.70	#N/A
Assets Turnover	0.01	0.03	0.46	0.26	0.07
Inventory Turnover	7.51	12.45	7.98	8.64	3.95
Net Sales To Gross Fixed Assets	0.02	0.26	0.37	0.33	0.21
Net Sales Pct Working Capital	0.03	0.04	1.69	1.93	0.12
Capital Expend Pct Fixed Assets	85.40	46.94	11.79	26.26	47.34
Capital Expend Pct Total Assets	111.76	96.09	9.77	10.40	18.48
Capital Expend Pct Sales	5,157.41	178.78	31.49	78.76	222.39
LEVERAGE	12/31/2000	12/31/1999	12/31/1998	12/31/1997	12/31/1996
Total Debt Pct Common Equity	92.87	-9.05	-130.48	-361.87	103.91
LT Debt Pct Common Equity	92.54	-0.71	-130.38	-325.69	103.91
Minority Interest Pct Total Capital	0.00	0.00	28.76	14.25	2.65
Total Debt Pct Tot Capital And ST Debt	21.83	0.94	305.25	120.87	49.61
LT Debt Pct Total Capital	21.77	0.07	305.71	123.74	49.61
Equity Pct Total Capital	23.52	-10.43	-234.47	-37.99	47.74
Preferred Stock Pct Total Capital	54.71	110.36	0.00	0.00	0.00
Total Debt Pct Total Assets	19.59	0.90	159.98	97.84	44.20
Common Equity Pct Total Assets	21.09	-9.91	-122.61	-27.04	42.54
Total Capital Pct Total Assets	89.67	95.04	52.29	71.16	89.11
Fixed Charge Coverage Ratio	-1.35	-0.93	-20.37	-13.29	-29.03
Fixed Assets Pct Common Equity	252.05	-63.22	-13.15	-187.27	61.83
Working Cap Pct Total Capital	37.83	92.13	52.13	19.19	63.65
LIQUIDITY	12/31/2000	12/31/1999	12/31/1998	12/31/1997	12/31/1996
Quick Ratio	3.96	18.71	1.31	1.21	6.12
Current Ratio	4.30	18.85	1.60	1.51	6.60
Cash Ratio	91.78	98.80	76.08	68.85	91.21
Receivables Pct Current Assets	0.43	0.47	5.76	11.07	1.65
Inventories Pct Current Assets	5.72	0.12	12.11	14.63	4.58
Accounts Receivable Days	72.88	37.28	42.31	45.59	39.38
Inventories Days Held	47.96	28.91	45.14	41.66	91.11

SEC 10 Yr. Balance Sheet Report

COMDISCO HOLDING CO IN

Symbol: CDCO (C000001156)

http://www.comdisco.com

Price 5/21/2010 Shs Out (th) Mkt Cap (th)

Exchange: NASB

8.60

Country: USA

SIC Code: EQUIP RENTAL & LEASING, NEC

PE Ratio EPS 1 Yr Grth Tot Ret 1Yr

NAICS Code:

Company Status: Active

Scaling Factor : Millions USD	Source: SEC Currency: USD				
ASSETS	09/30/04	09/30/03	09/30/02	09/30/01	09/30/00
Cash	167.00	139.00	564.00	600.00	369.00
Marketable Securities					
Receivables	4.00	41.00	98.00	592.00	1,126.00
Inventories	1.00	9.00	33.00	84.00	127.00
Other Current Assets					5,272.00
Total Current Assets	172.00	189.00	695.00	1,276.00	6,894.00
Net Property & Equipment	2.00	16.00	293.00	59.00	89.00
Property, Plant & Equip	8.00	90.00	293.00	59.00	89.00
Accumulated Depr.	6.00	74.00			
Int. & Adv. to Subsidiaries	15.00	44.00	36.00	138.00	899.00
Other Non-Current Assets			1,251.00	747.00	491.00
Deferred Charges	3.00				
Intangibles					
Deposits & Other Assets	6.00	124.00	66.00	3,982.00	324.00
Total Assets	198.00	373.00	2,341.00	6,202.00	8,697.00

SEC 10 Yr. Balance Sheet Report

COMDISCO HOLDING CO IN

Symbol: CDCO (C000001156)

http://www.comdisco.com

Price 5/21/2010 Shs Out (th) Mkt Cap (th)

Exchange: NASB

8.60

Country: USA

SIC Code: EQUIP RENTAL & LEASING, NEC

PE Ratio EPS 1 Yr Grth Tot Ret 1Yr

NAICS Code:

Company Status: Active

LIABILITIES & SHAREHOLDERS' EQUITY	09/30/04	09/30/03	09/30/02	09/30/01	09/30/00
Notes Payable			1,050.00	4,095.00	2,009.00
Accounts Payable	2.00	6.00	21.00	127.00	182.00
Curr. Long-Term Debt			35.00		3,452.00
Curr. Port. Cap. Lease					
Accrued Expense	13.00	62.00	107.00		
Income Taxes	6.00	29.00	49.00	35.00	415.00
Other Curr. Liabilities			438.00	964.00	794.00
Total Current Liabilities	21.00	97.00	1,700.00	5,221.00	6,852.00
Mortgages					
Deferred Charges/Inc.	2.00	27.00		153.00	225.00
Long-Term Debt				93.00	
Other Long-Term Liab.	72.00	67.00		288.00	406.00
Total Liabilities	95.00	191.00	1,700.00	5,755.00	7,483.00
Common Stock Net	0.04			23.00	23.00
Capital Surplus	108.96	169.00	413.00	365.00	360.00
Retained Earnings	-16.00		224.00	772.00	1,051.00
Treasury Stock				620.00	537.00
Total Shareholder Equity	103.00	182.00	641.00	447.00	1,214.00
Total Liab & Net Worth	198.00	373.00	2,341.00	6,202.00	8,697.00

SEC 10 Yr. Income Statement

COMDISCO HOLDING CO INC

Symbol: CDCO (C000001156)

http://www.comdisco.com

Price 5/21/2010 Shs Out (th) Mkt Cap (th)

Exchange: NASB

8.60

Country: USA

SIC Code: EQUIP RENTAL & LEASING, NEC

PE Ratio EPS 1 Yr Grth Tot Ret 1Yr

NAICS Code:

Company Status: Active

Scaling Factor : Millions USD

Source: SEC

Currency: USD

INCOME STATEMENT	09/30/04	09/30/03	09/30/02	09/30/01	09/30/00
Net Sales	61.00	241.00	59.00	1,555.00	3,092.00
Cost of Goods Sold	43.00	197.00	54.00	869.00	1,787.00
Gross Profit	18.00	44.00	5.00	686.00	1,305.00
R&D Expenditure					
SG&A Expense	43.00	62.00	13.00	575.00	622.00
Income Befor Dep & Amort	-25.00	-18.00	-8.00	111.00	683.00
Depreciation & Amort.					
Non-Operating Income	20.00	62.00	-13.00	-163.00	-7.00
Interest Expense	1.00	25.00	12.00	294.00	340.00
Income Before Taxes	-6.00	19.00	-33.00	-346.00	336.00
Prov. For Inc. Taxes	-42.00	-1.00	2.00	-138.00	120.00
Net Income Before Extra Items	36.00	20.00	-35.00	-208.00	216.00
Extra Items & Disc. Ops.	-13.00	80.00	259.00	-64.00	-283.00
Net Income	23.00	100.00	224.00	-272.00	-67.00
Outstanding Shares (th)	4,196	4,197	4,200	150,559	152,569