

CORPORATE VENTURE CAPITAL

by

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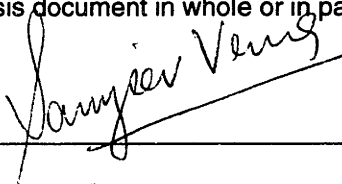
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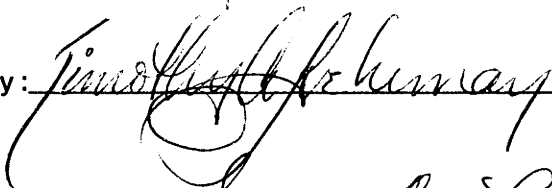
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Sanjeev Verma

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Administration

ABSTRACT

This study was prompted by my curiosity about several interesting trends the US high technology industry. The first of these was the incredible boom in the creation of privately financed startups in key high technology sectors - communication, software, multimedia and semiconductors. The second was the resounding success of many of these companies which was paralleled by a substantial outflow of talent from large well respected fortune 100 companies to entrepreneurial startups. As a manager of a high technology group in a large company, I had lost many talented engineers on my team to startups that offered them very lucrative options. I had also seen many colleagues successfully branch out on their own. I was also finding it hard to recruit new technical talent. What was going on ? What were the implications of these trends to the future of both small and large companies ? What were the implications for human resource policies for large and small companies ? Were these trends a flash in the pan or were they here to stay ? What should large corporations do to respond to these trends ? And who exactly were these "venture capitalists" that people seemed to talk a lot about ?

Our research has revealed a growing interest in corporations making equity investments in privately financed, technology driven companies. We have also discovered how some corporations are incorporating the structures and incentives of the private equity industry to foster entrepreneurship. This research also presents the determinants of and obstacles to successful corporate venturing.

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Introduction and Problem Statement

In the United States, the private equity market has been the fastest growing market for corporate finance during the past fifteen years. Recent studies by the Federal Reserve [1] have shown that the total amount of funds committed annually to organizations that invest in private equity increased from \$.78 Billion in 1980 to over \$19.35 Billion in 1994 - an almost twenty four fold increase in a period of fifteen years.

What exactly is the private equity market ? By private equity market, we mean the market for unregistered securities of private and some public corporations. Private equity placements have emerged as an important source of financing for startup companies, firms in financial distress or public companies seeking buyout financing - usually through leveraged buyouts or recapitalizations. In fact private equity placements in high technology and Bio technology companies have received significant attention lately. The spectacular initial public offerings of companies financed through the private equity market such as Netscape Communication, NexGen, and GT Interactive Software have fueled both public and professional interest in private equity.

While a significant majority of the market in private equity is dominated by professionally managed investment partnerships, non financial corporations have also shown a resurgence of interest in the potential of participating in the private equity market. These companies are particularly interested in the potential for gaining both financial as well as strategic benefits through equity investments in technology oriented startup companies. We call such strategic private equity investments by non financial corporations, Corporate Venture Capital. Furthermore we view Corporate Venture Capital as different from the private equity investments made by the pension funds of large corporations because

those investments are primarily driven by the need for high returns and financial diversification.

There are several reasons why corporate venturing is an important area for research. In recent years, corporations have become an important source of funding for technology and biotechnology companies. Furthermore, such investments offer intriguing possibilities for the development of strategic relationships between companies. These relationships are increasingly important in an era in which corporations are tending to only keep those activities in-house which they have core competencies. Yet another reason for the interest in corporate venturing is the phenomenal increase in the pace of technological change. Corporate venturing offers the possibility of acquisition of promising technologies that a company may not have developed in-house. Lastly, there are a fair number of corporate venture programs. Venture Economics, a company that tracks the private equity market has estimated that over ninety corporations have active corporate venturing programs [2].

Despite their importance, there is very little information or analysis of corporate venturing programs in the literature. One of the major reasons for this is the lack of readily available information because private companies are not required to disclose financial information about themselves. Likewise, larger public corporations are often secretive about their investments in startups due to their strategic significance. As a result much of the information about corporate venture capital is based on word of mouth or on studies of small samples of corporate venturing programs. In this thesis we will attempt to study corporate venturing by analyzing the investments patterns of over two hundred non financial corporations in more than 800 private companies during the period of 1980 to 1996. The source of this data is a private database of private equity investments in over 6000 companies compiled by a company called Venture One. Based on this data analysis and interviews with practitioners of corporate

venturing programs, we will attempt to understand how and why companies undertake corporate venture capital programs. We will then examine what are the challenges faced by corporate venture programs and determine what are the factors that contribute to success in such endeavors.

This thesis is organized as follows. In Chapter 1, we will describe the basic structure of the private equity market. It is important to understand the functioning of the private equity market because corporate venturing programs work within the broader context of this market. Furthermore, there is a very tight relationship between corporate venture programs and professionally managed private equity investment partnerships that constitute the bulk of the private equity market.

In Chapter 2 we will expand upon why corporations enter the private equity market. In this chapter, we will also describe the different structures that corporations have put together to attain their goals. In Chapter 3 we will follow up with a detailed look at how corporations have participated in the private equity market over the past decade. We will study issues such as who are the major corporate investors ? What kinds of companies do they invest in ? At what stage in a companies lifecycle do corporations typically invest ? We will also look at some of the international dimensions of corporate venturing. In particular, we will study how corporations in Europe and Japan view the US private equity market.

The discussions in Chapter 3 will set the stage for providing a framework to analyze how successful have corporate venturing programs been. In Chapter 4 we will define measures of success and compare the results achieved by corporate venturing programs to the broader private equity market. More importantly we will address the issue of whether there is a need for corporate venturing programs and what factors contribute to success in corporate venturing. Finally in Chapter 5 we will offer our conclusions and a summary of the key learning's from this research effort.

Chapter 1 : The Private Equity Market

In this Chapter, we will describe the key structural elements of the private equity market in the United States. It is useful to undertake this exercise because Corporate Venture Capital operates within the broader context of the overall private equity market. There are very close relationships and frequent interactions between corporate venturing programs and the professional venture capital investors that make up the larger private equity marketplace. Therefore, an understanding of the Private Equity market will facilitate our analysis of corporate venturing programs.

What is the Private Equity Market ?

In general the term “Private Equity Market” refers to equity investments in unregistered securities of mostly private and some public firms. In the United States, four subgroups make up the market for private equity [1]. They are :

- Professionally Managed Private Equity Investment Organizations.
- Angel Investors
- Informal Private Equity Market.
- The Rule 144A Private Equity Market

The professionally managed private equity market is largely made up of organizations that are professionally run i.e. the sole job of the managers of these organizations is to make equity investments in privately held companies and then to monitor and add value to the portfolio company [1] . One important way in which organized private equity investors differ from other equity investors is in the role they play in monitoring their investments. Organized private equity investors often play a very active role in their portfolio companies often by taking a seat on the company’s board of directors and by giving operational and

strategic advise to their portfolio company. Such investors can often exercise far greater control over their investments as opposed to passive investors in public equities. Corporate Venture Capitalist's (CVC) are included in the organized segment of the industry because the CVC programs of most companies are made up of managers whose sole responsibility is to make and monitor investments in private equity on behalf of the parent company. This thesis is exclusively focused on the organized segment of the private equity market.

Angel investors are wealthy individuals who have traditionally made investments in closely held private companies. In the United States there is a well developed tradition of wealthy families like the Rockefellers and the Whitneys making investments in private equity. Similarly, in recent times, successful entrepreneurs such as Bill Gates of Microsoft and Mitch Kapor of Lotus have become sources of angel capital to several computer and biotechnology startups. Angel investors continue to be one of the most important sources of seed financing for startup companies in the United States.

The informal private equity market is composed of sale of unregistered securities to accredited individuals and institutions. Typically these transactions involve companies with a larger number of investors with smaller stakes as compared to the organized market. Another important distinction is that inside investors remain the largest group of shareholders in the company after the transaction has been completed.

The last segment of the private equity market is the "Rule 144A" market. In 1990, the Securities and Exchange commission adopted rule 144A which specified rules and regulations under which private securities could be traded among pre-qualified institutional investors. Subsequent to the enactment of this rule, a new market for private equities was created. This market is largely made up of trading in the private equity offerings of publicly traded companies by large financial

institutions. Public companies make private equity offerings primarily to avoid the delays associated with a public offering process.

A final observation on the magnitude of these private equity subgroups. No accurate statistics exist on the magnitude of the Angel and informal private equity markets but Fenn and Liang [1] state that informal estimates of these markets place their magnitudes at several times larger than the organized private equity market.

Participants in the Organized Private Equity Market

There are three important participants in the organized private equity market. They are issuers, investment managers, and investors. A closer examination of the role played by each of these participants will help us understand the structure of the private equity market.

Issuers

A wide array of companies issue private equity. Private Equity is generally one of the most expensive means of financing a business therefore one of the most common reasons for companies to issue private equity is because they find it difficult to raise capital from the less expensive public markets. One meaningful way to segment firms issuing private equity is to divide them into firms seeking venture Vs. non venture financing.

Venture Firms

Venture firms are typically new businesses or ventures. In the past decade such firms have largely been technology oriented firms from the Biotechnology, Medical, Software, Computer, Semiconductor and Networking industries. Most Corporate Venture Programs make investments in the venture segment of the private equity market. The firms in this segment are characterized, based on

their maturity, as early stage or late stage. Early stage firms are those that have very uncertain technologies or are in early stages of developing a product. These firms are not generally shipping products and therefore do not significant revenues or positive cash flows. Early stage ventures issue private securities in order to finance research, product development and working capital. While such firms are by definition considered to be highly risky, the risk is offset to some degree by their high growth potential. Late stage venture firms are more mature new ventures. They are characterized by rapid revenue growth and positive cash flows. Such firms are typically shipping a product and have started establishing distribution channels. The potential of their products and technology is also less uncertain as compared to early stage ventures. Later stage ventures issue private equity to finance working capital to sustain their rapid growth. Subsequent to this infusion of equity financing most late stage firms often mature to a stage in their life cycle in which they can either go to the public markets to seek future financing through an Initial Public Offering (IPO) or get merged or acquired by other companies. Of course some companies remain private and satisfy their future financing needs through internally generated cash flows or banks.

Non Venture Firms

The second major group of firms that issue securities in the private market are non venture firms. These firms are typically mature businesses both in terms of their age and revenues, which often exceed \$50 Million. Non venture firms belong to a broad array of industries such as food, retail, and distribution. These companies generally have slower growth rates and stronger cash flows as compared to venture firms. They have several motivations for going to the private equity market. First many private firms, including many that are well established do not have credibility on the public markets which blocks their access to these markets. Another group of firms with limited access to the public market are those undergoing financial distress. Second, some private firms

need to secure financing faster than can be accomplished through registering for public placement. Third, family held private businesses undergoing a change in ownership often issue private equity to enable the original owners to cash out and be replaced by their heirs, new management and a group of investors. Finally, managers of non strategic business units of publicly traded companies use private equity placements to accomplish Leveraged Buy Outs (LBO's). These transactions allow the managers and an outside group of investors to take a public company or more often a division of a public company private. LBO's typically create value by allowing the new managers to focus on a narrow product scope and by increasing the operational efficiency of the business to reduce the leverage incurred to finance the buyout. Corporate Venture Capital programs are relatively inactive in this segment of the private equity market.

Investment Managers

Investment managers are professionals that invest and monitor their investments in firms that issue equity. As mentioned earlier, investment managers in private equity are very active in their oversight of their investments. They exercise a high degree of control over their investments, often by assuming seats on a company's board and by advising their companies on issues such as recruiting, strategy, and business alliances. These investment managers operate within two organizational structures.

The first is a limited partnership. In the 1990's over 80% of the investments in private equity were made by managers belonging to limited partnerships. Figure 1.1 shows a remarkable increase in the private equity investments being managed by limited partnerships. Another interesting trend that emerges from figure 1.1 is that non venture investments constitute over 70% of the total investments in private equity. (One of the reasons for this trend is that in recent years there has been a dramatic increases in the size of the fund managed by a partnership. This increase in the money available for investing has caused

partners to make larger investments. Non venture investments are therefore natural candidates for such investments due to their size.)

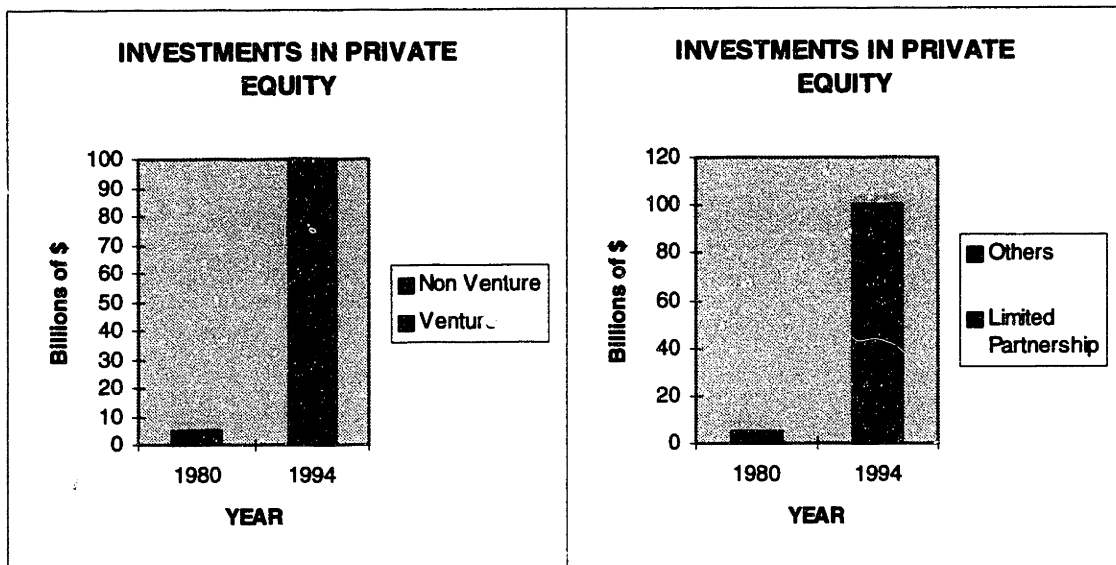


Fig 1.1 Trends in Private Equity Investments 1980 -1994

(Source : The Economics of the Private Equity Market)

A limited partnership is an organizational structure in which the investment managers, often called general partners, manage and monitor private equity investments for another group of largely passive investors called limited partners. The limited partnership structure typically lasts for a period of ten years and is designed to shield the limited partners from most legal liability from the investments made by the general partners on their behalf. The general partners also invest their own funds in their portfolio companies alongside the funds provided by the limited partners. They receive their compensation in two ways. First, limited partners pay a management fee to cover the salaries and other operating expenses of the investment partnership. This management fee typically varies between 1-2.5% of the funds under management. Second, general partners receive a share of the profits made by the total investment (which includes the funds provided by the limited partners). This share of the profits is called a carried interest and is typically 20% of the profits earned by the investments made by the partnership. An example will clarify this concept.

Suppose that a partnership invested \$10M in a portfolio of companies which were subsequently sold to other investors through an IPO or merger for \$15M. Assume also that the sources of the \$10 M were limited partners, \$9 M and general partners \$1 M. Then, the limited partners would receive \$9M + 80% of \$5M, or \$13M. The general partners would receive \$1M + 20% of \$5 M or \$2 M as their share of the profits. The \$1 M (20% of \$5 M) is called the carried interest. In practice the general partners receive their carried interest only after the limited partners have received their entire original investment, \$9 M in the above example. In fact many partnerships include hurdle rate covenants, which state that general partners can start receiving their carried interest only after the limited partners have been returned their original investment plus an amount that equals their original investment times a predetermined hurdle rate.

As an organizational structure, the limited partnership is a particularly suited to facilitating investments in private equity, and in particular in private equity of new ventures. Investing in private equity of new ventures is a complex process. Such firms typically have limited financial resources or assets. They have uncertain technologies and prospects. Therefore, investors need to perform careful due diligence prior to investing and provide constant oversight and guidance to the fledgling portfolio company after making an investment. Limited partnerships have over the years structured themselves to perform these functions efficiently. Most limited partnerships exist for a period of ten years. During the first three to six years, the general partners screen investment opportunities and make select investments. In order to bring the most insight into the investment selection decision, General Partners specialize in narrow industry segments such as Biotech or Software. Such specialization allows the general partner responsible for an industry segment to make superior investment decisions. Once an investment has been made, General Partners monitor their investment through several means such as assuming a seat on the board of the company. Finally, after about six years into the life of a partnership, the General

Partners start harvesting their investments by advising and guiding their successful investments through the process of going public or cashing out through a merger, acquisition or other transfer of their equity position. Notice that each of the activities performed by the General Partners is potentially accomplished more efficiently by a single or small group of highly skilled persons as opposed to a large number of unspecialized passive investors. This accounts for the popularity of the limited partnership as the predominant form of investment in private equity. The limited partners, general partners, and portfolio companies have also developed several procedures to better align their interests and to properly exploit information asymmetries between themselves. These issues are commonly referred to as agency problems and information asymmetry problems. We will expand on these issues in greater detail in later chapters because Corporate Venture Capitalists face similar problems and solving them efficiently is fundamental to the success of a Corporate Venturing Program.

The second organizational structure used to make investments in private equity is through the venture capital subsidiaries or divisions of financial and non financial corporations. Corporate investment managers particularly those from non financial corporations play a dual role of an investment manager as well as an investor since they primarily invest funds from their own company. As shown in figure 1.1, corporate investment managers manage only about 20% of all investments in private equity. Furthermore, in recent years non financial corporate managers have accounted for about 7% of all venture capital investments as compared to 13% for financial corporations. Table 1.1 shows recent trends in the amounts of venture capital managed by corporations and limited partnerships. We will describe the organizational structures employed by corporate investors in greater detail in subsequent chapters.

Year	Venture Capital Funds In Billions of \$	Percentage of Stock Managed by			
		Limited Partnerships	Corporate Industrial	Corporate Financial	Others
1985	\$ 19.60	75.00	8.00	13.00	3.00
1986	\$ 24.10	78.00	8.00	11.00	3.00
1987	\$ 29.00	81.00	7.00	11.00	2.00
1988	\$ 31.10	83.00	7.00	9.00	1.00
1989	\$ 34.40	79.00	7.00	14.00	-
1990	\$ 35.90	80.00	7.00	13.00	-
1991	\$ 32.90	81.00	7.00	12.00	-
1992	\$ 31.10	81.00	7.00	12.00	-
1993	\$ 34.80	81.00	7.00	12.00	-
1994	\$ 34.10	79.00	7.00	14.00	-

Table 1.1 : Venture Capital Funds under Management

Investors

The third important player in the private equity market are investors. In recent years, most investments in private equity have been made by large public and private pension funds such as Calpers, ATT, and IBM. Other major investors include University endowments from Harvard, Yale and Princeton as well as Bank holding companies. As mentioned earlier, most of these investors play the role of limited partners in professional limited partnerships. Their main motivation for participating in the private equity market is higher financial returns. In the past decade, these investors have invested record amounts of funds into the private equity market, mostly through limited partnerships. Figure 1.2 shows the funds committed to private equity partnerships in the past decade.

Corporations, both financial and non-financial are another active group of investors in the private equity market. In particular, non financial corporations, through their venture capital organizations play an important role in the market for equity of new, technology oriented ventures. We will describe these investments in greater detail in Chapter 3.

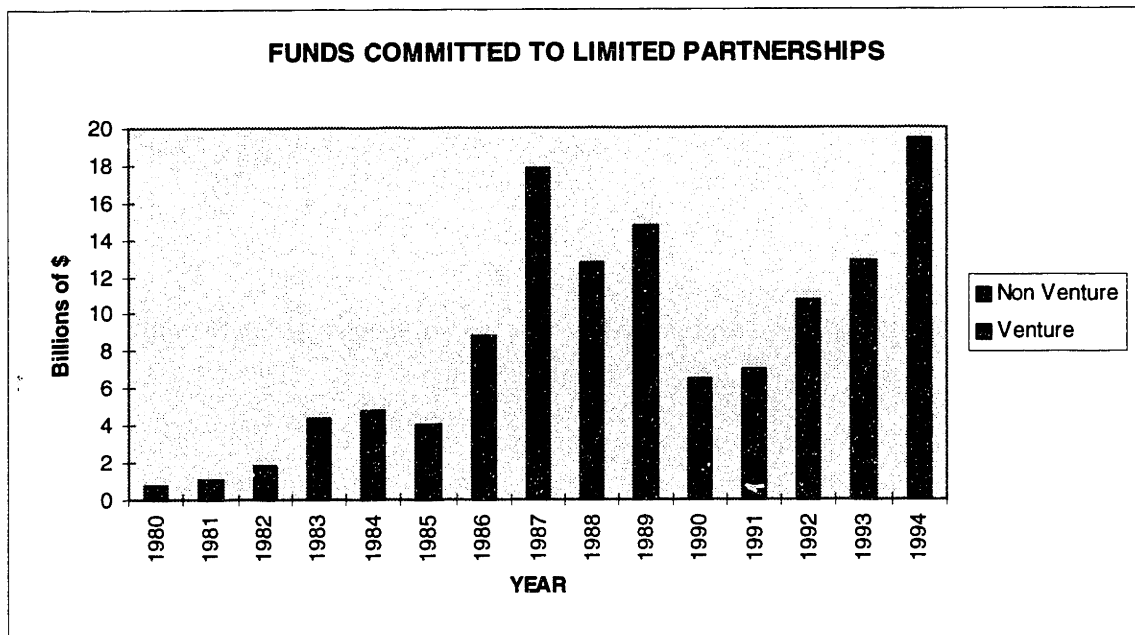


Figure 1.2 : Funds Committed to Private Equity Limited Partnerships

Summary

In this Chapter, we have laid the foundation for understanding the structure of the private equity market. We segmented the market into venture and non venture equity market and developed an understanding of three major players that shape the industry. We have placed Corporate Venture Capital programs into the venture segment of the private equity market. In this segment, CVC's play the role of both investors and investment managers.

Chapter 2 : Why do Corporations want to be Venture Capitalists ?

In this Chapter we will examine the reasons for why Corporations develop venture programs. An understanding of corporate motivations for pursuing venture capital will help us to better analyze the structure of venturing programs that companies have established. We will also be able to make a more meaningful assessment of how corporate venture programs are performing with respect to their goals.

Most corporations become corporate venture capitalists for two broad reasons, strategic and financial. In the following sections we will describe each of these models in greater detail.

Strategic :

One of the most frequent reasons for corporate investing in private equity of new companies is the attainment of “strategic” as opposed to purely financial objectives. That is, the investing company hopes to attain a competitive advantage through investing in the private equity. Of course ultimately, sustainable competitive advantage should lead to superior financial results.

Technology - a Key driver of Strategic Investments

Our analysis of corporate investments in new ventures shows that technology is one of the most important drivers of strategic investments in private equity. Table 2.1 shows the major industry segments in which strategic corporate investors have been active. The overwhelming majority - over 95% - of investments are in industries such as Biotechnology, Computers, Software, Semiconductors, Medical Instrumentation, Pharmaceuticals and Telecommunications, in which technology is one of the dominant sources of competitive advantage. Indeed,

one of the key characteristics of venture backed companies is their high level of R&D spending - \$20K/employee as compared to \$9 K /employee for fortune 500 companies [3].

Where Have Corporations Invested		
Industry	Number of Investments	Percentage
Advertising	1	0.13%
Aerospace	1	0.13%
Agriculture	12	1.55%
Biotechnology	111	14.38%
Broadcasting	2	0.26%
Cable	2	0.26%
CAD	32	4.15%
Computer Networking	43	5.57%
Computer	80	10.36%
Distribution	1	0.13%
Education	7	0.91%
Electronics	28	3.63%
Environment	6	0.78%
Financial Services	2	0.26%
Food	8	1.04%
Instrumentation	10	1.30%
Information Services	2	0.26%
Internet	13	1.68%
Materials	4	0.52%
Medical	100	12.95%
Multimedia	18	2.33%
Optics	6	0.78%
Pharmaceutical	4	0.52%
Power	4	0.52%
Process Control	8	1.04%
Retail	5	0.65%
Robotics	4	0.52%
Semiconductor	74	9.59%
Software	86	11.14%
Data Collection	5	0.65%
Telecommunication	60	7.77%
Data Storage	10	1.30%
Data Processing	23	2.98%
Total	772	100.00%

Table 2.1 : Breakup of Corporate Venture Investments by Industry

Even within the broad "technology" umbrella, corporate investors have varied motives. For example some investors make strategic investments to complement their internal R&D. Such decisions are often made when it would be too expensive for the company to develop a technology from scratch. Cisco Systems, a leading manufacturer of computer networking equipment has regularly made equity investments in companies whose technology complements Cisco's R&D. For example, in 1993, Cisco made an equity investment in Cascade Communications a rapidly growing privately held company. As part of the investment agreement, Cisco and Cascade agreed to jointly develop computer networking technologies based on combined Cisco - Cascade technology. Appendix B, lists the private equity investments made by Cisco and their strategic rationale. It shows that Cisco invests in rapidly growing young companies with the goal of exploiting business synergies in areas such as technology, marketing and distribution.

Many corporate investors look upon equity investments in high growth companies with a view towards acquiring the company in the future. The recent increases in the numbers of privately held companies in the computer, biotechnology, and software industry should further fuel this trend because many companies will seek alliances or merge as these industries consolidate. Globalization is also expected to fuel this trend since it may make sense for younger companies to enter foreign markets by piggybacking on more experienced companies.

Some companies invest in privately held technology leaders because they may have fallen behind on technological innovation in a rapidly growing area or otherwise been denied access to a potentially beneficial technology. The equity investment then provides companies with leverage in either licensing the technology from the new venture, or even acquiring the company at a later stage. Such investments increasingly make sense in an today's business

environment where knowledge is valued very highly. Biotechnology companies are prime examples of such investments. Given the high costs and long time period (typically 10 years) associated with developing new drugs, large drug manufacturers have made numerous investments in private Biotechnology and Medical companies, particularly those with strong patent portfolios. Appendix D shows the investments made by large pharmaceutical companies in privately held biotechnology companies with strong intellectual property.

Venture programs have also been used by corporations to diversify or rapidly enter high technology businesses. For example, Kubota Inc. a Japanese manufacturer of agricultural machines used corporate venturing to invest \$123 M in six computer companies as part of its strategy of entering the computer business.

Some companies view corporate venturing as buying long term options. For example, Motorola Inc.'s venture arm, called Motorola New Enterprises invests in companies that are developing potentially breakthrough technologies and new markets in businesses in which Motorola currently does not play. The idea is that equity investments in risky but potentially high growth companies have value, similar to financial options, because they give Motorola the right but not the obligation to participate in these markets and technologies in the future. Many investments in Biotechnology and drug development companies can also be viewed as purchases of long term options.

Entrepreneurship

Lastly, some companies, most notably 3M incubate some of their most exciting projects by funding them as entrepreneurial corporate ventures. By funding these projects as virtual companies that can later either be spun out or retained in house, 3M hopes to simulate the incentive systems and entrepreneurial spirit

of high growth companies. We call such investments “Spin Up” venturing. We will describe it more detail in Chapter 3.

Financial :

Several corporations have been attracted to the private equity market by the promise of high financial returns. Some of the most prolific financially driven investors in private equity are financial corporations such as Hambrecht and Quist. In fact, from 1985 to 1995, financial corporations have held an average of 12.2% of the equity of privately of venture financed companies. Table 2.2 shows some of the most active financially motivated investors in private equity during 1980 - 1996. For this analysis, we have treated financial subsidiaries of non financial corporations such as GE Capital as a financial corporation. Table 2.2 also breaks out the current status of the portfolio companies into Privately Held, Public, Acquired/Merged and Out of Business. These four states represent what happens to privately financed companies in the later stages of their life cycle and has important implications for investors seeking to exit their investments. We have also compared the portfolio of financial corporations with that of Ameritech, one of the largest corporate venture programs whose primary motivation is not financial return and with Kleiner Perkins Caufield & Byers, one of the largest Venture Capital Limited Partnerships.

Investor	Number of Investments	Current Status of Portfolio Companies							
		Privately Held	%	Public	%	Acquired / Merged	%	Out of Business	%
Hambrecht & Quist	292	80	27%	109	37%	103	35%	50	17%
Alex Brown	102	20	20%	44	43%	38	37%	15	15%
Morgan Stanley	82	22	27%	44	54%	16	20%	13	16%
JP Morgan	55	21	38%	27	49%	7	13%	1	2%
GE Capital	48	11	23%	27	56%	10	21%	4	8%
Goldman Sachs	37	17	46%	18	49%	2	5%	1	3%
Kleiner Perkins	270	86	32%	98	36%	49	18%	36	13%
Ameritech *	31	9	29%	10	32%	8	26%	3	10%

Table 2.2 : Financially motivated Corporate investors in private equity

Clearly, financially motivated corporate venture programs are often significantly more active in investing in private equity as compared to corporate venture programs of non financial corporations. In fact, the investment portfolios of companies like Hambrecht and Quist look very similar to those of large venture capital partnerships like Kleiner Perkins, both in terms of the numbers of investments and their status. Indeed, the corporate venture arms of many financial corporations are in fact structured as limited partnerships with the parent company playing the role of a limited partner.

The portfolio's of financial corporations are more diversified than those of strategic investors. They invest in Biotechnology, Computers, Software, Semiconductors, Retail, and Food industries. Another interesting attribute of private equity investments by financial corporations is that a very high percentage - almost 45% go public. Since IPO's or the process of going public is a particularly attractive means for investors to exit their investments, this record looks particularly appealing. However, one should bear in mind the fact that most of the financial companies listed in Table 2.2 are major underwriters of IPO's. Thus investments made during later stages or at an IPO contribute to the favorable statistic.

Spin Out Venture Programs

Several non financial companies have also created corporate venturing programs with primarily financial motivations. These programs are often referred to as "Spin Out" corporate venturing programs. Spin Out corporate venturing programs were created in the 1980's and 90's by corporations as a means to profit from the creativity and inventions of employees that were leaving the parent company in order to start their own ventures. We will use Xerox's venture subsidiary called Xerox Technology Ventures to illustrate the Spin Out Corporate Venturing model since it is highly representative and one of the best examples of Spin Out Corporate Venture Capital [4] .

Xerox Technology Ventures is a subsidiary of Xerox Corp., a well known fortune 50 company that makes photocopiers and other office machines. What is less well known is that Xerox, and in particular its research arm Xerox Palo Alto Research Center (PARC) are a hotbed of creativity in computers and software. In fact the ubiquitous Graphical User Interface and Mouse used in most computers were invented but not commercialized at Xerox PARC. Xerox Technology Ventures (XTV) was founded in 1988, when Xerox found itself in the midst of difficult negotiations with several of its managers and employees interested in spinning off a company to commercialize software technology invented at Xerox. Many large companies are increasingly facing similar issues of their employees wanting to build their own companies. There are several reasons for such a move. Some employees may perceive the atmosphere in large companies to be too bureaucratic, others may find that the projects and technologies they are working on do not fit well with the strategic direction of the company. The recent waves of corporate restructurings and downsizings have contributed to this trend due to the elimination of many highly promising projects. Lastly, many engineers and managers have seen their colleagues achieve unparalleled financial and professional success by setting up their own companies and taking them public.

Xerox, and other companies have developed corporate venture capital programs to profit from the inevitable and increasingly frequent departures of such employees. Xerox Technology Ventures was structured as a subsidiary of Xerox Corp. It received \$30 Million to invest in technologies invented at Xerox, that were not of direct strategic interest to it. Its highly simplified business model is as follows :

XTV's venture managers look for a promising but non strategic Xerox technology and employees that have interest in commercializing such a technology. If the

business plan for the technology appears very promising, Xerox's lawyers create a new spin out company which is independent of Xerox. XTV funds this company through an injection of equity financing. XTV manager's add value to this new company by giving it access to resources such as technology, office space, purchasing etc. Ultimately, this new company and its employees can sever all links to Xerox. It can go public, get acquired, get further financing from other sources or remain independent. At this stage, XTV partners cash in (called harvesting in private equity jargon) their investments. The key aspect of the investment is that it is made with the sole purpose of obtaining a high financial return. One of the main differences between the Spin Out and purely financial forms of venture capital is that in the Spin Out model, the equity of the participating employees increases with time based on their meeting certain predetermined goals. This differs from most financial venture capital programs which lead to a dilution of the equity held by the employees of the new venture with each new round of financing.

Summary

In this chapter, we have examined some of the key motivations for companies to invest in new ventures. In later chapters we will show that how these objectives influence the design of corporate venture programs.

Chapter 3 : Corporations in the Private Equity Market

1985 - 96.

In the previous chapter we described why corporations want to participate in the private equity market. In this chapter we will describe how they participate in the US private equity market. We will focus our description and analysis on the role of non financial corporations in the US private equity market in the 1980's and 90's. We will identify the major corporate venture programs and the investment vehicles used by them. Understanding the investment vehicles and organizational structures employed by corporations is important because it has a major impact on the ultimate success of the venture program in that they influence two significant determinants of success; namely how venture programs process information and provide incentives to their managers. Also throughout this chapter we will critically contrast corporate venture programs with venture capital limited partnerships that dominate the private equity industry. Such comparisons will help us analyze whether corporate venture programs add value to the parent corporation.

Corporate investors have developed many types of investment structures to manage their venturing programs. These structures primarily reflect a corporations desired level of involvement in the private equity investment process. Programs with low levels of corporate involvement generally limit the ability of a corporation to add value to its portfolio company. It is our contention, that the ability to add value to a portfolio company through access to corporate knowledge and resources is one of the main sources of a corporate investors competitive advantage - both among themselves as well as over professional venture capitalists. In Figure 3.1 we propose a matrix which segments the most prevalent corporate venture program structures along two dimensions, degree of involvement and potential for adding value.

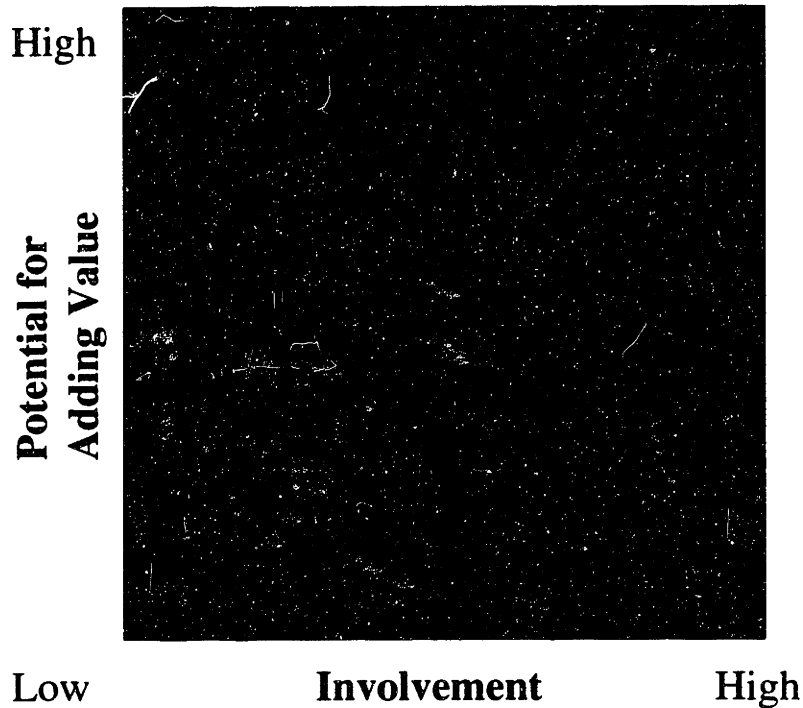


Figure 3.1 : The Corporate Involvement - Value Addition Matrix

High Involvement - High Value Added Structures :

There are three commonly used structures in which allow corporate venture programs to have a high degree of involvement as well as a high potential for adding value to their portfolio companies throughout the investing life cycle. We have named these structures as Spin Out, Spin Up and Venture Division. In Chapter 2 we introduced the Spin Out form of Corporate Venture Programs. The Spin Out model is a type of CVP in which the primary investment objective is financial. It has been used by companies like Xerox to benefit from the creativity and entrepreneurship of departing employees or developers of technologies that have limited strategic value to the parent company. The Spin Up form of Corporate Venturing was also introduced in Chapter 2. The 3M Corporation is widely regarded as a leading practitioner of this investment structure. Spinning Up involves selecting high potential projects from within the company and then nurturing them as separate enterprises in order to minimize the negative effects

of a bureaucratic corporate environment and to mimic the entrepreneurial spirit often found in young companies. The main difference between Spin Up and Spin Out programs is that Spin Up programs deal with programs of strategic value to the company which are intended to be integrated into the company whereas Spin Out programs deal with technologies of non strategic value to the company that have been targeted to be spun out.

The third type of CVP structure with a high level of involvement is the Venture Division. This type of investment structure is the most widely used vehicle for corporate investments in private equity. This structure involves creating a division or a group of a company whose sole focus is to make equity investments in external, independent companies. Corporate Venture divisions mostly invest alongside professional venture capitalists, as a part of an investment syndicate. Venture Divisions differ from Spin Out and Spin Up models because of their focus on investing outside the company. Their legal structures have considerable variation. Some Corporate Venture Divisions look like any other corporate division in terms of their legal structure and employee incentives. Yet others try to replicate the investment structure of venture capital limited partnerships by creating a limited partnership in which the company acts as a limited partner and some of its employees act as general partners within the partnership. The compensation incentives of these employees are often similar to traditional venture capitalists with the company employees who also play the role of general partners, getting part of their compensation by sharing in the carried interest generated by the investment. Eastman Kodak's CVP is an example of such an investment structure. Eastman Kodak invests in private equity through Aperture, a \$35 M venture capital limited partnership in which Kodak is the sole limited partner. In addition, one of the General Partners of Aperture is also Eastman Kodak employee. Kodak also makes equity investments which have a shorter term strategic rationale (and often higher financial commitment) through another venture division which is completely within Kodak.

Low Involvement - Low Value Added Structures :

Most corporate venture programs that have that seek to invest in private equity with a low level of involvement do so through two vehicles. The first is by being a limited partner in a venture capital partnership. Such a vehicle allows a corporation to learn about the private equity market and sometimes get an opportunity to look at emerging technologies and companies. However, limited partners by virtue of their legal status as passive investors have limited ability to add value to the investment portfolio. The second investment vehicle for companies seeking a low level of involvement is through investing in specialized corporate venture funds. Boston based Advent International is the largest corporate venture fund investor with almost \$200M under management in 12 dedicated corporate venture funds. The investors in Advent's dedicated corporate funds have included ABB, Apple, Monsanto and Nippon Steel. The Advent corporate funds have a charter which defines the areas in which the fund focuses. The selection of this area is driven by the corporate investor, who may have one of its employees work regularly with the investment team. As a result of these steps, the specialized corporate funds provide more opportunities for a corporation to add value to a portfolio company as compared to being a limited partner. However, such funds almost always do not provide the value adding potential of independent venture programs. Some of the structural features of such funds are obstacles to adding value. For example, consider the case of corporate investors that are competitors investing in two dedicated corporate venture funds. Since the funds are managed by the same company, it is highly likely that both funds will have access to similar deal flow and indeed might end up investing in the same companies. As a consequence, a potential source of competitive advantage could be neutralized.

Corporations in the Private Equity Market :

In order to analyze the role of corporations in the private equity market, it is useful to divide the corporate private equity lifecycle into three chronological phases, the investment phase, the monitoring phase and the harvest or exit phase.

The Investment Phase :

During the investment phase, corporate venture managers screen potential investment opportunities, perform detailed analysis of select investment candidates -also called "due diligence" - and finally structure the terms and conditions of an investment. The investment phase is extremely demanding in terms of the magnitude of effort and the skills required to accomplish it well. Most investment managers have to screen hundreds of investment proposals prior to making a single investment decision. Investment managers also have to be skilled in diverse areas such as technology, finance, entrepreneurial business management and business development - a rare skill set in most corporations. This job is made even more difficult by the organizational structure within which corporate venture programs are located. For example, venture managers often face significant barriers to investing in external companies from corporate R&D and business units that are trying to protect their turf. We have shown in earlier chapters, corporate venture programs are particularly interested in technology oriented young companies which generally have a high degree of business and technological uncertainty associated with them. A troublesome consequence of this uncertainty is that it is very difficult to value such companies with different valuation techniques often resulting in a very different valuations¹. Despite

¹ Several techniques can be used to value young companies. The "Venture Capitalists Method", commonly used by Venture Capitalists discounts equity cash flows at very high discount rates ranging from 50-75%. Another methodology is to use standard Discounted Cash Flow techniques and a Weighted Average Cost of Capital determined with the help of comparable publicly traded companies. Finally, Adjusted Present Value and Options Pricing techniques can also be used for valuing companies. See "A Note on Valuation in Private Equity Settings" Harvard Business School

these difficulties, corporations have increased their participation in private equity investments since the 1980's as evidenced by figure 3.2.

Investment Trends :

The figure shows the number of rounds of financing² completed by corporate investors from 1981 to 1995. The data for 1996 reflects the results till Q1 only.

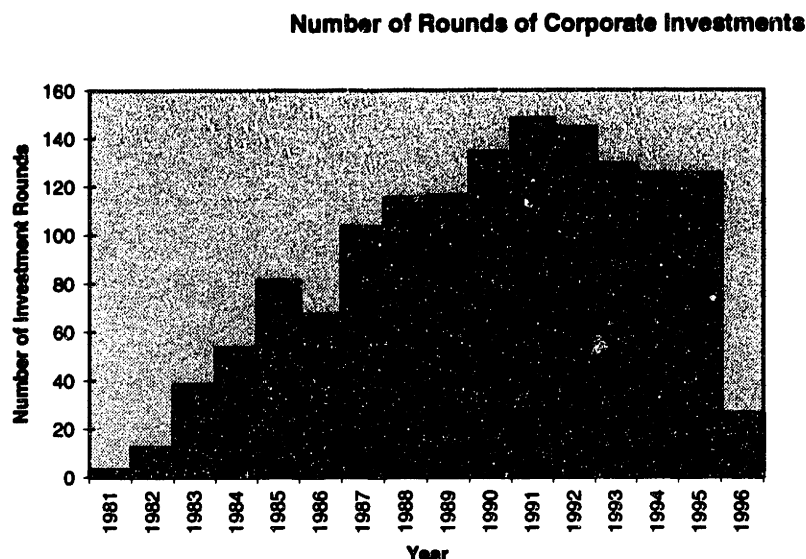


Figure 3.2 : Number of Rounds of Corporate Investments

While prior research [5] has characterized corporate investors as highly cyclical, our data indicates that while individual companies may well be cyclical in their commitment to private equity, as a group corporations are not highly cyclical . In fact they have generally increased their commitment to private equity investments over the past decade.

Case 9-297-050 by John Willinge and Josh Lerner for a description of private equity valuation techniques and examples.

² Most private equity investments are made in discrete sequential phases called “rounds”. In each round a company attempts to raise money for a specific purpose, for example to build a prototype or finance working capital. When a company needs access to more cash, it seeks another round of financing. Typically when a company becomes more mature it goes to the public markets to meet its cash needs - a step that is called an Initial Public Offering or IPO.

Indeed one of the reasons that corporate investors are an important source of financing for venture backed companies is due to the fact that they dampen the cyclicality of the investments from traditional venture capitalists. Figure 3.3 validates this assertion. It compares the numbers of companies that received equity financing exclusively from Venture Capitalists with the number of companies that received financing from non financial corporations.

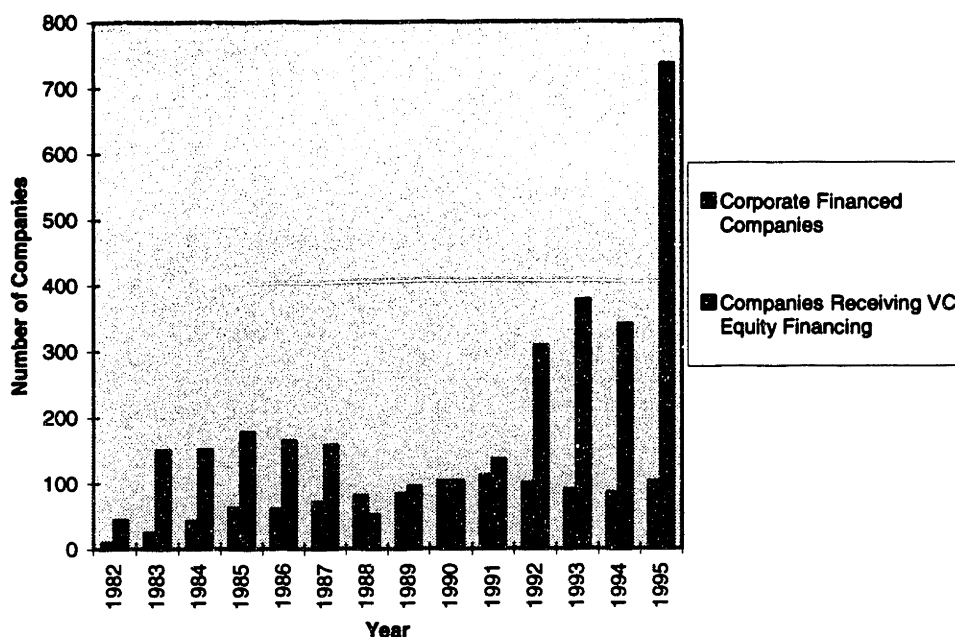


Figure 3.3 : Number of Companies Receiving Equity Financing from Venture Capitalists and Non Financial Corporations.

The figure shows that in many periods corporate investors have acted countercyclically to professional venture capitalists. In particular, corporations provided financing to almost 50% of venture backed companies from 1988 to 1991. The figure also shows that corporate investors have on average provided financing to almost 30% of all venture backed companies. The countercyclicality of corporate investments has important implications to the returns provided by their investments. In general, investing during periods when traditional venture

capitalists have withdrawn from the market is likely to be a source of higher financial returns to corporate investors due to the fact that they will avoid investing in companies with inflated valuations [6].

Major Corporate Investors :

Table 3.1 lists the twenty five most active corporate venture investors in US private equity. This list was derived from our database of corporate venture investors who made equity investments in two or more privately held companies. In general, these investors are well known large corporations from the US and Japan³.

Several interesting characteristics emerged from our study of active corporate investors. First, the most active corporate investors are large telecommunications, computer, semiconductor and pharmaceutical companies. The industries to which the investors belong, correlates very well with the type of companies that receive corporate venture investments. As indicated in the previous chapter, corporate investors have tended to invest heavily in technology oriented companies. Figure 3.4 shows the broad industry segments in which corporate VC's have invested during the past decade.

³ Our data shows that Japanese Corporations are the most active direct investors in US private equity and account for 21% of all corporate investments. Japanese companies tend to invest on their own, which differs from European investors who rely on specialized investment funds or venture capitalists to invest for them.

Corporate Investor	Industry	Number of Companies Invested In (1980-95)
Xerox	Office Equipment	46
Nippon	Conglomerate	39
AT&T	Telecommunications	32
Ameritech	Telecommunications	32
Johnson & Johnson	Pharmaceuticals	25
Mitsubishi	Conglomerate	23
Hewlett-Packard	Computers	20
Intel	Semiconductors	20
Tenneco	Chemicals	19
Sumitomo	Conglomerate	19
Baxter	Pharmaceuticals	17
Apple	Computers	17
Mitsui	Conglomerate	16
IBM	Computers	16
Eli Lilly	Pharmaceuticals	16
Adobe	Software	16
Northern Telecom	Telecommunications	14
US West	Telecommunications	13
Kyocera	Electronics	13
DuPont - Merck	Pharmaceuticals	13
Ciba Giegy	Pharmaceuticals	12
Microsoft	Software	12
Kubota	Agriculture&Computers	11
Humana	Healthcare	10
Harris Corp	Electronics	10

Table 3.1 : Most active Corporate Venture Investors

Table 3.1 and Figure 3.4 clearly show that large corporate venture capitalists tend to target industries that they understand well. This has important implications on the ability of corporate venture capitalists to select investments because in general young privately held companies do not provide a high level of disclosure as compared to public companies. This means that corporate investors can leverage their superior understanding of their industry to improve their analysis of investment candidates.

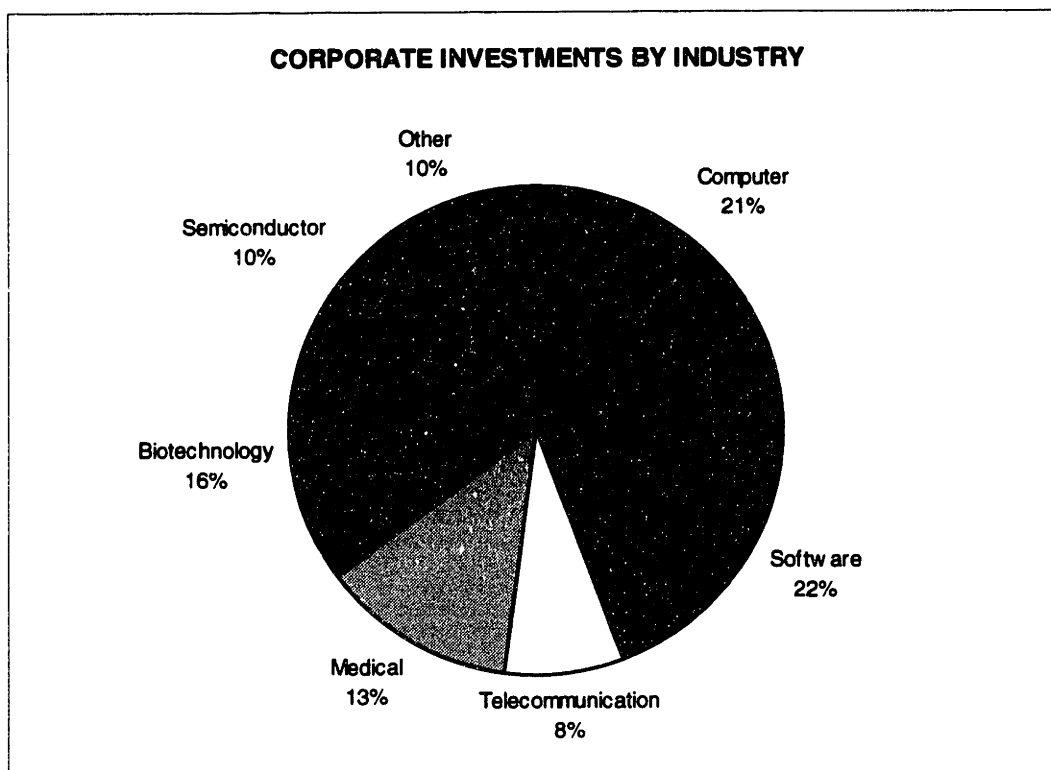


Figure 3.4 Industries targeted by Corporate Investors

Second, most of the venturing programs target external companies as opposed to spin outs⁴. Third, when investing in external companies corporate investors almost never invested alone. Instead, in 99% of the portfolio companies we studied, corporate investors coinvested with professional venture capitalists and other corporations. This important point needs more clarification. While a corporate investor may be the sole investor in an investment round, it is almost never the only outside investor in a company. Most exceptions to this assertion are spin outs from the parent company. Indeed, even when corporate investors in one or more investment rounds, they do so as part of a syndicate of venture capitalists and other corporate investors. This has important implications to the corporate investing process because it means that corporations operate within

⁴ Our data does not include Spin Up investments. Such data is very difficult to obtain from public sources.

and are tightly linked to the larger private equity industry. Furthermore, the relationships forged within an investment syndicate are an important source of deal flow and learning for corporate venture capitalists.

Upto this point we have described the actions of high involvement corporate venture capitalists that use the spin out, spin up or venture division structures of investing. CVC's that invest in private equity through intermediaries such as corporate venture capital funds or venture capital limited partnerships also have to make critical decisions during the investment phase. Their task is primarily centered around selecting a venture capitalist or corporate fund to manage their investments. CVC's take considerable care to structure their investment agreements with venture capitalists to protect their financial and strategic interests. They use restrictive covenants and profit sharing incentives such as those described in Chapter 1 to better align the interests of the outside investors to their own objectives. Commonly used examples of such incentives and covenants are compensating the external investors through profit sharing mechanisms such as carried interest and obtaining the right to evaluate a company in their investors portfolio that wants to either license its technology or seek a merger.

The Investment Monitoring Phase

After corporations have made an equity investment, they enter the investment monitoring phase. The behavior of private equity investors - both corporate and venture capitalists - is very distinct from public equity investors in that many private equity investors assume an active role in monitoring and adding value to their portfolio companies. During the investment monitoring phase the differences between low and high involvement corporate investors are also very striking. High involvement corporate investors use several mechanisms to monitor and add value to their portfolios.

Board Seats :

Many corporate venture capitalists provide active oversight of their companies by assuming a seat on the board of directors of their portfolio companies. The corporate use of the practice of assuming a board seat is similar to venture capitalists who also employ it extensively. Several corporate venture capitalists such as Motorola, insist on assuming a board seat as a precondition for investing in a company. The corporate venture capitalists that we interviewed for this study indicated unanimously that they resolve any potential conflict of interests between their employer and their portfolio company by using a well known legal principle. As board members, they act in the best interest of the shareholders.

Access to People and Resources :

Corporate investors add value to their portfolio companies by providing them access to people and resources such as suppliers, partners and distribution channels. Many corporations, particularly large ones, have access to significant material and human resources. Therefore, they have an advantage over venture capitalists in their ability to add value to portfolio companies. However, corporations should be careful in using their resources and networks to help their investments because too much interference in the operations of the portfolio companies has often led to negative outcomes due for example to the stifling of the entrepreneurial drive of the portfolio company. Despite the difficulties mentioned above, it is during the investment monitoring phase that much of the value for the corporate investor is or can be created. CVC's typically evaluate their portfolio companies during this phase to determine whether there is a possibility to transfer technology, undertake joint R&D, exploit synergy by developing business relationships or even undertaking a merger.

Operating Roles :

Some CVC's, particularly spin out and spin up venture capitalists sometimes assume operating roles in their portfolio companies. For example corporate

venture managers in Xerox⁵ have on several occasions assumed this role. However, much of the current literature on corporate venturing with an external focus cautions against this practice.

Most corporate VC's who use low involvement structures such as corporate funds have low involvement in their portfolio companies and as a consequence have limited ability or incentives to monitor and add value to their investments.

The Exit Phase :

The final phase of a corporate venture investment is the exit or harvest phase. During this phase, CVC's bring a closure to their investment in a portfolio company. The exit strategies for CVC's depend upon a interplay of factors that depend upon what happens to the portfolio company and the strategic objectives of the corporate investor. From the perspective of the portfolio company, four there are four possible outcomes. It could either :

- Remain private and independent,
- Get acquired by or merged with another company,
- Go public,
- Go bankrupt or out of business.

Corporate investors who directly invest in private equity decide upon their exit strategy based upon how their objectives align with each of the above outcomes. They consider issues such as the desirability of continuing a relationship with the portfolio company and financial returns - usually calculated as an IRR on their investment. CVC's that invest through venture capitalists or corporate venture funds also need to worry about exit strategies because they receive their original

⁵ See "Xerox Technology Ventures : March 1995" HBS Case N9-295-127 by Brian Hunt and Josh Lerner.

investment and profits as distributions - from their investment managers - of stock in their portfolio companies.

If the portfolio company remains privately held and the corporate investor desires to continue its relationship with the company, then no exit strategy is needed. On the other hand if the corporate investor wishes to exit from the investment, it can do so by selling its stock to venture capitalists, to the portfolio company itself or to certain institutional investors. Likewise, corporate investors have the choice of either acquiring their portfolio company or liquidating their equity position to another company that intends to acquire or merge with the portfolio company. All the above situations pose numerous challenges, for example the stock of private companies is often not very liquid. Similarly, there can be significant divergence in its valuation by different participants to a deal. Therefore exiting a private equity investment when the portfolio company remains privately held or is acquired by another company can be a difficult and challenging task⁶.

Should a portfolio company go public, it is normally much easier to liquidate one's holding (or add to it). However, corporate investors still face issues such as timing when to sell the stock. These issues can become very important if the compensation of corporate investment managers is linked to the financial returns generated by their portfolio. Finally, if a portfolio company goes out of business corporate investors are at least saved the trouble of planning and executing an exit strategy.

We conclude our description of the exit phase by comparing what happened historically to the companies that received financing from corporate investors to those financed solely by venture capitalists. Table 3.2 presents a comparison of

⁶ "Rogers Casey Alternative Investments : Innovative Responses to the Distribution Challenge" Harvard Business School case N9-296-024 by Josh Lerner describes many of the issues and challenges encountered during the process of distributing stock to limited partners and investors.

such results. It shows that corporate backed companies are significantly more likely to go public as compared to venture backed companies. We will analyze this significant fact in more detail in Chapter 4 during our discussion of success drivers of corporate venture programs. At the same time, the table also highlights the risks inherent in corporate venturing. Almost 10% of the companies backed by corporate investors go out of business and almost 35% continue to remain privately held - which poses significant challenges to corporate investors during the process of exiting their investment.

	Number of Companies				
	Private and Independent	Public	Acquired or Merged	Out of Business	Total
Corporate Backed	282	267	168	88	805
Percentage	35%	33%	21%	11%	100%
Venture Backed	2623	1198	959	469	5249
Percentage	50%	23%	18%	9%	100%

Table 3.2 : A comparison of the outcomes of Corporate and Venture backed companies

Summary :

In this chapter we presented the life cycle of the corporate venturing process. We also suggested a framework to categorize corporate venturing programs based on their level of involvement with the investment process and their potential for creating value.

Chapter 4 : Determinants of and Obstacles to Success

In previous chapters we have developed an understanding of the motivation of and structures employed by corporate venture capitalists. We have also presented the industry context within which corporate venture capital programs operate. These analysis have laid the groundwork for us to answer several fundamental questions about corporate venturing. Is corporate venturing a sustainable strategy ? Has it been successful ? Indeed what is the definition of success in corporate venturing ? In this chapter we will attempt to answer these questions. We will first present our hypothesis on the sustainability of corporate venture programs. Then we will focus on the obstacles faced by corporate venture programs. Finally, we will present our assessment of the factors that contribute to success in corporate venturing. Throughout this chapter, we will continue to compare and contrast CVC's with traditional venture capitalists in order to explore whether there is truly a need for corporate venturing or whether other institutions could accomplish the task better.

Is Corporate Venturing Relevant and Sustainable ?

Our assessment based on this research effort is that corporate venturing can be a *valuable* and *sustainable* way for established corporations in technology oriented industries to develop new and high growth businesses. However we think that it is very important for corporations to focus on *how* to execute their corporate venturing strategies because flawed execution can easily void any potential gains from such a strategy. Let us present some qualitative and quantitative arguments to validate our hypothesis.

Positive Synergy :

Our first contention is that corporate venturing is *valuable* because there are positive synergy's between the resources of corporations and young privately

held companies. The distribution channels, brands, global reach, financial resources and marketing skills of large corporations can create a lot of value when matched with the technological innovation, rapid implementation and entrepreneurship of young startups.

Biotechnology is an industry in which external corporate venturing creates significant value. Let us understand how and why. The current estimates of the average cost of drug development are around \$250 Million⁷. Furthermore this process takes around 10 years. In the past decade numerous innovative biotechnology companies with impressive intellectual property right portfolios have been formed with financial backing from venture capitalists. However, table 4.1 shows that these companies face difficulties in financing the high cost of drug discovery from traditional venture capitalists. Venture Capitalists have tended to make relatively small investments per financing round - often due to restrictive covenants in their partnership agreements - and are further handicapped by their investment horizon of approximately ten years.

	1991	1992	1993	1994	1995
Average Amount Raised Per Round (M)	\$4.8	\$5.2	\$5.6	\$5.7	\$6.3
Average Amount Raised in IPO's (M)	na	\$31.3	\$22.3	\$14.7	\$24.7

Table 4.1 : Financing of Biotechnology Firms

Source : VentureOne 1995 Annual Report

One solution has been to take these companies public through an IPO at a very early stage of their lifecycle. Such a strategy is often problematic since the public

⁷ "ImmuLogic Pharmaceutical Corporation March 1991" Harvard Business School Case N9-293-066 by Josh Lerner.

markets are not well equipped to finance companies with highly uncertain prospects and negligible cash flows for a long time. Furthermore, Table 4.1 shows that even companies that went public did not generate the large sums of money needed for financing drug discovery and development. Corporate investors address many of these problems. They are a good match for Biotech firms because they are not only a source of equity financing, but also can provide the young firms access to their manufacturing, sales and distribution capabilities and thereby allow them to focus on the actual drug discovery process. Such investment patterns are well established in the industry - table 3.1 showed that prominent pharmaceutical firms like Johnson and Johnson and Merck are among the most active corporate investors in biotech startups. It is very reasonable to assume that in the absence of a fundamental change in the business proposition of pharmaceutical companies, such a trend is likely to continue⁸. Indeed, in the pharmaceutical industry corporate partnering and investments have become a prerequisite for a company attempting to go public.

Continued Small Company Formation :

Our next contention is that corporate venturing is likely to be *sustained* because we expect that innovative small companies, which are of most interest to corporate venturing programs, will continue to be formed. We also expect the differences in the resources and capabilities of established versus young companies are expected to persist in the future. One of the key differences between established and young companies is their ability to respond to technological change. As long as young companies remain more nimble at responding to technological change, they will be valuable to more established companies. There is little doubt that during the past decade the pace of technological change has accelerated significantly in most technology oriented

⁸ Based in part on the comments of Kevin Tang, Vice President of the Investment Bank Alex Brown and Sons in the 1995 annual report of VentureOne.

industries and there is every reason to believe that there will be no slowdown in the future. A continued acceleration of the rate of technological change suggests that small innovative companies will continue to be formed. An abundant supply of innovative young companies, most of which are expected to be privately financed, promises to be an important source of growth for large companies.

Let us validate our hypothesis with an example from the computer industry. The early 80's were the age of the mainframe. It was widely used, but only by organizations with significant financial resources. Within a decade, at least two technological waves upset the status quo. First was the entry of the minicomputer from companies like DEC. These in turn were supplanted by workstations from Sun, Hewlett Packard, and Apollo. Which in turn have paved the way for powerful personal computers from Compaq, Dell, Gateway, IBM and Apple. Each wave of computers was significantly different from the other and all this change took place in less than ten years. This example illustrates that technological change takes place very rapidly. Young entrepreneurial companies have been very active in capitalizing on sudden shifts in technology. For each IBM and Hewlett Packard there was a Sun or a Compaq or a Dell.

The same story can be retold in other industries that have received attention from corporate venture capital such as computer networking, biotechnology, semiconductors and software. For example, the dominant companies in software and computer networking - Cisco, Bay Networks, Microsoft, Oracle, and Lotus - were entrepreneurial startups which rode to prominence by capitalizing on their ability to respond to technological change. Again, if we think back to how much time was taken by all this change, the answer is less than a decade. In short, the key industries that have received the attention of corporate venture investments (see figure 3.4) have experienced significant technological change. It is also true that young entrepreneurial companies such as Cisco, Wellfleet, Microsoft, Sun, and Apple were in general very adept at capitalizing on

technological change in these industries. It is interesting to note that many companies that were formerly entrepreneurial startups such as Cisco, Microsoft, and Apple are now active corporate venture capitalists themselves.

Another factor contributing to the sustainability of corporate venturing is that technological innovation in small companies - the skill most sought by corporate investors - is likely to be sustained because young startups continue to attract technological and even executive talent from established companies. Witness for example AT&T's loss of its president and CEO designate Alex Mandl to Associated Communications, a privately held wireless communications startup. Other top AT&T executives to leave for startups include Jim Barksdale, who quit to run software high flyer Netscape Communications and consumer electronics chief Joseph Nuccio. These departures are not limited to AT&T, rather companies such as Intel, Nynex, Sun, and Merck have faced similar losses of top tier talent. Such moves of top executives from mega firms to minuscule companies are a relatively new but increasingly common phenomena which signals the continued viability of privately held companies. To be sure this trend is fueled in part by cyclical peaks in the stock market valuations of startup companies and by the numerous stories of large company employees getting wealthy. However, the talent drain can also be attributed to the large scale corporate downsizing that took place during the past decade and led to the departure of thousands of technical and business people. Downsizings not only impacted the people that were laid off but also weakened the overall employer - employee relationship. As a result, thousands of people - including those that were laid off and those that weren't - have gone on to work for or founded private companies. Support for this assertion was found by randomly sampling the former affiliations of the founders and officers of privately held companies in VentureOne's database. An overwhelming number of companies had at least one top officer or founder that came from fortune 500 companies. Corporate venturing - external, spin out or spin up are corporate responses to this trend.

Track Record of Corporate Investors :

Another reason for continued corporate venturing is that as a group corporate investors have a good investment record. In table 3.2 we showed that corporate backed companies are 10% more likely to go public and 3% more likely to be acquired or merged as compared to companies that are only backed by venture capitalists. In general the companies, particularly those that go public are stronger than those that can not, because the process of going public weeds out the financially weaker companies. It is also fair to say that companies that go public or are acquired are generally financially more beneficial to their investors because they provide them with a relatively good exit strategy. While the superior corporate performance in taking companies public might be due in part to selection bias -i.e, corporations may be investing in less risky companies - still we believe that their superior investment record is an indicator of their continued existence.

Superior Financial Results by Exploiting Information Asymmetries :

Finally, we believe that corporate venturing is sustainable because it has the potential to generate superior financial returns for corporations investing in their own or related industries. This ability is in part due to the fact that corporate investors can translate their deep understanding of their own industry into an edge in assessing the prospects of privately held companies. Unlike the public markets, where everyone has access to largely similar information, the private equity market is characterized by asymmetric information. This characteristic translates into the possibility for generating superior financial returns for investors who have an edge in analyzing investment opportunities in the presence of asymmetric information. Indeed past research has shown that there is a spread of 12% per annum between the performance of private equity investors in the 25th and 75th percentile compared to a spread of 3% for investors in publicly traded equities [7] The presence of such wide spreads

means that well designed corporate investment programs that can neutralize information asymmetries should be able to generate superior returns. We should clarify that by “superior” returns we mean returns relative to other investors in private equity. Of course in absolute terms corporate investors should expect returns commensurate with the higher risk of private equities - particularly those of young technology oriented companies.

Obstacles to Success

Prior literature [8] and research into Corporate Venture programs has documented several obstacles to the success of corporate venturing programs. Much of this research is comprised of statistical surveys of corporate venturing programs and individual case studies. The broad conclusions of these studies have been that corporate venturing has led to mixed results. Researchers and practitioners have identified numerous significant obstacles to corporate venturing. In this section, we will present our perspective on the obstacles to corporate venturing. We have arrived at our conclusions based on a study of the prior research as well as interviews with Corporate Venture Capitalists from Eastman Kodak, Motorola, and Hewlett Packard. We have divided the obstacles faced by corporate venture programs into two areas, strategic and operational.

Strategic Obstacles

Lack of Clear Goals :

One of the most fundamental strategic errors made by companies undertaking venturing programs is the lack of a clear and well defined objective. In Siegal and Macmillan's [9] survey of corporate venture programs, corporate managers highlighted a lack of clear objectives as the most significant hurdle to successful corporate venturing. Companies often expect multiple results from corporate venturing programs; commonly encountered objectives include financial gains, promoting internal entrepreneurship, and getting access to external technology.

As we have shown in chapter 3, there are significant differences in the structures of corporate venture programs that are needed to attain each of the above goals. Many companies fail to realize this and find themselves mired in venture programs that can not meet their objectives. Errors at this stage of the program have serious repercussions in the execution of the venture program therefore it is important to clearly articulate a focused set of goals for the program and then construct a program that meets those objectives.

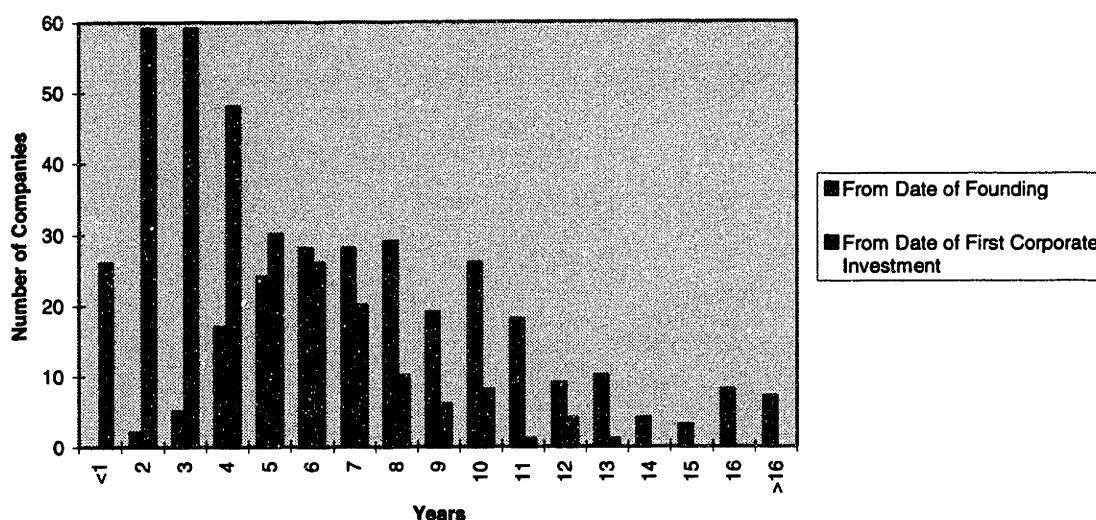


Figure 4.1 : Time Taken by Companies to Go Public

Time Horizon :

Many senior managers are unaware of the long time commitments entailed by corporate venturing programs. It is not unusual for an investment to take more than three years to bear results. For example, on average, corporate investors have to wait 2.7 years for a company in which they have invested to go public. Figure 4.1 shows the distribution of the time taken by companies to go public after receiving their first corporate investment. Another measure of the time horizons that investors ought to be thinking about is the time taken by a company to go public from its founding. Again Figure 4.1 shows a distribution of

the time taken by corporate backed companies to go public from their founding. Four years seems to be the bare minimum time taken by a corporate funded company to go public. These statistics illustrate the need for corporate investors to have a long term horizon for the venture investments to mature. Such a time horizon may not be consistent with the strategic objectives of many companies and lead to unrealistic and unrealized expectations. The history of corporate venturing is littered with programs that were terminated four years after their inception, which in our opinion never allowed them an opportunity to demonstrate their effectiveness.

Choice of Industries :

We have already indicated that corporate venturing is most suited for corporations in industries characterized by rapid technological innovation and an abundant supply of privately held companies with highly talented employees. Industries that lack these characteristics may find that other alternatives such as internal R&D or mergers and acquisitions may be more suited to their objectives.

Culture of Successful R&D :

Companies that have a legacy of very successful R&D need to be careful in designing a venturing program. Such firms often find it much easier to implement Spin Out as opposed to external investment programs because of the tendency of the R&D departments to accomplish every project in house. Such companies should consider implementing their external investment programs through highly independent, well funded organizations or use external corporate or venture investors to establish an external focus.

Rapid Changes in the Overall Corporate Strategy :

Corporations that make frequent changes to their corporate strategy could make the venturing process ineffective. Consider the example of a company like Kodak which had diversified into pharmaceuticals. The corporate venture program

made multiple strategic investments in biotechnology companies. Subsequently, Kodak decided to withdraw from the pharmaceuticals business and sold its Sterling Drug subsidiary. However, the biotech firms that were funded by Kodak continued to remain in the corporate portfolio but were of no strategic value to the company.

Support of Senior Management :

Corporate venture programs that are not well understood by a broad cross section of senior management are frequently shut down in a short period of time. Such corporate programs are perceived by many to be the “pet projects” of a select group of executives and are often easy targets for cost cutting programs during economic downturns. Many successful venture programs attribute a part of their success the continuous support they receive from senior management. In turn, the senior managers that support corporate venturing do so only when they understand its pros and cons very well.

Operational Obstacles

In addition to the strategic errors outlined above most corporate venturing programs fail due to operational errors. In our conversations with corporate venture capitalists, many of the following themes were frequently cited as significant obstacles to corporate venturing.

Lack of Proper Compensation Mechanisms :

The larger private equity investment community - composed largely of venture capitalists - uses compensation as an important tool to align the interests of the limited partners with those of the general partners. Briefly, the two key components of the compensation of venture capitalists by limited partners are a management fee that covers their salaries and operating expenses and the carried interest paid after the limited partners have withdrawn their invested capital (plus sometimes a percentage of their invested capital). Most successful

venture capitalists receive a bulk of their compensation from their share of the carried interest. The carried interest therefore serves as an incentive for the managing partners to think in terms of investments with a long term potential because they have a personal stake in receiving a long term payoff. The time at which general partners receive their share of the carried interest - usually in the later phase of the partnerships lifetime - also serves to ensure that the managing partners continue to pay attention and add value to their investments throughout the investment cycle.

Most corporate venture programs do not make use of this useful motivation tool. They pay their corporate venture capitalists a salary and some bonus based on a variety of criteria, most of which fail to provide an incentive to the corporate venture managers to think of the long term investments. Corporations tend to pay their venture managers salaries and some bonuses because that is the “standard” corporate compensation package and companies are very reluctant to deviate from it, particularly when the deviation could result in some employees potentially earning substantially more money than senior executives. However, a consequence of such a compensation package is that corporate venture capitalists often do not think of investments with a long term payoff. They also do not have an incentive to continually add value to their portfolio companies during their life cycle. As we have indicated earlier, portfolio companies need a strong commitment of time and resources from their investors. Therefore it is not hard to understand why managers without long term incentive to benefit from their efforts may not provide the necessary attention to their investment.

Another drawback of the lack of an alignment of interests is that corporate venture capitalists may not have an incentive to assume risk in order to achieve higher returns. Assuming risk is essential for successful private equity investments since only a small percentage of companies in a portfolio become

successful. Thus lack of risk taking is likely to be detrimental to the financial profitability of the investment.

Finally, poor alignment of incentives hurts corporate venture programs because it limits their ability to attract and retain top talent. There is wide consensus that the specialized skills of the investment managers are extremely important to the successful private equity investments. Therefore the lack of competitive pay packages leads to high caliber corporate venture capitalists pursuing the significantly higher payoffs in the broader venture industry.

Financial returns from CVP's of companies such as Kodak and Xerox⁹ which let their investment managers share in the carried interest seem to indicate that such programs have generated superior financial returns, with IRR's in excess of 25%. In our opinion Kodak's venture program has a good system of incentives (despite it having been subjected to strategic shifts). Its venture manager is a company employee who acts as a general partner - along with outside venture capitalists - of an investment fund in which Kodak is the sole limited partner. The investment manager shares in the fund's carried interest and therefore has the incentive to generate superior long term returns. The fund has independence in making individual investment decisions but at the same time is informally aligned with the strategic and business objectives of the company through the business associations of the investment manager with senior corporate and business unit heads. We would suggest that these linkages need to be more formal for an even better alignment of the fund's objectives to the needs of the business units.

Lack of Autonomy :

⁹ Based on interviews with corporate investment managers and the case analysis of "Xerox Technology Ventures 1995", Harvard Business School Case N9-295-127 by Brian Hunt and Josh Lerner.

Corporate Venture Capitalists often suffer from a lack of autonomy and firm commitment of corporate funds to the venture activity. As a result many corporate venture programs are hindered in their ability to assume risk and make fast, independent investment decisions. Corporate venture programs in which the venture managers have to seek individual approval and financing for each investment have several handicaps. First such programs are more likely to face uneven access to investment funds especially during periods in which the parent company faces reduced profitability. Such cyclical availability in fund availability can result in the program losing potentially valuable deals. This effect can be further exacerbated for companies whose profitability is cyclical and tied to the broader macroeconomic cycle. Such companies are likely to lose deals during periods of economic downturns which often correlate with attractive valuations for private equities. Second, individual scrutiny of each investment by senior management may lead to delays in making an investment due to political and other short term concerns internal to the company. Third, lack of autonomy prevents corporate venture investors from co-investing with professional venture capitalists. The lack of co-investment opportunities limits the relationships between corporate and professional venture capitalists which in turn can throttle a potentially valuable source of deal flow for the corporate investors. Finally, high levels of scrutiny curb entrepreneurship and lead to the selection of lower risk investments because of a tendency by investment managers to only present relatively riskless investments to senior management

Control over the Portfolio Company :

Another frequent tactical error made by venture programs is to micro manage their investments. Such tactics result in a stifling of the entrepreneurial spirit of the portfolio company and clashes between the investor and the investee. All the corporate venture capitalists we interviewed suggested that hands on micro-management of portfolio companies stifles entrepreneurship and is very often counterproductive for both companies.

Determinants of Success

What are the determinants of success for corporate venturing ? In the previous sections we have described several strategic and tactical obstacles to successful corporate venturing. Corporate venture programs need to be aware of and address the obstacles outlined in the previous sections. In this section we will augment our prior analysis with additional factors that make for successful ventures. Which brings up the question, what exactly is the definition of success for a corporate venture program ? Our view is that there is no single criteria for determining the success of a corporate venture program. This is in marked contrast to venture capital limited partnerships whose success can largely be determined by the financial return generated by them. In the following sections we will present our criteria for and determinants of success for CVP's.

Focus on Financial Returns :

Among our criteria for success, the first and foremost is financial return. It is important to remember that corporations ultimately undertake venturing as a means to improve their financial performance. That is why we feel that a focus on generating positive financial returns should be a very important determinant of success. Furthermore, we believe that financial goals should be used by all the major models of corporate venturing. The Spin Out, Limited Partnership, and Corporate Venture Funds can obviously be evaluated primarily using financial metrics such as IRR. Corporations that adopt the Venture Division or Spin Up structures might not have a financial focus because they feel that they make venture investments to meet "strategic" goals. However, even a strategic investment must be justifiable on financial basis. After all, why should a corporation make an investment that will hurt financial performance ? One frequently encountered response is that some strategic investments still need to be made despite the fact that the individual investment has a negative NPV. Our view is that even in such cases, tools from modern finance such as applications

of real options [10] can help determine whether the investment is justifiable on a financial basis. Another reason for focusing on financial returns is that corporate venturing tends to be a long term activity during which time a corporate strategy may change. In such cases, even if some of the companies in the venture portfolio are not strategically important to the investor, the program can still add value to the parent company. In short, corporate venture programs should pursue a goal of attaining superior financial performance and use financial measures such as IRR as an important element for evaluating their performance.

Invest in Companies with a Track Record :

We view the percentage of companies in a corporate portfolio that have gone public as a proxy for success of a venture program. Such a metric is particularly meaningful for Spin Out, Limited Partnership and Venture Fund forms of investing because in these vehicles, the percentage of companies being taken public is an indicator of the flexibility to investors in harvesting their investment. Furthermore, a higher percentage of companies being taken public is an indirect measure of financial success because in general financially successful firms tend to go public. Another benefit of using this metric is that it can be used to benchmark a program's performance against the industry. For example, one could compare the performance of a venture program against the industry averages given in table 3.2.

Our research indicates that CVP's can improve their probability of success, where success is defined as the ability to eventually take a company public by investing in companies that have been in business for "relatively" longer periods of time. This is not surprising because the longer a company has been in existence, the more information there is to make an informed investment decision. Table 4.2 shows that there is a correlation between the time of the first corporate investment in a company (from its founding) and its eventual outcome. Note for example that portfolio companies that eventually went public had been

in business for 4.35 years at the time of receiving their first corporate investment. In marked contrast, the companies that eventually went out of business had been in business for only 2.78 years when they received corporate funding. These trends are further clarified in Figure 4.2 which shows the distribution of the time of the first corporate investment. The time is measured from the date of founding of the company that received the investment. Also we have segmented the companies based on what happened to them, i.e., they went public, were acquired / merged, remained private or went out of business.

Eventual Outcome of Investment	Time (Years) of First Corporate Investment from Date of Founding
Company Went Public	4.35
Company Was Acquired / Merged	3.28
Company Remained Private	3.09
Company Went Out of Business	2.79

Table 4.2 : Invest in Mature Companies

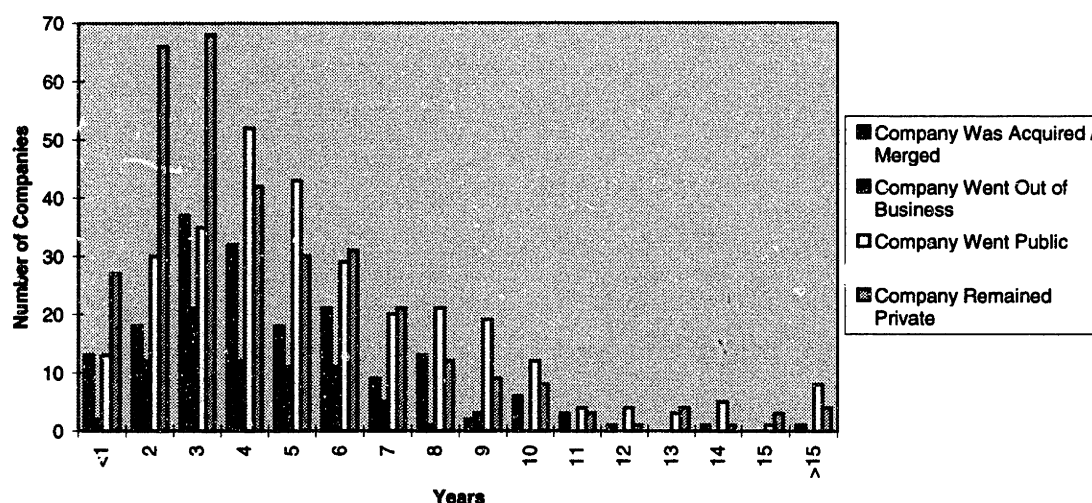


Figure 4.2 : Time of First Corporate Investment From Date of Founding

Think Relationship Not Acquisition:

Another contributor to successful venturing is to view investment candidates as strategic partners as opposed to only viewing them as acquisition candidates. Our data indicates that corporate investors acquire less than five percent of the companies in which they invest. In our sample, while 21% of the companies that received corporate investments ended up being merged or acquired, the percentage of companies that were acquired by corporate investors that had made equity investments was very low. We are not certain why this number is so low. However, our hypothesis is that acquisitions typically result from a focused strategy of targeting a specific company for a merger or acquisition based on well defined needs. Often corporate investors can not articulate a clear case for a merger at the time of making their first equity investment because they invest in several companies in a strategic business area. For example, Motorola has recently invested in several multimedia companies as part of its strategy of entering the emerging multimedia software business. It is uncertain at an early stage of business development which, if any, of the companies that Motorola has invested in will ultimately be acquired. In the interim, they should view their equity investment as a means to influence companies with which they see a potential for developing a strategic relationship. Such a strategy orients the corporate investor towards creating value through technology licensing, joint development, OEM and marketing agreements. These strategies facilitate the transfer and sharing of learning between the two organizations. This approach is better for corporate investors because it can produce results during the entire lifecycle of the investment as opposed to waiting for a low probability acquisition. At the same time the entrepreneurial owners of companies that receive the equity investment are also more comfortable with the relationship model because it preserves their independence.

Focus on the Quality of the Company :

Corporate venture programs need access to a wide array of high quality investable firms. High quality firms are those with top people, technology, or products. Successful corporate venture managers indicate that close relationships with highly reputable venture capitalists, and well developed internal networks are two of the most important sources of investable companies [2]. Corporate venture managers interviewed by us placed a high priority on maintaining a close relationship with top venture capitalists. These managers stressed the importance of the reputation and quality of the venture capitalists to the ultimate success of the corporate venture program. Such relationships are useful to corporate investors because top VC's have access to a high quality deal flow. These VC's in turn provide corporate investors an opportunity to co-invest with them. In fact corporate investors get around 30% of their deal flow from venture capitalists. Also, venture capitalists provide an independent assessment of the valuation of potential investment candidates. The venture capitalists also benefit because they can raise money for promising companies and at the same time increase their chances for successfully exiting their investment through future corporate mergers or acquisitions.

Internal networks and personal contacts are a second important source of deal flow and therefore a determinant of success for the CVP. Corporate VC's obtain between 30-40% of their deal flow from their corporate contacts and networks. Spin out and spin up CVP's in particular rely heavily on their corporate networks as a critical deal source. Similar to external venture capitalists, the business or technical reputation of the members of the internal network has a strong correlation with ability of the CVP to locate quality investment opportunities.

Invest in Narrow Industry Segments

Finally, venture programs that invest in external companies for strategic benefits should narrowly define the industry and segment of strategic interest to them. It may not be adequate to just specify an interest in a particular industry, for

example software or telecommunications, since the range of industry sub-segments in each of these broad groups is very large. Most often corporate investors view equity investing as a means to expand or complement their capabilities in a narrow industry segment. If such a goal is not clearly articulated, the resulting investments, particularly those made by an autonomous investment division, may not meet the corporations strategic objectives. Microsoft is a successful corporate private equity investor in part due to its narrow industry focus. In recent years it has made equity investments in companies in electronic commerce, games, and internet multimedia in order to complement its own capabilities and to catch up in specific segments of the software industry where it lags the competition. Recent marketshare numbers indicate that Microsoft is gaining marketshare in these narrow segments.

Top Venture Programs

We have indicated earlier in this chapter that there is no single criteria for identifying successful corporate venturing. However, during our research, we identified several programs that can be called successful because they have implemented different aspects of the corporate venturing process well. In Table 4.3, we list eight successful corporate venture programs along with the reasons why we consider them successful.

Summary

In the previous sections we have evaluated the sustainability of corporate venturing programs. We have also identified the important determinants of successful corporate venture programs. Our conclusion is that corporate venturing is a sustainable strategy. We also believe that financially driven, autonomous programs with clear goals and well compensated staffs make for successful corporate venture programs.

Successful Corporate Venturing Programs						
	Investment Profile					Criteria for Success
Name of Company	# of Investments	% Public	% Private	% Out of Business	% Merged Acquired	
3M ¹⁰	5	0%	20%	0%	80%	Best executor of Spin Up Venturing
Adobe ¹¹	23	35%	65%	0%	0%	Extremely high financial returns > 50%. Company instituted Venture related dividend.
Hewlett ¹² Packard	20	45%	15%	10%	30%	Success in identifying promising companies. High % of companies went public
Johnson and Johnson	25	0.32	0.44	0.08	0.16	Success in executing strategic alliances with Biotech Companies
Kodak	27	37%	44%	15%	4%	High Financial Returns - IRR > 25%, excellent structure of program and incentives
Merck Dupont	13	54%	23%	8%	15%	Success in executing strategic alliances with Biotech Companies
Microsoft	12	42%	42%	8%	8%	Success in identifying companies. Used CVP to enter internet business
Xerox ¹³	47	30%	13%	19%	32%	Model Spin Out CVP program with very high Financial returns > 50%

Table 4.3 : Successful Corporate Venture Programs

¹⁰ The investment profile reflects direct external investments.

¹¹ Adobe made 23 investments with a cost basis of \$60M. It has received distributions of \$72M and its outstanding portfolio is valued at \$72.4M. The investment period is estimated at 3 years. In Feb 1997, Adobe announced a dividend to its shareholders from gains on its venture investment portfolio.

¹² HP's success may be in part due to its very cautious approach to equity investing. It is very skeptical of the ability of corporate venture programs to create value and makes equity investments in very select companies to meet specific strategic goals. It evaluates its investments using a financial yardstick.

¹³ Includes external venture investments.

Chapter 5 : Conclusions

This research effort was an attempt to explore the implication - to larger, well established companies - of the boom in technology startups during the 80's and 90's. In search of answers, we studied the structure and workings of the private equity market since it is instrumental in the creation of such startups. We have come to the conclusion that we can transfer a lot of what we learned from the private equity market to large corporations looking for meaningful responses to the twin issues of employee turnover and growth in the markets which have significant numbers of entrepreneurial startups. In this chapter we will attempt to summarize our findings and the linkages we discovered between these twin issues.

Our foremost conclusion is that companies that operate in industry sectors with significant numbers of privately financed technology driven companies must understand the workings of the private equity market. Why ? Because the structure and institutions of the private equity market will have an important influence on how larger companies go about the process of finding, acquiring, merging or building relationships with entrepreneurial firms. We believe that the quantity and quality of the firms in several key industries such as multimedia, semiconductors, biotechnology and communications make them hard for any serious business to ignore.

This research also helped us understand the numerous obstacles to and determinants of success for companies interested in making equity investments in privately financed firms. Briefly, corporate investors who intend to regularly participate in the private equity should consider setting up autonomous divisions with clear goals, financial investment criteria and well designed compensation schemes that can align the interests of the investment managers with the

investor and investee. We should clarify that we are not advocating that all companies in certain industries implement a portfolio investment program. Rather, we have suggested how such a program could be structured to create value for both the investor and investee. Many of the lessons learnt by us - on valuation, deal and industry structure - are also applicable to companies that make targeted private equity investments as opposed to building a portfolio because such activities are inextricably linked to the workings of the larger private equity market. We also suggested alternative structures such as corporate venture funds and limited partnerships for corporations seeking to enter the private equity market. For each of the above structures we suggested pros, cons and what to expect.

We feel that in the coming years, many large companies in addition to investing in private equity may also borrow some of the compensation and incentive techniques used by privately held firms as a means to foster entrepreneurship. Another reason for the continued corporate interest in private equity is due to the recent (1994-1996) boom in the numbers of private firms in areas such as internet software, which is likely to result in a wave of consolidations, mergers or acquisitions as weaker private firms loose ground and larger firms jockey for dominance in their industry based in part on economies of scale and scope. Large corporate investors should find mergers and acquisitions of privately held firms, an area of significant interest and activity in the coming years - yet another reason to learn about private equity.

We also showed how investment structures such as the Spin Out venturing that have been borrowed from the private equity world can be modified and used by corporations to foster entrepreneurship and profit from select departing employees. Likewise we studied but did not seriously analyze the Spin Up form of corporate entrepreneurship and business development. We feel that well

executed spin up venturing should have much appeal to very innovative technology oriented companies.

Finally, our research data helped create a probabilistic model of what outcomes could a typical corporate investor expect from their investment. We also identified some of the best practitioners of the different types of corporate venturing. These ranged from the inward looking and highly entrepreneurial spin up venturer 3M to externally focused venture investors like Adobe.

To summarize, our study was an attempt to understand the role of corporations in the private equity market. We concluded that increasing numbers of domestic and international firms are investing in the US private equity market. Since we expect no significant let up in new small company formation, we expect even more interest in private equity in the coming years. In short, the corporate presence in the private equity market is here to stay.

Appendix A : Sources of Data

Research in the area of private equity is often hampered by ready access to information. There are several reasons for the lack of information on private equity. The more important ones being that private companies, which are the recipients of private equity financing are not required to make financial (or other) declarations unlike public corporations. Secondly, corporations - including publicly held corporations - that invest in private equity likewise do not often disclose their investments due to concerns about revealing strategically significant information. If corporations or individuals make significant investments in a publicly owned company, they are required by US securities law to file a disclosure to that effect. No such law applies to similar investments in privately held companies. All these factors contribute to the difficulties in obtaining information about the private equity market.

Our research attempted to overcome difficulties in information collection by obtaining information from the following private and public sources :

- VentureOne, a private database
- Articles from the business press gathered through Lexis-Nexis
- Interviews with practitioners of Corporate Venture Capital
- Cases on Venture Capital and Private Equity developed at the Harvard Business School.

In this appendix we will primarily focus on the methodology used to collect data from the VentureOne database and our interviews with practitioners of corporate venture capital.

VentureOne Database

VentureOne is a privately held, California based company that tracks private equity investments in companies that have received a part of their funding from

professional institutional venture capital limited partnerships (Venture Capitalists). It considers corporate investors who either invest alongside venture capitalists or have programs whose primary mission is to make and manage investments in private companies as venture capitalists. It therefore tracks a significant majority of corporate venture capital programs. Included in such programs are corporate venturing programs of both US and foreign corporations.

VentureOne collects its data primarily through regular (once a month) contact with the senior management of venture backed companies. It identifies such companies through regular reviews of company web pages, trade and technical publications, government documents and financial disclosures made by such companies during the process of going public. VentureOne tracks a private company up to the point that it goes public. Using this methodology, it has created a database of over 6000 companies that have received financing and around 1000 venture investors. The information dates back to 1980, although it is more reliable from the mid 80's onwards.

VentureOne made the database available to students enrolled in a course on Venture Capital and Private Equity at the Harvard Business School. I was able to access the VentureOne database by virtue of my enrollment in this course. The basic information included in the database is as follows :

Information on Investors

VentureOne database includes the name of the investor company and its portfolio of investments. By portfolio of investments we mean the companies to which a venture capitalist (including corporations) has provided funding.

Information on Private Companies

- The name of the company.
- Its main line of business.

- The date of founding
- Its status - public, private, acquired / merged or out of business - at the time of the last updating of the company record.
- Its most recent stage in the corporate lifecycle i.e. whether the company is a startup, is in product development, is in pre launch customer trials called Beta tests, is shipping a product, is profitable or is looking to restart another series of financing rounds.
- The rounds of private equity investment it has received, the sources, amounts of financing and the dates on which it received financing. The type of rounds are generally classified as seed, numerical, corporate, mezzanine, acquisition and IPO. A seed round typically refers to an early and small round of equity financing made soon after the company was founded. Numerical rounds are sequentially increasing rounds of equity financing for example a first round followed by a second and third round of financing. Corporate rounds refer to those rounds in which only corporations invested. Mezzanine financing rounds are generally the last round of venture financing prior to an initial public offering. They are generally characterized by an increase in the amount of financing as well as the valuation of the company. Acquisition rounds refer to a financing round in which a company was either acquired or merged with another company. Finally, IPO (Initial Public Offering) round refers to the process of offering the a percentage of the securities of the privately held company on the public markets.
- Information on the senior managers of the company and the board of directors. This information includes the prior and current professional affiliations of the managers and the current affiliation of the board members.

Appendix C is a sample printout that shows the financing history of Sun Microsystems.

How the data on corporate investments was gathered ?

In order to collect data on Corporate Venture Capital, I first reviewed each investor that had a portfolio of at least two companies. I chose a threshold of a minimum of two investments to separate investors who have venture programs from those that have dabbled once in the private equity market. I then separated the investors into corporate and “others”. My definition of a corporate investor was a company whose primary line of business is non financial.

Furthermore, I excluded the financial subsidiaries of non financial corporations like General Electric because such subsidiaries are essentially structured like financial companies. In order to check whether a company was a non financial corporation, I consulted a database of international firms to determine its main business. As a result of this process, I obtained a list of over 225 corporate venture investors. Next, I checked the portfolios of each of these corporate investors and created two custom databases using Microsoft Excel.

In the first database, I included the name of the investor, the name of each company in its portfolio, the date of founding of the portfolio company, its stage, status, and financing history with respect to the investing company. The financing history of a portfolio company with respect to its corporate investor included the date and round, (i.e. seed, first, mezzanine etc.) of equity investment. Finally, for those companies that went public, I included their IPO date and the amount raised at the IPO. This database included 1058 records of corporate investments in companies from 1982 to mid 1996. It included records of over 1500 individual rounds of financing and is therefore statistically significant. The second database included the same information as the first, however, I eliminated multiple references to the same portfolio company. In other words, if two or more corporate investors invested in the same company, I retained at random the investment record of only one of those investors. This database was created to analyze the investment performance of all corporate investors as a group by considering them as a single investor. For example,

using the second database, I could determine how many companies with corporate investors went public. This database avoided double counting the same portfolio company. The second database contains investment profiles of over 800 portfolio companies that received at least part of their funding from corporate investors. In Appendix D we show the databases of corporate investments in private equity.

Sources of Bias in the VentureOne Data

There are several sources of bias in the VentureOne data upon which our analysis is based. These sources of bias have been highlighted by Gompers and Lerner who have conducted research based on data from VentureOne. This section borrows heavily from their work.

First, VentureOne often obtains data on financing of earlier rounds when a firm seeks refinancing. As a result, the most recent data is not as complete as that from earlier years because it includes firms that have not sought refinancing. Second, the VentureOne database has more accurate data on high technology companies, particularly those based in Western United States because VentureOne is located in California and enjoys greater visibility among entrepreneurs in high -technology companies located in that area. Finally, in some cases it is difficult to ascertain whether an investor is a corporation or a limited partnership. Some US and several European companies invest in companies through traditional venture capital partnerships. For example, Eastman Kodak not only makes direct equity investments but also invests through a partnership called Aperture in which it is the sole limited partner. Similarly there are other specialized partnerships that cater exclusively to corporate investors. A prominent example of such partnerships is Advent, a Boston based investment partnership. Our data sample does not in general accurately tag such investments due to the difficulty in unraveling complex corporate relationships. Therefore our sample is mainly composed of

corporations that are investing in private equity under their own name. However, we feel that the large data set compiled by us offsets the bias in the data to some extent. As a result our results should offer a reasonably accurate view of corporate venturing.

Interviews with practitioners of Corporate Venture Programs

We have supplemented the VentureOne data and our review of prior literature in the field of corporate venturing with interviews with current practitioners. We conducted interviews with corporate venture program managers from Eastman Kodak, Motorola and Hewlett Packard. These interviews were not intended to be the source of data that can be analyzed statistically, rather, we sought to get a qualitative assessment of the workings of corporate venture capital from practitioners in leading companies.

Appendix B :Cisco Systems Summary of Minority Equity Investments

Source : Cisco Systems World Wide Web Site

Software.com, Inc. -- March 1997

In March 1997, Cisco Systems, Inc., has taken a minority equity interest in privately-held Software.com Inc. an Internet infrastructure software company whose mission is to provide high-performance, scalable server-based messaging solutions to Internet/intranet customers. In addition to the investment, Cisco and Software.com have signed an agreement to jointly develop and market networking technology to provide scalable dynamic Internet address allocation and secure networked commerce. Customers using this combination of network expertise, including Cisco IOS™ software, will be able to easily scale their online networked services including remote access, telecommuting, networked commerce and email while maintaining a high level of security and reliability.

VXtreme, Inc. -- January 1997

In January 1997, Cisco Systems, Inc., Informix Software, Inc., and SOFTBANK Ventures Inc. have each purchased a minority equity stake in VXtreme, Inc., the leading provider of high-quality streaming video for the Internet and corporate networks. In addition to its financial commitment, Cisco and VXtreme plan to work closely to assure interoperability of VXtreme's streaming technology features with Cisco's Internetworking Operating System (IOS) software technologies. This compatibility will help facilitate the development of a networking infrastructure that delivers the bandwidth, quality of service, and efficient multipoint communication for high quality video.

OpenConnect Systems -- December 1996

In December 1996, Cisco Systems, Inc., has taken a minority equity stake in OpenConnect Systems a leading provider of internetworking software, systems and development tools that securely transport and extend SNA enterprise applications beyond traditional boundaries using corporate intranets and the Internet. In parallel to delivering standards-based networking products for these users, Cisco plans to work with TCP/IP technology vendors OpenConnect Systems and Interlink Computer Sciences, Inc. for joint development, marketing and worldwide customer support.

Interlink Computer Sciences, Inc. -- December 1996

In December 1996, Cisco Systems, Inc., has made a minority investment in Interlink Computer Sciences, Inc. a leading supplier of high-performance solutions for enterprise networked systems management. Interlink produces the TCPaccess product family for mainframe TCP/IP connectivity, fault to tolerance, remote printing services and CICS-to-LAN application integration. The company also develops and distributes the HARBOR product suite for backup, archive & restore, and application data & software distribution. Cisco IOS/390 software will build upon Interlink Computer Sciences Inc.'s highly-acclaimed TCPaccess offering for MVS mainframes.

Visigenic Software -- May 1996

In May, Cisco Systems, Inc., announced a stock purchase agreement with Visigenic, the premier independent provider of standards-based database connectivity and distributed object messaging for developing and managing database applications within all enterprise and Internet computing environments. The equity investment in Visigenic represents Cisco's endorsement of standards-based middleware for both software applications and network management products.

Precept Software -- April 1996

In April 1996, Cisco Systems, Inc., and Precept Software, a leading developer of networking software that addresses the emerging demand for local-and wide-area networking of real-time multimedia information, have signed an agreement under which Cisco will make a minority investment in Precept and will resell Precept's standards-based multimedia networking software products.

DataBeam Corp. -- April and February 1996

In February 1996, Cisco Systems, Inc., announced an agreement for Cisco to license DataBeam's data conferencing standard and integrate it into the Cisco Internetwork Operating System (Cisco IOS(tm)) software. Cisco has also taken a minority equity stake in DataBeam. DataBeam's technology, based on the T.120 standard established by the International Telecommunication Union (ITU), is a series of communication and application protocols and services that provide support for real-time, multi-location sharing of information.

Terayon Corp. -- January 1996

In February 1996, Cisco Systems, Inc., announced an agreement to purchase an equity stake in privately-held Terayon Corporation, an innovator in the fast-growing field of cable-based digital communications. The investment is intended to accelerate the delivery of advanced technology and products to service providers who are exploring the use of cable television systems for Internet access, electronic commerce, education and other services such as special interest user groups.

Objective Systems Integrators -- December 1995

In December 1995, Cisco Systems, Inc., announced that it has made a minority equity investment in Objective Systems Integrators (OSI), the leading independent developer of network management software for service providers. The two companies plan to develop enhancements to OSI's NetExpert family of

graphical user interface (GUI)-based development tools and management applications.

CyberCash, Inc. -- October 1995

In October 1995, Cisco Systems, Inc., and CyberCash, Inc., a leading developer of software and service solutions for secure financial transactions over the Internet, have signed an agreement in which Cisco will make a minority investment in CyberCash. The CyberCash system is designed to allow banks to offer secure payments to their merchants using public and private networks.

NETSYS Technologies, Inc., -- February 1995

In February 1995, Cisco Systems, Inc., announced it has purchased a preferred stock equity interest in privately-held NETSYS Technologies, Inc. Additionally, Cisco will obtain a seat on the NETSYS Technologies' board of directors. Cisco's investment is intended to help common customers base design and plan for networks ideally suited to their unique business requirements.

International Network Services (INS) -- January 1995

In January 1995, Cisco Systems, Inc., announced an agreement to purchase a minority equity investment in INS, a networking services company with a focus on large-scale networks. INS is a leading provider of network integration, management and consulting services which help its clients optimize the performance of their mission-critical, enterprise networks.

Cascade Communications Corporation -- December 1993

In December 1993, Cisco Systems, Inc., and Cascade Communications Corporation announced a worldwide agreement in which Cisco and Cascade will jointly develop a multiservice WAN solution for the telecommunications marketplace based on combined Cisco and Cascade technology. Cisco also announced a minority stake in then privately-held Cascade

Appendix C: VentureOne Data Example : Sun Microsystems

SUN MICROSYSTEMS

CONTACT INFORMATION:

Record current as of: 02/95

10201 N. DeAnza Blvd.
Cupertino, CA

Financing Contact: Scott McNealy, Chief Executive Officer

COMPANY OVERVIEW:

Business Brief:	CORPDEVT
Financing plans:	As of 03/86 \$64MM IPO EFFECTIVE 3/4/86.
Founded:	02/82
Industry:	Minicomputer/Workstations
Employees:	2700
Status	Publicly-held
Spinout of:	Stanford University
Stage:	Profitable

INVESTORS:

Investment Firm	Participating Round #(s)
Kleiner Perkins Caufield & Byers	2, 3, 4
U.S. Venture Partners	1, 2, 3, 4
West Coast Ventures	1, 2, 3
TVI Associates	2, 3, 4
Woodman Kirkpatrick	3
ABS Ventures Limited Partnerships	3
Cable & Howse Ventures	3
Hewlett-Packard Co., Benefit Fund	3
IBM Pension	3
Rothschild Ventures Inc.	3
Eastman Kodak	5
BNP Ventures	3

FINANCINGS TO DATE:

Round #	Round Type	Date	Amount Raised (\$MM)	Post \$ Valuation (\$MM)	Company Stage
1	Seed	04/82	0.3		Startup
2	1st	11/82	2.2		Shipping
3	2nd	04/83	2.1		Profitable
4	3rd	11/83	11	137.5	Profitable
5	Mezz	11/84	20	300	Profitable
6	IPO	03/86	64	430	Profitable

FINANCIALS:

(A=Actual E=Estimated P=Projected)

(\$MM)	1983A	1984A	1985A	1986A
Revenue	8.7	38.9	115.2	210
Net Income	0.7	2.7	8.5	0

Burnrate (\$K/Month): 0

EXECUTIVES AND BOARDMEMBERS:

Name	Title	Background	Telephone
Scott McNealy	Chief Executive Officer	Date joined: 02/82 Dir of Operations, Onyx Systems	(415)960-1300
Bernie Lacroute	Executive Vice President	Date joined: 08/83 Mgr, Distributed Systems, DEC	(415)233-3325
Robert Smith	Vice President, Finance	Date joined: 04/84 VP, Office Product Div, XEROX	(214)243-6786
Carol Bartz	Vice President, Marketing	Date joined: 09/83 MGR, OEM Marketing Operations, DEC	(415)332-2344
Wayne Rosing	Vice President, Engineering	Date joined: 05/85 Dir of Engr, Apple II Group, Apple Computer	(415)960-1300

William Joy	Vice President, Research & Development	Date joined: 08/83 Principal Programmer, UC Berkeley/DARPA	(415)960-1300
Doug Broyles	Board Member, Venture Investor	Partner Glenwood Management Partner	(408)399-9101
Robert Sackman	Board Member, Venture Investor	Partner U.S. Venture Partners	
John Doerr	Board Member, Venture Investor	Partner, Kleiner Perkins	(415)233-3353
David Marquardt	Board Member, Venture Investor	Partner, August Capital; formerly with TVI	(415)854-7472
Robert Murray	Board Member, Venture Investor	VP Corporate Planning, Eastman Kodak	
Vinod Khosla	Board Member,	Founder, Sun Microsystems & Daisy Systems	(415)233-3477

BUSINESS INFORMATION:

Overview:

High performance 32-bit workstations to the engineering, scientific, and technical markets. Product design philosophy is based on use of industry standard technologies such as the Unix operating system, VME system bus, Ethernet local area network, and Motorola 680X0 microprocessors.

Product:

FIRST GENERATION WORKSTATION - UPGRADED TO SUN-2

Customers:

AS OF 2/86, OVER 750 CUSTOMERS INCLUDING COMPUTERVISION, INTERLEAF, AT&T, LOCKHEED, GENERAL ELECTRIC. DISTRIBUTION THROUGH DIRECT SALES FORCE.

Market:

MAJOR APPLICATION AREAS INCLUDE COMPUTER AIDED ENGR (CAE), CAE, CASE, COMPUTER AIDED PUBLISHING, ARTIFICIAL INTELLIGENCE AND UNIVERSITY & SCIENTIFIC RESEARCH.

Competition:

DEC, APOLLO, IBM

VentureOne Corporation
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Online Information System
by Leverage

Appendix D : Corporate Investments in Private Equity

PORTFOLIO COMPANY	FOUNDED	BUSINESS	STATUS	STAGE	IPO DATE	IPO VALUE (MILL \$)	INVESTOR	INVESTMENT ROUND					DATE OF INVESTMENT				
								I	II	III	IV	V	I	II	III	IV	V
Sync Research	Sep-81	Computer	Public	Shipping	Nov-95	78	3Com		2	Corp			Feb-93	Apr-94			
Echelon	Jan-88	Networking	P&I	Shipping			3Com		2				Jan-89				
Com21	Jul-92	Communication	P&I	Beta			3Com		4				Jun-90				
Insite Peripherals	Mar-87	Data Storage	A/M	Shipping			3M		3	Corp			Feb-90	May-91			
Synergy Computer Graphics	Jul-84	Computer	A/M	Shipping	Mar-90		3M		Debt				Feb-89				
Raycom Systems	Jan-81	Optics	A/M	Profitable	Mar-94	83M			3				Jun-84				
Codon	Jan-80	Biotech	A/M		Jul-90	803M											
Anesta	Aug-85	Biotech	Public	Shipping	Jan-94	31.3	Abbot Labs		4				Dec-92				
Neose																	
Pharmaceuticals	Jan-90	Biotech	Public	Prod Dev	Feb-96	28.1	Abbot Labs		Corp	Mezz			Apr-94	Dec-95			
Spectrx	Oct-92	Medical	P&I	Prod Dev			Abbot Labs		1	2			May-94	Sep-96			
Lyphomed		Agriculture	Public				Abbot Labs										
Verity	Mar-88	Software	Public	Shipping	Oct-95	40	Adobe		Corp	4	Mezz		Jul-91	Sep-94	Aug-95		
Netscape	Apr-94	Internet	Public	Shipping	Aug-95	140	Adobe		Corp				Apr-95				
Extensys	Jul-93	Software	P&I	Shipping			Adobe		1				Feb-96				
Digimarc	Mar-95	Software	P&I	Shipping			Adobe		2				Jul-96				
Pointcast	Jan-92	Software	P&I	Shipping			Adobe		Corp				Jul-96				
Mfactory	Jan-95	Multimedia	P&I	Shipping			Adobe		2				Oct-95				
Salon Internet	Jan-95	Internet	P&I	Shipping			Adobe		Seed	1			Dec-95	Jul-96			
Objectivity	Jul-88	CAD	P&I	Shipping			Adobe		7				Jun-94				
Siebel Systems	Jul-93	Software	Public	Profitable	Jun-96	33.3	Adobe		1				Mar-95				
Fractal Design	Apr-91	Software	Public	Profitable	Nov-95	27.5	Adobe		2				Jul-95				
Cascade Systems	Mar-94	Software	P&I	Profitable			Adobe		2				Mar-96				
Lantana Research	Sep-94	Computer	P&I	Profitable			Adobe		1				Jan-95				
Electronic Submission Publishing																	
	Jan-94	Software	P&I	Prod Dev			Adobe		1	2	3		Jul-95	Jul-96	Sep-96		
Crosswise	Jan-91	Software	P&I	Prod Dev			Adobe		1				Aug-94				
Cogito Learning Media	Jan-95	Education	P&I	Prod Dev			Adobe		2				Feb-96				
Digital Think	Apr-96	Education	P&I	Beta			Adobe		Seed				Aug-96				
Sepracor	Jan-84	Medical	Public	Shipping	Sep-91	40	Alcoa		4				Apr-87				
Sepracor	Jan-84	Medical	Public	Shipping	Sep-91	40	Alcoa		4				Apr-87				

PORTFOLIO COMPANY	FOUNDED	BUSINESS	STATUS	STAGE	IPO DATE	IPO VALUE (MILL \$)	INVESTOR	INVESTMENT ROUND					DATE OF INVESTMENT				
								I	II	III	IV	V	I	II	III	IV	V
Ceramics Process Systems	Sep-84	Electronics	Public		Jul-87	18	Alcoa										
Mainstream Software	Jan-88	Process Control Electronics	A/M	Shipping			Allen Bradley	2					Nov-91				
AWI			A/M				Allen Bradley	2	3								
Procase	Apr-87	CAD	P&I	Shipping			Allied Signal	2	3				Sep-89	Apr-91			
Oryx	Dec-83	Computer	OFB	Shipping			Allied Signal	1	2	Debt			Jul-88	Oct-89	Feb-90		
Synekrion	Jul-81	Electrical Power	A/M	Shipping			Allied Signal	5					Dec-87				
Spatial Technology	Jan-86	CAD	P&I	Profitable			Allied Signal	1	2				Jun-89	Mar-91			
Avcon	May-88	Robotics	P&I	Beta			Allied Signal	Corp					Mar-93				
WYSE	Jan-81	Computer	Public	Profitable	Mar-90		Altos Computer										
Visual Engineering	Jan-83	Software	P&I	Profitable			Altos Computer	2					Feb-86				
Digital City	Jan-96	Internet	P&I	Startup			America Online	1					Jul-96				
excite	Jun-93	Internet	Public	Shipping	Apr-96	34	America Online	Mezz					Mar-96				
Interzine																	
Productions	Nov-94	Internet	P&I	Shipping			America Online	1	2				Jul-95	Jul-96			
Ivillage	Jan-95	Internet	P&I	Shipping			America Online	1	2				Jan-95	May-96			
Planet Out	Dec-95	Internet	P&I	Shipping			America Online	1					May-96				
Preview Travel	Jan-85	Internet	P&I	Shipping			America Online	Later Later					Jan-95	Jun-96			
							American										
Sepracor	Jan-84	Medical	Public	Shipping	Sep-91	40	Cynamid	4	5	6	8		Apr-87	May-88	Feb-90	Jun-91	
							American										
Embrex	May-85	Agriculture	Public	Shipping	Nov-91	18.9	Cynamid	1	2	3			Jan-86	Mar-88	Oct-89		
							American										
Cytogen	Mar-80	Biotech	Public				Cynamid										
							American										
Xoma	Oct-81	Biotech	Public		Jun-86		Cynamid										
Regeneron																	
Pharmaceuticals	Jan-88	Biotech	Public	Prod Dev	Apr-91	99	Amgen	Corp					Sep-90				
Sugen	Aug-91	Biotech	Public	Prod Dev	Oct-94	12.5	Amgen	Mezz					Oct-93				
Ontogen	Jun-92	Biotech	P&I	Prod Dev			Amgen	1					Jan-93				
Amcell	Nov-93	Biotech	P&I	Prod Dev			Amgen	Corp					Mar-94				
Gigabit Logic	Jan-81	Semiconductor	A/M	Shipping			Analog Devices	3	4				Apr-87	Sep-88			
Numerix	Jan-82	Computer	A/M	Shipping			Analog Devices	1									
International																	
Imaging Systems	Jan-70	Computer	A/M	Shipping			Analog Devices										
Altera	Jun-83	Semiconductor	Public	Profitable	Mar-88	22	Analog Devices	2					Mar-85				
Triquint																	
Semiconductor	Aug-81	Semiconductor	Public	Profitable	Dec-93	22	Analog Devices	Mezz					Nov-93				

PORTFOLIO COMPANY	FOUND ED	BUSINESS	STAT US	STAGE	IPO DATE	IPO VALUE (MILL \$)	INVESTOR	INVESTMENT ROUND					DATE OF INVESTMENT				
								I	II	II	IV	V	I	II	III	IV	V
Quantitative Technology	Mar-81	CAD	P&I	Profitable			Analog Devices	1	2	Resta	1		Jan-85	Jul-89	Apr-90	Jan-91	
Test Systems	Jan-79	Instrument	OFB				Analog Devices	1									
Scientific Computer Systems	Aug-83	Computer	OFB				Analog Devices	2					May-85				
Photodyne		Instruments	A/M				Anderson	1									
Notable Technologies	Jun-91	Software	P&I	Restart			Anderson Industries	2					Dec-92				
Citrix Systems	May-89	Software	Public	Profitable	Dec-95	37.5	Anderson Industries	4					Feb-93				
Photonics	Feb-85	Networking	Public	Shipping	Nov-93	16.9	Apple Computer	Seed	1	2			Jan-88	Aug-88	Feb-89		
Echelon	Jan-88	Networking	P&I	Shipping			Apple Computer	1	2				Mar-88	Jan-89			
Salon Internet	Jan-95	Internet	P&I	Shipping			Apple Computer	Seed	1				Dec-95	Jul-96			
Spectra Touch	Jan-85	Computer	P&I	Shipping			Apple Computer	4	5				Sep-89	Aug-90			
Communications	Mar-85	Networking	OFB	Shipping			Apple Computer	1	2				Jun-87	Aug-88			
Digital F/X	Jan-88	Multimedia	OFB	Shipping			Apple Computer	3	4				May-88	May-89			
Pillar	Oct-87	Software	A/M	Shipping	Nov-94	21.7	Apple Computer	1	2	3	5		Jul-88	Nov-90	Jul-91	Dec-92	
ON Technology	Oct-87	Software	A/M	Shipping			Apple Computer	5	6				Feb-90	Jul-91			
Course Technology	Jun-89	Education	A/M	Shipping			Apple Computer	2					Mar-91				
Mirus	Mar-86	Computer	A/M	Shipping			Apple Computer	1	2	3			May-87	Jun-88	Feb-89		
Biocad	May-89	CAD	A/M	Shipping			Apple Computer	1	2	3			May-90	Aug-91	Jan-92		
Molecular Simulations	Sep-85	CAD	A/M	Shipping			Apple Computer										
ON Technology Corp.	Jul-92	Software	Public	Profitable	Aug-95	42	Apple Computer	1	Mezz				Jul-92	Jun-94			
Sybase	Nov-84	Software	Public	Profitable	Aug-91	49.6	Apple Computer	4	5				Aug-87	Apr-88			

PORTFOLIO COMPANY	FOUNDED	BUSINESS	STATUS	STAGE	IPO DATE	IPO VALUE (MILL \$)	INVESTOR	INVESTMENT ROUND					DATE OF INVESTMENT				
								I	II	III	IV	V	I	II	III	IV	V
Netframe Systems	Aug-85	Networking	Public	Profitable	Jun-92	27	Apple Computer	2	3				Feb-89	Jun-90			
Exponential Technologies	Jun-93	Semiconductor	P&I	Prod Dev			Apple Computer	1	2	3			Jul-94	Oct-95	Dec-96		
Forethought	Jan-83	Software	A/M				Apple Computer										
Resound	Jan-84	Medical	Public	Shipping	Mar-93	21.5	AT&T	4th	5th	Mezz			May-91	Feb-92	Nov-92		
Digital Generation Systems	Apr-91	Multimedia	Public	Shipping	Feb-96	33	AT&T	2	3	4			Mar-94	Dec-94	Jul-95		
3DO	Sep-91	Computer	Public	Shipping	May-93	43.5	AT&T	Mezz					Feb-93				
First Virtual	Oct-93	Software	P&I	Shipping			AT&T	2	3				Oct-94	Aug-95			
Classic Sports Network	May-94	Media	P&I	Shipping			AT&T	2nd					Apr-95				
BBN Planet	Jan-94	Internet	P&I	Shipping			AT&T	1st					Jul-95				
Topometrix	Sep-90	Electronics	P&I	Shipping			AT&T	Mezz					Jan-94				
Cellnet Data Systems	Jun-85	Data Process	P&I	Shipping			AT&T	1st	Later				Jan-93	Jan-95			
Data Sorix	Jul-92	Computer	P&I	Shipping			AT&T	2	3	Rest			Jul-93	Aug-94	Sep-95		
Multex Systems	Nov-92	Communications	P&I	Shipping			AT&T	2					Nov-94				
Comquest																	
Technologies	Apr-91	Communications	P&I	Shipping			AT&T	2nd					Aug-95				
Hybrid Networks	Jun-90	Communication	P&I	Shipping			AT&T	3					May-95				
Wildfire																	
Communications	Jan-92	Communication	P&I	Shipping			AT&T	?									
Lanser Wireless	Jan-90	Communication	P&I	Shipping			AT&T	2nd					Dec-95				
ASET	Mar-86	Semiconductor	OFB	Shipping			AT&T	1st					May-87				
EO Computer	Jul-91	Computer	OFB	Shipping			AT&T	1st					Sep-92				
Echo Logic	Aug-91	Software	A/M	Shipping			AT&T	Seed					Aug-92				
Sandisk	Jun-88	Semiconductor	Public	Profitable	Nov-95	31.7	AT&T	?									
Premisys																	
Communications	Jul-90	Communications	Public	Profitable	Apr-95	32	AT&T	?									
J3 Learning	Jan-93	Software	P&I	Profitable			AT&T	Mezz					Apr-95				
Lease Partners	Mar-87	Financial Serv	P&I	Profitable			AT&T	3rd					Oct-91				
Open Connect Systems	Jun-81	Communication	P&I	Profitable			AT&T	2nd					Aug-88				
Imagination Network	Aug-93	Communication	A/M	Profitable			AT&T	1st					Jul-93				
Knowledge Adventure	Aug-91	Software	P&I	Profitable			AT&T						Jun-93				
Object Design	Jul-98	Software	P&I	Profitable			AT&T	2					May-93	Mar-94			
								Corp	Mezz								

PORTFOLIO COMPANY	FOUNDED	BUSINESS	STATUS	STAGE	IPO DATE	IPO VALUE (MILL \$)	INVESTOR	INVESTMENT ROUND					DATE OF INVESTMENT				
								I	II	III	IV	V	I	II	III	IV	V
Soliteck	Apr-90	Communications	P&I	Profitable			AT&T	2					Feb-95				
Redgate																	
Communications	Oct-85	FinS	A/M	Profitable	May-94	35	AT&T	4					Dec-93				
Spectrum Holobyte	Jan-86	Electronics	A/M	Profitable			AT&T	LBO	2				Aug-92	Mar-93			
Online																	
Technologies	Dec-93	Software	P&I	Prod Dev			AT&T	2	3				Sep-94	May-95			
PF Magic	Sep-91	Multimedia	P&I	Prod Dev			AT&T	1st	2nd				Feb-93	Feb-94			
Netro	Nov-94	Communication	P&I	Prod Dev			AT&T	1	2				Jun-95	Nov-95			
Counterpoint																	
Computers	Jun-84	Computer	A/M				AT&T	3rd					Dec-85				
Peak Systems	Nov-83	Semiconductor	OFB	Shipping			Baccarat	1	2	3	May		Jan-89	Dec-91	Oct-92		
CEIT Systems	?	DP/Med	OFB	?			Baccarat	1					May-87				
Supertek Computer	Jun-85	Computer	A/M				Baccarat	2	3				Nov-86	Feb-88			
Earth's Best	Jul-87	Food	P&I	Shipping			Bacharris	Rest					Apr-83				
Endovascular																	
Technologies	Jul-89	Medical	Public	Beta	Feb-96	24	Bacharris	1					Jul-89				
AgriDyne																	
Technologies	Jan-73	Environment	Public	Shipping	Feb-92	17.5	BAT Industries	1					Feb-89				
Twyford																	
International	Jan-82	Agriculture	A/M	Shipping			BAT Industries	3					Apr-85				
Photonic Integration	Nov-83	Semiconductor	P&I	Shipping			Battelle	1					Jul-87				
Informed	Jan-90	DP/Med	A/M		Sep-89		Battelle	1					Jan-84				
Imagyn	Sep-89	Medical	P&I	Shipping			Baxter	0					Sep-89				
Innerspace	Jun-90	Medical	P&I	Shipping			Baxter	1					Jan-91				
Stericycle	Mar-89	Environment	P&I	Shipping			Baxter	2					Nov-93				
Apache Medical	Sep-87	DP/Med	P&I	Shipping			Baxter	Corp					Dec-92				
Mediscence	May-81	Medical	Public	Profitable	Jun-94	54	Baxter	1					Nov-83				
ICU Medical	Jan-84	Medical	Public	Profitable	Mar-92	14.3	Baxter	IPO					Mar-92				
Physicians																	
Computer Network	Aug-83	DP/Med	Public	Profitable	Nov-91	36	Baxter	2					Mar-90				
Applied Immune																	
Sciences	Dec-84	Medical	Public	Prod Dev	May-91	31	Baxter	3					Oct-87				
Sanders Prototype	Jan-95	Software	P&I	Prod Dev			Baxter	1					Jun-85				
Steritech	Sep-91	Medical	P&I	Prod Dev			Baxter	3					Jun-94				
Neocrin	Jun-92	Biotech	P&I	Prod Dev			Baxter	4	6				Dec-95	Jun-96			
Optex Biomedical	Jan-85	Medical	Public	Beta	May-94	4	Baxter	3					Mar-92				
Sangstat Medical	Jan-88	Biotech	Public	Beta	Dec-93	11	Baxter	4					Apr-93				

PORTFOLIO COMPANY	FOUNDED	BUSINESS	STATUS	STAGE	IPO DATE	IPO VALUE (MILL \$)	INVESTOR	INVESTMENT ROUND					DATE OF INVESTMENT				
								I	II	III	IV	V	I	II	III	IV	V
Transcend Therapeutics	Jan-93	Biotech	P&I	Beta			Baxter		1	2			Apr-94	Sep-95			
Linus Technology	Jan-85	Computer	OFB				Baxter		2				Aug-88				
Xedia	Dec-92	Networking	P&I	Shipping			Bay Networks		2				Nov-95				
Saratoga Semiconductor	Sep-85	Semiconductor	OFB				Bayside & Co.		4				Nov-88				
Cleamnet Communications	Jan-84	Communication	Public	Profitable	Oct-94	83.4	BCE Mobile		2				Mar-93				
Lucid	Jan-84	Software	OFB	Shipping			Bechtel		1	2	3		May-85	Apr-86	Mar-91		
Formative Technology	Jan-83	Software	A/M	Shipping			Bechtel		2				Aug-84				
Atlantic Cellular	Jan-89	Communication	P&I	Profitable			Bechtel		2				Aug-90				
Oncogene Science	Mar-83	Medical	Public	Shipping	Sep-91	17.6	Becton Dickinson	IPO					Oct-91				
Quidel	Jan-81	Medical	A/M	Shipping			Becton Dickinson		4				Nov-85				
Sensym	Jan-82	Instrument	A/M	Shipping			Becton Dickinson		2				Aug-86				
Nexagen	Mar-91	Biotech	Public	Prod Dev	Jan-94	23	Becton Dickinson	Mezz					Sep-93				
Verity	Mar-88	Software	Public	Shipping	Oct-95	40	Bell Atlantic		3	4			Jul-90	Sep-94			
Fourth Communications																	
Network		Multimedia	P&I	Shipping			Bell Atlantic		1				Feb-94				
Cellular Data	Mar-88	Communication	OFB	Shipping			Bell Atlantic		3	Mezz			Jun-91	Dec-92			
FileNet Basement	Jan-88	Retail	Public	Profitable	Sep-91	76	Bell Atlantic	LBO					Jul-88				
Palgarn																	
Technology	Feb-88	Communication	Public	Profitable	Sep-93	58	Bell Canada		1	2	Mezz		Feb-89	Jul-90	Oct-92		
National Dispatch Center	Nov-90	Communication	P&I	Profitable			Bell Mobility		2				Oct-91				
Prime New Ventures	Nov-94	Other	P&I	Shipping			Bell South	Later					Jan-95				
Aqua Air																	
Environmental	Aug-90	Environment	P&I	Shipping			Bend Research		1	2	3		Aug-90	Jun-91	Jun-92		
Consep	Jan-85	Agriculture	Public	Prod Dev	Feb-94	12.9	Bend Research		4				May-92				
Caps	Mar-94	Multimedia	P&I	Beta			Blockbuster		1	2			Nov-94	Dec-95			
Portrait Display Labs	Dec-92	Computer	P&I	Shipping			Blue Cross		1				Jan-93				
Ultracision	Oct-88	Medical	A/M	Shipping	Dec-95	67	Blue Cross	Mezz					Jun-93				
Insurx	Jan-86	DP/Med	A/M	Profitable			Blue Cross		3				Jul-90				

PORTFOLIO COMPANY	FOUNDED	BUSINESS	STATUS	STAGE	IPO DATE	IPO VALUE (MILL \$)	INVESTOR	INVESTMENT ROUND					DATE OF INVESTMENT				
								I	II	III	IV	V	I	II	III	IV	V
Khepri Pharmaceutical	Aug-92	Biotech	A/M	Prod Dev	Dec-95	30	Blue Cross		3					Nov-94			
Cimillex																	
Teknowledge	Jan-80	Robotics	A/M	Shipping			BMW		5					Feb-88			
Logos	Jan-69	Software	P&I	Profitable			BMW		4					Aug-85			
Gold Hill	Jan-84	Software	A/M	Profitable			BMW		1	2	3	4	5	Aug-84	Nov-85	May-88	
Optographics	Oct-82	CAD	A/M	Profitable	Sep-93	10.7	BMW		2	4				Sep-85	Nov-88		
Maxitron	Jan-83	Instrument	O/FB				BMW		3					May-87			
Electronic Systems Products	?	Computer	O/FB				BMW		2					May-87			
Saber Technology	Jan-82	CAD	O/FB				BMW		4					Feb-86			
Interling Software	Jan-82	Software	Public	Profitable	Apr-93	20	Boettcher		2					Sep-88			
Proxima	Feb-82	Computer	Public	Profitable	Feb-93	26	Boettcher		2					Nov-85			
Biocontrol Systems	Jan-87	Biotech	P&I	Profitable			Boettcher		1					Aug-87			
BBE Sound	May-85	Audio	P&I	Profitable			Boettcher		2					Aug-85			
Micro Decisionaire	Jan-80	Software	A/M	Profitable	Jan-94	25	Boettcher		Seed	1				Mar-85	May-88		
Sierra																	
Semiconductor		Semiconductor	Public		May-91		Boettcher		2	3	4			Dec-86	Jun-87	Mar-88	
Ford/Higgins	?	Computer	O/FB				Boettcher		2					Dec-84			
IC Sensors	Nov-82	Instrument	A/M	Shipping			Borg Warner		0					Nov-82			
Sierra																	
Semiconductor		Semiconductor	Public		Apr-91		Borg Warner										
Lin Data	Jan-83	Computer	A/M				Borg Warner		2					Jun-85			
Oncocath							Boston										
Cardiothoracic Systems		Biotech	P&I	Prod Dev			Scientific		1					Aug-95			
Byvideo	Sep-95	Medical	IPO R&D	Prod Dev	Mar-96	63.75	Boston		1					Sep-95			
SEQ Limited	Jan-81	Data Processing	O/FB	Shipping			Scientific		2	3	5			Jun-85	Nov-87	Nov-89	
IXsys	Jun-91	Medical	P&I	Prod Dev			Brentwood		2								
Cadus	Mar-90	Biotech	P&I	Prod Dev			Bristol Myers Squibb		3					Aug-95			
Pharmaceuticals	Apr-92	Biotech	P&I	Prod Dev			Bristol Myers Squibb		Corp	Corp				Jun-93	Sep-95		
Procept	Nov-85	Biotech	Public	Prod Dev	Feb-94	17.9	Bristol Myers Squibb		2					Jul-94			
Verticom	Dec-93	Telecommunications	P&I	Shipping			Bristol Myers Squibb Brown		R&D	2 Mezz				Feb-90	Aug-90	Feb-93	
							Technology		1	2				Jan-94	Dec-94		

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								I	II	III	IV	V	I	II	III	IV	V
Iris Medical Instruments	Feb-89	Medical	P&I	Profitable			Brown Technology										
Microsource	Nov-81	Electronics	P&I	Profitable			Brown Technology	2					Nov-86				
Conceptus	Oct-92	Medical	Public	Beta	Feb-96	42	Brown Technology	1	3				Dec-92	Jun-95			
Ascort	Oct-87	Communication	P&I	Profitable			Bruno Corp	2					Aug-89				
Sygen	Jan-81	Computer	OFB				Bruno Corporation	1					Nov-84				
Cymer Laser Technology	Jan-86	Semiconductor	P&I	Shipping			Cannon	3					May-90				
Onyx Graphics	Dec-89	Software	A/M	Profitable			Cannon	1					Dec-91				
Ate J	Jan-84	Semiconductor	A/M	Profitable			Cannon	4					May-87				
In Store Advertising		Retail	Public	Shipping	Jul-90	38	Cities/ABC Capital	3					Jun-89				
Yes Entertainment	Nov-92	Consumer Elect	Public	Shipping	Jun-95	12.1	Cities/ABC Capital	Mezz					Jun-94				
Young Broadcasting	Jan-86	Broadcasting	Public	Shipping	Nov-94	84.4	Cities/ABC Capital	IPO					Nov-94				
Optical Data Inc.	Apr-81	Multimedia	P&I	Profitable			Cities/ABC Capital	1	2				Jan-90	Oct-93			
Calyx&Corolla	Jan-90	Mail Order	P&I	Profitable			Cities/ABC Capital	Later					Jun-95				
Wireless Access	Nov-91	Networking	P&I	Shipping			Casio	3					May-94				
Phoenix Metals	Jan-89	Electronics	OFB	Shipping			Caterpillar	1					Aug-89				
Cycleair	Aug-83	Environment	P&I	Profitable			Caterpillar	1	2				Jun-85	Mar-89			
Fared Robot Systems	Jan-81	Robotics	OFB				Caterpillar	2					Nov-84				
Avitech Diagnostics	Jan-88	Biotech	P&I	Shipping			Centocor	3					Dec-93				
Tektagen	Apr-87	Medical	P&I	Profitable			Centocor	Out									
Corvas International	May-87	Biotech	Public	Prod Dev	Jan-92	36	Centocor	1	2	Corp			May-88	Dec-89	Nov-91		
Apollo	Jan-92	Biotech	P&I	Prod Dev			Centocor	1	2				Jun-92	Nov-93			
Enzytech	Jan-87	Biotech	A/M	Prod Dev	Dec-92	30	Centocor	Mezz					Jun-91				
Implimed	Aug-90	Medical	P&I	Prod Dev			Child Health Corp. of America										

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								I	II	III	IV	V	I	II	III	IV	V
Ascent Pharmaceuticals	Mar-89	Pharmaceuticals	P&I	Beta			Child Health Corp. of America										
Nexgen Microsystems	Nov-86	Computer	Public	Shipping	May-95	43	Chips & Technologies	1	2	3	4		Apr-87	Apr-88	Nov-90	Jun-92	
Plus Logic	Apr-88	Semiconductor	A/M	Shipping			Chips & Technologies	Seed					Nov-88				
Netframe Systems	Aug-85	Networking	Public	Profitable	Jun-92	27	Chips & Technologies	2	3				Feb-89	Jun-90			
Reply	Dec-88	Computer	P&I	Profitable			Chips & Technologies	Seed					Mar-90				
Onyx Pharmaceuticals	Apr-92	Biotech	P&I	Prod Dev			Chiron	Seed	1				Apr-92	Apr-92			
Ribozyme	Feb-92	Biotech	IPO Rd	Prod Dev		20	Chiron	Corp					Aug-94				
Pharmaceuticals	Oct-89	Biotech	Public	Beta	Sep-95	36	Chiron	2					Mar-94				
Depotech	Jan-87	Biotech	P&I	Beta			Chiron	Corp	4				Jul-94	Mar-95			
Cytomed	Jan-86	Medical Distrib	Public	Shipping	Jan-92	63.8	Chrysler	2 Mezz					Feb-97	Mar-91			
Automation Technology Products	Apr-83	CAD	O/FB	Shipping			Chrysler	6					Sep-87				
Synektikon	Jul-81	Electrical Power	A/M	Shipping			Chrysler	5					Dec-87				
Kenfil	Jan-83	Software	Public	Profitable	Jan-93	17.5	Chrysler	recap					Sep-90				
United States Paging	Dec-86	Communication	Public	Profitable	Jun-92	6	Chrysler	1					Feb-87				
British Biotechnology Corp	Jan-86	Biotech	Public	Prod Dev	Jul-92	57	Chugai Pharmaceuticals	IPO					Jul-92				
Vertex Pharmaceuticals	Jan-89	Biotech	Public	Prod Dev	Jul-91	27	Chugai Pharmaceuticals	R&D					Oct-90				
Metra Biosystems	Mar-90	Biotech	Public	Shipping	Jun-95	30	Ciba Giegy	Corp					Jul-90				
IC Sensors	Nov-82	Electronics	A/M	Shipping			Ciba Giegy	0									
Plasmon Data Systems	Jan-83	Data Storage	P&I	Profitable			Ciba Giegy	4 Later					Nov-90	Jan-92			
Cocensys	Feb-89	Biotech	Public	Prod Dev	Jan-93	22.5	Ciba Giegy	3					May-92				
ISIS Pharmaceuticals	Mar-89	Biotech	Public	Prod Dev	May-91	25	Ciba Giegy	3					Mar-91				
Synaptic Pharmaceutical	Jan-87	Biotech	Public	Prod Dev	Dec-95	25	Ciba Giegy	Corp					Aug-94				

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								I	II	III	IV	V	I	II	III	IV	V
IDUN																	
Pharmaceuticals	Jun-94	Biotech	P&I	Prod Dev			Ciba Giegy	Corp					Sep-95				
Sibia	Apr-81	Biotech	P&I	Prod Dev			Ciba Giegy	Corp					May-92				
Insite Vision	Aug-86	Biotech	Public	Beta	Oct-93	33	Ciba Giegy	Corp					Oct-91				
Tanox Biosystems	Mar-86	Biotech	P&I	Beta			Ciba Giegy	Corp	Corp	Corp			May-90	May-91	Jun-94		
Alfymax	Jun-88	Biotech	Public	Prod Dev	Dec-91	80	Ciba-Giegy	3					Jun-91				
Fluent	Aug-89	CAD	A/M	Shipping	Jul-93	17.5	Cirrus Logic	2					Aug-91				
Media Vision	May-90	CAD	Public	Profitable	Nov-92	45	Cirrus Logic	2 Mezz					Mar-91	Jan-92			
Voyant	Dec-90	Multimedia	OFB	Prod Dev			Cirrus Logic	1					May-93				
Cascade																	
Communications International	Oct-90	Networking	Public	Shipping	Jul-94	30	Cisco Systems	2	3				Aug-92	Sep-93			
Network Services	Feb-92	Networking	P&I	Profitable			Cisco Systems	2					Jul-94				
Tarayon	Nov-94	Internet	P&I	Prod Dev			Cisco Systems	Corp					Jan-96				
Natsys Tehnologies	Jun-94	Software	P&I	Beta			Cisco Systems	1					Feb-95				
Opal	Dec-86	Semiconductor	Public	Profitable	May-95	29.5	Cial Electronic Industries	4					Aug-90				
DSP							Cial Electronic Industries										
Communications	Jan-87	Communication	Public	Profitable	Mar-95	28	Industries	IPO					Mar-95				
Sensormedics	Dec-83	Medical Devices	P&I	Shipping			Cleveland Cliffs						Dec-83	Feb-85			
Peak Systems	Nov-83	Semiconductor	OFB	Shipping			Cleveland Cliffs		2				Jan-89	Dec-91	Oct-92		
Neogen	Jul-81	Agriculture	Public		Aug-89	6	Cleveland Cliffs						May-87				
Attache Software		Software	OFB				Cleveland Cliffs		1				Oct-83				
Cincinnati Coca Cola Bottling		Food	P&I	Profitable			Coca Cola	LBO					Jul-84				
Coca Cola Bottling Group		Food	A/M				Coca Cola	LBO					Mar-82				
Prograff Medical	Jul-93	Medical	P&I	Prod Dev			Collagen	Seed	1				Jul-93	Aug-94			
Fusion Medical	Feb-92	Medical	P&I	Prod Dev			Collagen	1	2				Nov-93	Jan-95			
Genpharm																	
International	Dec-88	Agriculture	P&I	Prod Dev			Collagen	Corp	Later				Jul-93	Jul-94			
Cemax Icon	Mar-82	Medical	P&I	Shipping			Collagen Corp.	3	4	5	6	7	Feb-85	Aug-86	Jul-88	Sep-89	May-92
PYXIS	Jun-87	Medical Devices	Public	Shipping			Columbia Healthcare	5 Mezz					Jul-91	Jun-92			

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								I	II	III	IV	V	I	II	III	IV	V
Biosite Diagnostics	Jan-88	Biotech	P&I	Shipping			Columbia Hospital		3 Mezz				Oct-91	Dec-92			
Biosyle Diagnostics	Jan-88	Biotech	P&I	Shipping			Columbia Hospital		3 Mezz				Oct-91	Dec-92			
Eastern Telelogic	Jul-86	Optics	P&I	Shipping			Comcast		Corp				Nov-92				
Lightspan	Sep-93	Education	P&I	Beta			Comcast		2				Feb-95				
Partnership																	
Nexgen																	
Microsystems	Nov-86	Computer	Public	Shipping	May-95	43	Compaq		Corp	3			Jan-90	Nov-90			
Pointcast	Jan-92	Software	P&I	Shipping			Compaq		Corp				Jul-96				
Silicon Video	May-91	Computer	P&I	Prod Dev			Compaq		2	3			Apr-94	May-95			
Nexgen							Compaq										
Microsystems	Dec-86	Computer	Public	Shipping	Jun-95	44	Computer		Corp	3			Jan-90	Nov-90			
Mobileware	Aug-91	Networking	P&I	Shipping			Compaq		1				Aug-92				
							Compaq										
Kidsoft	Jul-92	Multimedia	P&I	Shipping			Computer		2				Feb-94				
							Compaq										
Books that work	Jun-92	Education	P&I	Shipping			Computer		Corp				Sep-94				
Intellon	Jan-89		P&I	Shipping			Compaq		1				Jul-95				
							Compaq										
Conner Peripherals	Jun-85	Data Storage	Public	Profitable	Apr-88	32	Computer		1	2			Jun-86	Dec-86			
Fourth Shift	Jan-84	Software	Public	Shipping	Jul-93	18.8	Control Data		1	2	3		Oct-84	Feb-86	Aug-86		
Akashic Memories		Data Storage	A/M	Shipping	Dec-87	20	Control Data										
Seragen	Jan-79	Biotech	Public	Prod Dev	Apr-92	36	Control Data										
Nastec	Jan-82	Software	A/M				Control Data		1	3			Sep-83	Aug-87			
Edgecore	Jan-83	Computer	A/M				Control Data		1	4			Mar-84	Oct-87			
Lisp Machine	Jan-80	Computer	A/M		Sep-87	2	Control Data		3				Oct-84				
Vista Environmental Information																	
	Jan-89	Information Serv	A/M	Shipping			Cox Enterprises		1				Feb-93				
Optical Data Inc.	Apr-81	Multimedia	P&I	Profitable			Cox Enterprises		2 Mezz				Jul-94	Jul-94			
Contentware	Jan-92	Multimedia	P&I				Cox Enterprises		1				Jan-95				
Beta Phase	Jul-85	Electronics	Public	Shipping			Gray REsearch		Corp				Apr-90				
Gigabit Logic	Jan-81	Semiconductor	A/M	Shipping			Gray Research		3				Apr-87				
Triquint																	
Semiconductor	Aug-81	Semiconductor	Public	Profitable	Dec-93	22	Cray Research		Mezz				Nov-93				

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Pointcast	Jan-92	Software	P&I	Shipping			CUC International	Corp					Jul-96				
Quicklogic	Jan-88	Semiconductor	P&I	Shipping			Cypress Semiconductor	Corp Mezz					Oct-92	Jun-95			
Aspen	Jan-87	Semiconductor	OFB	Shipping			Cypress Semiconductor	Seed					Dec-87				
Vitesse	Jul-84	Semiconductor	Public	Profitable	Dec-91	28.8	Cypress Semiconductor	2 3					Jan-88	Aug-89			
Glytec	Dec-89	Biotech	A/M	Prod Dev			Cytel	1									
Sequel	Jun-92	Biotech	A/M	Prod Dev			Cytel	Seed					Jun-92				
Therapeutics	Feb-91	Software	Public	Shipping	Mar-96	45.15	Data General	Mezz					Mar-85				
Force Software	May-88	Semiconductor	P&I	Shipping			Data General	1 2					May-88	Jun-89			
Power Integrations	Jan-85	Semiconductor	Public	Profitable	Aug-93	39	Data General	1 2					Oct-85	Jun-86			
Mercury Computer Systems	Jan-83	Computer	P&I	Profitable			Data General	Later					Dec-87				
Fisher Imaging	Jan-73	Medical	Public	Profitable	Aug-91	21.7	Dianonics	IPO					Aug-91				
Neuroscience	Jan-84	Medical	A/M				Dianonics	1					May-85				
Maspar Computer	Mar-88	Computer	P&I	Shipping			Digital Equipment	Corp Debt					Jun-91	Aug-93			
Gigabit Logic	Jan-81	Semiconductor	A/M	Shipping			Digital Equipment	3					Apr-87				
Triquint	Aug-81	Semiconductor	Public	Profitable	Dec-93	22	Digital Equipment	Mezz					Nov-93				
Semiconductor	Aug-81	Semiconductor	Public	Profitable	Jul-92	17.5	Digital Equipment	Corp					Jun-90				
Siratacom	Jan-86	Networking	Public	Profitable			Digital Equipment	3					Jul-89				
Synergy	Jan-87	Semiconductor	IPO Ref	Profitable			Digital Equipment						Aug-85	Feb-87	Jan-88		
Thumbscan	Aug-85	Data Process	A/M	Beta			Digital Equipment	Seed	2 3								
Adra Systems	Jul-83	CAD	P&I	Profitable			Digital Equipment Corp	Corp					Sep-91				
Intellidex	Jan-81	Robotics	OFB	Profitable			Digital Express	Seed	1 2 3 4				Dec-81	Nov-82	Jul-83	Mar-85	Nov-86
Intellivoice	Jan-88	Communication	P&I	Shipping			Digital Express	1 2					Jan-95	Oct-95			
PSI Star	Jan-83	Electronics	A/M	Shipping			Dow Chemical	1 2 5					Mar-84	Oct-85	Aug-88		
Neoprobe	Jan-83	Medical Equipment	Public	Prod Dev	Nov-92	9	Dow Chemical	1					Apr-91				
Atek	Jan-82	Aerospace	P&I	Prod Dev			Dow Chemical	Seed					Aug-81				
Software Ventures	Jan-84	Software	A/M	Shipping	Jun-95	11.7	Dow Jones	1					Nov-83				
Intelligence	Jan-81	Educational Soft	OFB	Profitable			Dow Jones	Mezz	4 5				Jan-84	Feb-87	May-89		

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								I	II	III	IV	V	I	II	III	IV	V
Oasis Healthcare Systems	May-94	DPMed	P&I	Shipping			Dun & Bradstreet	LBO	1	2			May-94	May-94	May-95		
Gartner Group	Jan-79	Information Serv	Public	Profitable	Oct-93	58.5	Dun & Bradstreet	IPO					Oct-93				
Etec Systems	May-89	Semiconductor	Public	Profitable	Oct-95	42	DuPont	LBO					Mar-90				
Laserscope	Jan-82	Medical	Public	Profitable	Nov-89	16	DuPont		5				Feb-86				
Biomedical	Jan-82	Aerospace	P&I	Prod Dev			DuPont	Seed					Aug-81				
Avtek	Apr-84	Computer	A/M	Prod Dev			DuPont	Corp					Feb-87				
Grayhawk Systems Applied	Sep-84	Biotech	OFB	Beta			DuPont	1					Aug-87				
Biotechnology	Jan-82	Computer	A/M				DuPont	3					Jan-86				
Imagitex	Oct-92	Biotech	P&I	Prod Dev			DuPont Merck	3					Dec-95				
Mitotix	May-89	Semiconductor	OFB	Shipping			Dynatech	2					Sep-90				
Elite	Jan-73	Telecommunicat	Public	Profitable			Dynatech	1					May-87				
Complete PC	Jul-86	Computer	A/M	Profitable			Dynatech	1					Apr-88				
Interleaf	Jan-81	Software	Public	Shipping	Jan-87		Eastman Kodak	2					Jul-84				
Literal	Jan-83	Data Storage	P&I	Shipping			Eastman Kodak	2					Mar-91				
Oryx	Dec-83	Computer	OFB	Shipping			Eastman Kodak	R&D	1	2			Aug-85	Jul-88	Oct-89		
Cygnat Systems	May-83	Data Storage	Bankru	Restart			Eastman Kodak	2					Feb-86				
Data Technology	Jan-79	Computer	Public	Profitable	May-87	22	Eastman Kodak	1					Feb-86				
Sun Microsystems	Feb-82	Computer	Public	Profitable	Mar-86	64	Eastman Kodak	Mezz					Nov-84				
Neorx	Sep-84	Biotech	Public		Sep-84		Eastman Kodak	Seed	1				Jun-83	Sep-84			
Solo Systems		Computer	OFB				Eastman Kodak	2					Nov-82				
Speech Recognition Systems		Computer	OFB				Eastman Kodak	2					Feb-86				

PORTFOLIO COMPANY	FOUND ED	BUSINESS	STAT US	STAGE	IPO DATE	IPO VALUE (MILL \$)	INVESTOR	INVESTMENT ROUND					DATE OF INVESTMENT				
								I	II	II	IV	V	I	II	III	IV	V
Electronics Systems Products		Computer	OFB				Electro Science Management		2	Bridge			Mar-84	May-87			
International Immunotechnology		Biotech	OFB				Electro Science Management		1	Seed			Jul-82				
Amcodyne		Data Storage	A/M				Electro Science Management		1	2			Nov-82	Aug-83			
Ventritex	Jan-85	Medical	Public	Shipping	Jan-92	84.6	Eli Lilly		4	Mezz			Feb-90	Nov-91			
Indigo Medical	Oct-90	Medical	P&I	Shipping			Eli Lilly		1	2			May-93	May-95			
Cell Care	Jan-78	Medical	P&I	Shipping			Eli Lilly		1								
Oclassen																	
Pharmaceuticals	Feb-85	Biotech	P&I	Profitable			Eli Lilly		Corp				Aug-92				
Medica	Jan-84	Medical Instrum	A/M	Profitable			Eli Lilly		1				Jan-85				
Shaman																	
Pharmaceuticals	May-89	Biotech	Public	Prod Dev	Jan-93	45	Eli Lilly		1	2	3		Mar-90	Dec-91	Aug-92		
Synaptic																	
Pharmaceutical	Jan-87	Biotech	Public	Prod Dev	Dec-95	25	Eli Lilly		3	Mezz			Jun-91	Jan-93			
Glycomed	Jul-88	Biotech	Public	Prod Dev	Jun-91	16	Eli Lilly		3				Apr-90				
Sphynx																	
Pharmaceuticals	Jun-87	Biotech	Public	Prod Dev	Jan-92	75	Eli Lilly		4				Nov-91				
Athena																	
Neurosciences	Jul-86	Biotech	Public	Prod Dev	Nov-91	54	Eli Lilly		Corp	Reg D			Nov-88	Jan-91			
Nexagen	Mar-91	Biotech	Public	Prod Dev	Jan-94	23	Eli Lilly		Mezz				Sep-93				
Sibia	Apr-81	Biotech	P&I	Prod Dev			Eli Lilly		Corp				May-92				
Icagen	Nov-92	Biotech	P&I	Prod Dev			Eli Lilly		Seed	1			Apr-93	Nov-94			
Millenium	Jan-93	Biotech	P&I	Prod Dev			Eli Lilly										
Genpharm																	
International	Dec-88	Agriculture	P&I	Prod Dev			Eli Lilly		Corp	Corp			May-93	Aug-93			
Liposome Company		Biotech	Public		Jan-86		Eli Lilly										
Zoran	Dec-81	Semiconductor	Public	Shipping	Dec-95	27.7	Elron Industries		1	2	3	4	Aug-94	Oct-85	Mar-87	Jul-88	
Servisoft	Jan-87	Software	P&I	Shipping			Elron Industries		Seed	1	2	3	4	Jul-87	Jun-89	May-90	Dec-92
Opal	Dec-86	Semiconductor	Public	Profitable	May-95	29.5	Elron Industries		2	3			May-88	Oct-89			
Netmanage	Apr-90	Networking	Public	Profitable	Sep-93	35.2	Elron Industries		1				Dec-91				
Chip Express	Jan-90	Semiconductor	P&I	Profitable			Elron Industries		Corp				Jan-89				
Crystal																	
Technologies	Jan-83	Communication	OFB				Elron Industries										
Elcam	Jan-84	CAD	A/M				Elron Industries										

PORTFOLIO COMPANY	FOUNDED	BUSINESS	STAT US	STAGE	IPO DATE	IPO VALUE (MILL \$)	INVESTOR	INVESTMENT ROUND					DATE OF INVESTMENT				
								I	II	III	IV	V	I	II	III	IV	V
Voxel Imaging	Jan-89	Computer	P&I	Shipping			EMC		1	2			Jan-90	Jun-91			
Garden Fresh Restaurants	Nov-83	Food	Public	Profitable	May-95	13.5	EMC		1	2	3		Nov-85	May-87	Jan-88		
Sunward Technologies	Jan-85	Data Storage	A/M	Profitable			EMC		2	4			Jul-86	Jun-88			
Cytotech	Jan-83	Medical	A/M				EMC										
Intelligent Images		Computer	A/M				EMC		1				Oct-85				
Digital Appliance Controls	Jan-84	Process Control	A/M	Profitable			Emerson Electric		1	2	3		Jul-85	Nov-86	May-89		
Stereotaxis	Jan-90	Medical	P&I	Prod Dev			Emerson Electric		1				Apr-95				
Aqua Air																	
Environmental	Aug-90	Environment	P&I	Shipping			Exxon		3				Jun-92				
Sydex	Jan-82	Computer	O/B				Exxon		2				Sep-84				
Cimilux																	
Teknowledge	Jan-80	Robotics	A/M	Shipping			Ford		5				Feb-88				
Inference	Jan-83	Software	Public	Profitable	Jun-95	24.4	Ford		2	3	4	Mezz	May-89	Dec-90	Oct-91	Apr-93	
Verity	Mar-88	Software	Public	Shipping	Oct-95	40	Fame Technology		Corp				May-93				
Integral Peripherals	Oct-90	Data Storage	P&I	Shipping			Fuji Electric		2	4			Dec-91	Feb-94			
Intelligence	Jan-82	Software	Public	Profitable	Aug-93	21	Fuji Xerox		3				Feb-92				
Auspex Systems	Dec-87	Networking	Public	Profitable	May-93	60	Fuji Xerox		Corp				Jun-90				
Via Technologies	Feb-87	Semiconductor	O/B	Shipping			Fujitsu		Corp	Corp			Feb-88	Jul-90			
Poquet Computer	Jan-88	Computer	A/M	Shipping			Fujitsu		1				Jan-88				
Censor	Oct-81	Data Storage	P&I	Restart			Fujitsu		Corp				Feb-91				
Anamartic		Data Storage	P&I				Fujitsu		2	3			Sep-88	May-90			
Microchip Technology	Apr-89	Semiconductor	Public	Profitable	Mar-93	19.5	Future Electronics		Mezz				Nov-92				
Telecom							Future Electronics										
Semiconductor	Jun-93	Semiconductor	Public	Profitable	Jul-95	30.6	G&G										
Microprobe	Jan-86	Biotech	Public	Shipping	Sep-93	16.5	Diagnostics		3	4			Jan-91	Jul-92			
Innovative Health Concepts	Oct-92	Medical	P&I	Profitable			G&G		1				Oct-93				
Aprogenex	Dec-88	Biotech	Public	Prod Dev	Oct-93	11	Diagnostics		2	3			Oct-91	May-92			
Viagene	Nov-87	Biotech	Public	Prod Dev	Dec-93	18	G&G		3	Mezz			Aug-90	Sep-92			

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Terrapin Technologies	Mar-86	CAD	P&I	Prod Dev			G&G Diagnostics	1	Oct-92
Pointcast	Jan-92	Software	P&I	Shipping			Garnet Communications	Corp	Jul-96
House of Blues	Jan-93	Food	P&I	Shipping			Gartmore Company		
Jupiter Technology	Jan-83	Networking	A/M	Profitable			Gartmore Company	1	Aug-85
Microbio Resources	Nov-81	Food	P&I				Gartmore Company		
SDA Systems	Jan-83	CAD	A/M	Shipping			Ge Semiconductor	1	Jan-84
Xenova Corp	May-87	Biotech	Public	Shipping	Jul-94	11.5	Genentech		
Cell Care	Jan-78	Medical	P&I	Shipping			Genentech	1	
Incyte									
Pharmaceuticals Sequana	Apr-91	Biotech	Public	Prod Dev	Nov-93	15	Genentech	Corp 3	Sep-91 Jun-92
Therapeutics	Feb-93	Biotech	Public	Prod Dev	Jul-95	18	Genentech	Corp Mezz	Sep-94 Oct-94
Glycomed	Jul-88	Biotech	Public	Prod Dev	Jun-91	16	Genentech	Corp	Dec-90
Nexagen	Mar-91	Biotech	Public	Prod Dev	Jan-94	23	Genentech	Mezz	Sep-93
Genomix	Jun-88	Medical Instrum	P&I	Prod Dev			Genentech	Seed	Sep-88
Genvec	Dec-92	Biotech	P&I	Prod Dev			Genentech	Seed 1 2	Dec-92 May-93 Nov-94
Khepri									
Pharmaceutical Orion Network	Aug-92	Biotech	A/M	Prod Dev	Dec-95	30	Genentech	Seed	Aug-92
Systems	Jan-82	Electronics	Public	Shipping	Aug-95	56	General Dynamics		
Silicon Compilers Systems	Jan-81	CAD	A/M				General Dynamics		
Avalon Software	Jan-74	CAD	P&I	Profitable			General Electric	Later	Mar-94
Silent Radio	Jan-79	Computer	P&I	Shipping			General Instrument	1 2	May-83 Jan-84
Arnel	Dec-84	Semiconductor	Public	Profitable	Mar-91	58.5	General Instruments	1	Dec-87
Private Satellite Network	Jul-83	Electronics	P&I				General Instruments	1 2	Aug-83 Aug-84
Evernet Systems	Jul-89	Networking	A/M	Shipping	Jun-93	22	Genstar	3	Nov-90
Supernac Technology	Sep-88	Computer	Public	Profitable	May-92	18	Genstar	2	

PORTFOLIO COMPANY	FOUNDED	BUSINESS	STATUS	STAGE	IPO DATE	IPO VALUE (\$ MILL)	INVESTOR	INVESTMENT ROUND					DATE OF INVESTMENT				
								I	II	III	IV	V	I	II	III	IV	V
Cor Therapeutics	Feb-88	Biotech	Public	Prod Dev	Jun-91	15	Genstar	2	3				Apr-89	Dec-90			
Sequana Therapeutics	Feb-93	Biotech	Public	Prod Dev	Jul-95	18	Glaxo	Corp					Jul-94				
Ligand Pharmaceuticals	Oct-87	Biotech	Public	Prod Dev	Nov-92	41	Glaxo	Later					Sep-92				
Gilead Sciences	Jun-87	Biotech	Public	Prod Dev	Jan-92	75	Glaxo	R&D					Jul-90				
Photoc Dynamics	May-86	Semiconductor	Public	Profitable	Nov-95	23	Goldstar	3					Nov-91				
Avatar Technologies	Feb-81	Networking	A/M	Shipping			Greyhound Computer										
IMA Systems		Data Storage	OFB				Greyhound Computer	Seed					Mar-82				
Raster Technologies	Jan-81	Computer	A/M				Greyhound Computer	Mezz					Oct-83				
Mycotech	May-90	Environment	P&I	Prod Dev			Groundwater Technology	Seed	2				Jan-91	Oct-93			
Ascent Logic	Jan-86	CAD	Pre IPO	Shipping			Grunman	1	4	Later			Jan-89	Nov-92	Nov-93		
Oryx	Dec-83	Computer	OFB	Shipping			Grunman	1	2	Debt			Jul-88	Oct-89	Feb-90		
Etec Systems	May-89	Semiconductor	Public	Profitable	Oct-95	42	Grunman	LBO					Mar-90				
Pharmchem	Jan-71	Medical	Public	Profitable	Aug-91	17	Grunman	IPO					Aug-91				
Orasis	Jan-84	Power Electronics	OFB				Grunman	1					May-89				
Cellico	Jan-88	Medical	P&I	Restart			Haemonetics	Corp	Later				Apr-93	Oct-94			
Spectrian Corp.	Apr-84	Power	Public	Shipping	Aug-94	30.3	Harris Corp	7					Feb-91				
Molten Metal Technology	Nov-89	Environment	Public	Shipping	Feb-93	42	Harris Corp	IPO					Feb-93				
Advanced Fibre Communications	Jun-92	Telecommunications	P&I	Shipping			Harris Corp	3	4	Mezz			May-94	Oct-94	Sep-95		
SDA Systems	Jan-83	CAD	A/M	Shipping			Harris Corp	1	3				Jan-84	Feb-86			
Crosscheck Technology	Oct-87	Electronics	P&I	Restart			Harris Corp	2					Dec-89				
Phycor	Jan-88	Medical	Public	Profitable	Jan-92	38	Harris Corp	3					Jan-90				
Synopsis	Dec-86	CAD	Public	Profitable	Feb-92	29	Harris Corp	1	2				Aug-87	Dec-88			
Bizmart	Jan-87	Retail	A/M	Profitable			Harris Corp	2					Nov-88				
Harris Adacom	May-85	Computer	A/M	Profitable			Harris Corp	Later					Feb-90				
Alimet	Jan-94	Telecommunications	P&I	Prod Dev			Harris Corp	0					Jan-94				
Communications Zoran	Dec-81	Semiconductor	Public	Shipping	Dec-95	27.7	Harris Corp.	4					Oct-89				
PYXIS	Jun-87	Medical Devices	Public	Shipping			Health Advantage	2	3	4			Sep-89	Mar-90	Feb-91		
Abtox	Oct-87	Medical Equipment	P&I	Shipping			Health Advantage	2	3				May-90	Nov-91			

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								I	II	III	IV	V	I	II	III	IV	V
Carelink	Jan-87	Medical Equipment	A/M	Shipping	Jul-92	40	Health Advantage		2	3			Dec-89	Jun-91			
Keravision	Nov-86	Medical Equipment	Public	Beta	Jul-95	48.6	Health Advantage		Mezz				Nov-92				
Accurax	Jan-92	Medical Equipment	P&I	Beta			Health Advantage		1				Jun-92				
Netscape	Apr-94	Internet	Public	Shipping	Aug-95	140	Hearst Corp.		1				Apr-95				
Kidsoft	Jul-92	Multimedia	P&I	Shipping			Hearst Corp.	Corp					May-95				
Books that work	Jun-92	Education	P&I	Shipping			Hearst Corp.	Corp					Feb-94				
Molecular																	
Dynamics	Jul-87	Medical Devices	Public	Profitable	Feb-93	23.5	Helios		1	2	3	Mezz	Nov-87	Dec-88	Nov-90	Aug-92	
Lumisys	Feb-87	Medical Devices	Public	Profitable	Nov-95	20	Helios										
Geoworks	Sep-83	Software	Public	Shipping	Jun-94	9	Hewlett-Packard		3				Feb-94				
Conductus	Sep-87	Semiconductor	Public	Shipping	Aug-93	15	Hewlett-Packard	Corp					Oct-88				
Aspect Communications	Aug-85	Telecommunications	Public	Profitable	May-90	29	Hewlett-Packard	Mezz					Feb-89				
Sun Microsystems	Feb-82	Computer	Public	Profitable	Mar-86	64	Hewlett-Packard		2				Apr-83				
Sequoia Systems	Jan-81	Computer	Public	Profitable	Mar-90		Hewlett-Packard	Corp					Dec-89				
Spectrographics	Jun-81	Computer	P&I	Profitable			Hewlett-Packard		2				Sep-83				
Spatial Technology	Jan-86	CAD	P&I	Profitable			Hewlett-Packard		1	2	Mezz		Jun-89	Mar-91	Feb-93		
Four PI Systems	Apr-86	Electronics	A/M	Profitable	Mar-93	<1	Hewlett-Packard		4	Mezz			Jan-90	Apr-91			
Silicon Video	May-91	Computer	P&I	Prod Dev			Hewlett-Packard		1	2	3		Jan-92	Apr-94	May-95		
Forum Systems	Apr-82	Computer	A/M	Prod Dev			Hewlett-Packard		1				Sep-83				
Cross Access		Software	P&I	Beta			Hewlett-Packard		3	4	5		Aug-91	Feb-92	Jul-93		
Elisware	May-90	Software	A/M	Beta	Dec-95	27	Hewlett-Packard	ACQ					Dec-95				
Lexocorp		Computer	A/M				Hewlett-Packard		6				May-95				
Nelcor	Jan-81	Medical	Public		May-87	38	Hewlett-Packard		1	2	3		Feb-83	Dec-83	Jan-84		

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								I	II	III	IV	V	I	II	III	IV	V
Solo Systems		Computer	OFB				Hewlett-Packard		2 Mezz				Nov-82	Sep-83			
Osborne Computer		Communication	OFB				Hewlett-Packard		2 Mezz				Jul-82	May-83			
Dataspeed		Telecommunication	A/M				Hewlett-Packard		1				Nov-83				
Koala technologies		Computer	A/M				Hewlett-Packard		1	2			May-83	Nov-83			
HMT Technology	Jan-84	Data Storage	IPO rel	Shipping	Mar-86	84	Hitachi	LBO					Nov-85				
Insite Peripherals	Mar-87	Data Storage	A/M	Shipping			Hitachi	3 Corp					Feb-90	May-91			
Msat																	
Immunosystems	Jan-84	Medical Devices	P&I	Profitable			Hitachi	Corp					Nov-87				
Protein Design Labs	Jul-86	Biotech	Public	Prod Dev	Jan-92	52	Hoffman-Laroche	Corp					Mar-89				
Millenium	Jan-93	Biotech	P&I	Prod Dev			Hoffman-Laroche	Corp					Mar-94				
Hybridon	May-89	Biotech	Public		Jan-96	50	Hoffman-Laroche	4 Later					Mar-93	Mar-94			
Advanced Business Communications																	
Sandisk	Jul-79	Telecommunication	P&I	Restart			Honeywell	Bridge					Aug-86				
Healthcare	Jun-88	Semiconductor	Public	Profitable	Nov-95	31.7	Honeywell	?					?				
Recoveries	Jul-88	Medical	P&I	Shipping			Humana	1					Jan-90				
Nimbus Medical	Jan-82	Medical	P&I	Shipping			Humana	3					Mar-88				
Menlo Care	May-85	Medical	A/M	Shipping	May-95	56.5	Humana	3					Oct-90				
US Behavioral																	
Health	Jan-80	DPMed	A/M	Shipping			Humana	2					Sep-89				
Raytel Medical	Feb-90	Medical	Public	Profitable	Dec-95	20	Humana	1	2	3			Apr-84	May-85	Feb-90		
Vancor	Jan-85	Medical	Public	Profitable	Sep-89	14.5	Humana	1					Dec-87				
Transkaryotic																	
Therapies	Jun-88	Biotech	P&I	Prod Dev			Humana	3	4 Mezz				Feb-92	Apr-93	Nov-93		
Biomagnetic																	
Technologies	Jan-70	Medical	Public		Jul-89	13.5	Humana	2					Apr-87				
Healthfield		Medical	P&I				Humana	2					May-92				
Infusion Systems	Jan-83	Medical	A/M				Humana	1	2				Mar-85	Nov-85			
Access analytical systems	Sep-88	Biotech	A/M	Shipping			Hybritech										
Gen-Probe	May-84	Medical	A/M				Hybritech	1	2				Mar-85	Jan-86			
Portable Software	Oct-93	Software	P&I	Shipping			Hyundai	Out/2					Jul-95				

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								I	II	III	IV	V	I	II	III	IV	V
Portable Energy Products	May-89	Energy	P&I	Shipping			HYundai						Apr-93	Jul-95			
US Airwaves	Oct-94	Telecommunications	OFB	Prod Dev			Hyundai						Jul-95				
Bachman Information Systems	Jan-84	CAD	Public	Shipping	Nov-91	30	IBM						Aug-89				
Kaseworks	Jul-88	Software	P&I	Shipping			IBM						Nov-92				
ICTV	Jul-89	Cable	P&I	Shipping			IBM										
Knowledge Based Technologies	Jun-88	Software	OFB	Shipping			IBM						May-90				
Mesa Archival Systems	Jan-88	Data Storage	OFB	Shipping			IBM						May-89				
Supercomputer Systems	Oct-87	Computer	OFB	Shipping			IBM						Dec-87				
Qronos Technology	Jan-84	Control Systems	A/M	Shipping			IBM						Jan-85	Mar-87			
Command data Systems	Jan-78	Computer	A/M	Shipping	Jul-89	5	IBM						Aug-85	Nov-88			
Metaphor Computer Systems	Oct-82	Computer	A/M	Shipping	7/91	109	IBM						Jan-88	Jul-91			
Molecular Simulations	Sep-85	CAD	A/M	Shipping			IBM										
Etec Systems	May-89	Semiconductor	Public	Profitable	Oct-95	42	IBM						Mar-90				
Easel	Jan-81	Computer	Public	Profitable	Aug-90	13	IBM						May-89				
Parralen Computer	Jul-88	Networking	Public	Profitable	Mar-93	27	IBM						Jun-92				
Object Design	Jul-88	Software	P&I	Profitable			IBM						May-93	Mar-94			
Synon	Jan-83	CAD	P&I	Profitable			IBM						Jan-90				
Telematics International	Mar-82	Networking	Public				IBM										
Electronic Design	Jan-81	Electronics	A/M	Shipping			Inishtech						Aug-87				
Stratagene Cloning Systems	Jul-84	Biotech	P&I	Profitable			Inishtech						May-87				
Intelco	8-Jan	Fiber Optics	A/M	Profitable			Inishtech						Dec-85				
Santa Clara Systems	Jan-81	Computer	A/M				Inishtech						Mar-84				
Metrologix	Jan-90	Semiconductor	OFB	Shipping			Innotech						Sep-92				
Optical Specialities	Jan-78	Semiconductor	P&I	Restart			Innotech						Nov-91				
S3	Jan-89	Semiconductor	Public	Profitable	Mar-93	30	Innotech						Nov-90				

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								I	II	III	IV	V	I	II	III	IV	V
Opal	Dec-86	Semiconductor	Public	Profitable	May-95	29.5	Innotech	3					Oct-89				
Exponential Technologies	Jun-93	Semiconductor	P&I	Prod Dev			Innotech	2					Oct-95				
Business Objects	Jan-90	Software	Public	Profitable	Sep-94	35	Innovacom	2					Aug-93				
Apsilog	Jan-94	Software	P&I	Prod Dev			Innovacom	1					Jun-95				
Nimbus Medical	Jan-82	Medical	P&I	Shipping			Integrated Healthcare	3					Mar-88				
Exocell	Jan-88	Biotech	P&I	Beta			Integrated Healthcare	Seed					Mar-88				
Immunogen	Jan-81	Biotech	Public	Shipping	Nov-89	15	Integrated Medical	2					May-86				
Oclassen	Feb-85	Biotech	P&I	Profitable			Integrated Medical	3					Mar-89				
Systemsoft	Jan-90	Software	Public	Shipping	Aug-94	14	Intel	Corp					Dec-93				
Articulate Systems	Jan-86	Software	P&I	Shipping			Intel	Corp					Feb-92				
Intellilink	Jan-91	Software	P&I	Shipping			Intel	Seed					Aug-93				
Middlegate	Aug-95	Multimedia	P&I	Shipping			Intel	1					Nov-95				
Gyrations	Jun-89	Computer	P&I	Shipping			Intel	Corp					Apr-93				
GO	Sep-87	Software	OFB	Shipping			Intel	3	4	Mezz			May-90	Apr-92	Apr-93		
Digital FX	Jan-88	Multimedia	OFB	Shipping			Intel	3	5	6			May-88	Mar-90	May-92		
Multiflow Computer	Apr-84	Computer	OFB	Shipping			Intel	5					Nov-89				
Illustra Information Technologies	Aug-92	Software	A/M	Shipping	Feb-96	465	Intel	3					May-95				
Fluent	Aug-89	CAD	A/M	Shipping	Jul-93	17.5	Intel	2					Aug-91				
Citrix Systems	May-89	Software	Public	Profitable	Dec-95	37.5	Intel	3					Nov-91				
Videoserver	Feb-91	Software	Public	Profitable	May-95	44.6	Intel	3					May-94				
Microtest	Jan-84	Networking	Public	Profitable	Oct-92	33.4	Intel	Corp					Aug-91				
Object Design	Jul-88	Software	P&I	Profitable			Intel	Mezz					Mar-94				
Onlive Technologies	Dec-93	Software	P&I	Prod Dev			Intel	3					May-95				
Zitel	May-83	Memory	Public				Intel	1					May-83				
							Intercoast Energy										
Metricom	Dec-85	Data Collection	Public	Shipping	May-92	9	Company	Mezz					Apr-89				
							Intercoast Energy										
Superconductivity	Jul-88	Energy	P&I	Shipping			Company										
							Intercoast Energy										
Mycotech	Jun-90	Environment	P&I	Prod Dev			Company	Seed	1	2			Jan-91	Jun-92	Oct-93		

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								I	II	III	IV	V	I	II	III	IV	V
Versant Object Technology	Oct-88	Software	P&I	Shipping			Intergraph										
Maspar Computer	Mar-88	Computer	P&I	Shipping			Intergraph						May-90	Aug-91	Apr-92	Apr-94	
Centric Engineering Systems	Mar-90	CAD	P&I	Shipping			Intergraph						Jun-89	Jun-90	Aug-93		
Integrated Silicon Systems	Jan-85	CAD	Public	Profitable	Feb-94	30	Intergraph	Corp					May-92				
Waferscale Integration	Aug-83	Semiconductor	P&I	Profitable			Intergraph		3	4			Jan-86	May-87			
Tangent Systems	Jan-84	CAD	A/M	Profitable	Jan-89		Intergraph		2				Jun-86				
Affymax	Jun-88	Biotech	Public	Prod Dev	Dec-91	80	Interhealth	Corp					Jun-91				
Transkaryotic Therapies	Jun-88	Biotech	P&I	Prod Dev			Interhealth						Feb-92	Apr-93	Nov-93		
Steris	Jan-85	Hospital Supply	Public	Shipping	Jun-92	14	Invacare		1	2	3		Jan-87	Jan-88	Jan-89		
Medical Composite Technology	Feb-89	Hospital Supply	A/M	Shipping	Jan-94		Invacare Corp.		2				Nov-91				
Nvidia	Jan-93	Semiconductor	P&I	Shipping			Itochu		2				Dec-94				
Wireless Access	Nov-91	Networking	P&I	Shipping			Itochu		3				May-94				
Gyrations	Jun-89	Computer	P&I	Shipping			Itochu		1	Corp			Jan-89	Jul-92			
CAD Solutions	Aug-85	Computer	P&I	Shipping			Itochu		2				Mar-91				
Dytel	Jan-82	Telecommunication	A/M	Shipping			Itochu		1				Nov-84				
Iwerks																	
Entertainment	Jan-86	Movie	Public	Profitable	Oct-93	54	Itochu	Corp					Dec-92				
Avalon Software	Jan-74	CAD	P&I	Profitable			Itochu	Later					Mar-94				
Exponential Technologies	Jun-93	Semiconductor	P&I	Prod Dev			Itochu		2				Oct-95				
Broad Vision	Nov-93	Software	P&I	Beta			Itochu	Corp	3				Apr-94	Aug-95			
Crystal Technologies	Jan-83	Communication	OFB				Itochu										
Hornclub		Retail	Public		Jun-85		Jack Eckerd Corp.		2				Dec-84				
Ross Stores	Aug-82	Retail	Public				Jack Eckerd Corp.										
Checc Medical Centers		Medical	A/M		Jan-88	3.5	Jack Eckerd Corp.		1				Jun-84				
Protein Polymer Technologies	Jul-88	Biotech	Public	Shipping	Jan-92	9.4	Johnson & Johnson	PPPE					Jul-94				
Nimbus Medical	Jan-82	Medical	P&I	Shipping			Johnson & Johnson		3				Mar-88				

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								I	II	III	IV	V	I	II	III	IV	V
Indigo Medical	Oct-90	Medical	P&I	Shipping			Johnson & Johnson	Seed	1	2			Oct-91	May-93	May-95		
Apex	May-85	Medical	Bankrupt	Shipping			Johnson & Johnson										
Luxar	Oct-88	Medical	P&I	Profitable			Johnson & Johnson	1	2				Mar-91	Sep-91			
British Biotechnology Corp	Jan-86	Biotech	Public	Prod Dev	Jul-92	57	Johnson & Johnson	IPO					Jul-92				
Lifespex	Jan-94	Medical	P&I	Prod Dev			Johnson & Johnson	Seed	1				Aug-93	Jul-95			
PHDX Systems	Jul-94	DP/Med	P&I	Prod Dev			Johnson & Johnson	Seed					Nov-94				
Trophix Pharmaceuticals	Jun-92	Biotech	P&I	Prod Dev			Johnson & Johnson	3					May-94				
Microcide Pharmaceuticals	Dec-92	Biotech	P&I	Prod Dev			Johnson & Johnson										
Neurocrine Biosciences	Jan-92	Biotech	P&I	Prod Dev			Johnson & Johnson										
MCM Laboratories	Jul-85	Medical	OFB	Prod Dev			Johnson & Johnson	2					Dec-88				
Houghton Pharmaceuticals	Mar-90	Biotech	IPO Ref	Prod Dev	Feb-96	36	Johnson & Johnson	3					Jul-94				
Glitech	Aug-87	Biotech	Public	Beta	Oct-95	21.9	Johnson & Johnson	Corp					Oct-94				
Ovamed	Apr-91	Medical	P&I	Beta			Johnson & Johnson	Seed	1				Aug-92	Jun-94			
Collagenex	Jan-92	Biotech	P&I	Beta			Johnson & Johnson	1	2	4			Nov-92	Sep-93	Dec-95		
Allos Therapeutics	Jan-94	Biotech	P&I	Beta			Johnson & Johnson	Seed	1	2			Jan-94	Oct-94	Jun-95		
Vaso Products	Aug-91	Medical	A/M	Beta			Johnson & Johnson	Seed	1	2			Aug-91	Jun-92	Jun-94		
Academic Systems	Mar-92	Software	P&I	Shipping			Jostens	Seed	Seed	1	2		May-92	Nov-92	Mar-93	Aug-94	
Starlight Networks	Mar-90	Networking	P&I	Shipping			Jostens	2	3	Mezz			Apr-92	Apr-93	Aug-95		
Mediashare	Jun-90	Multimedia	P&I	Shipping			Jostens	1	2				Jul-90	May-92			
Broderbund Software	Jan-80	Software	Public	Profitable	Nov-91	36	Jostens										
Optical Data Inc.	Apr-81	Multimedia	P&I	Profitable			Jostens										
C-Cube Systems	Jul-88	Semiconductor	Public	Shipping	Apr-94	36	JVC	Mezz					Dec-92				

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Vista Medical Technologies	Jan-93	Medical Instruments	P&I	Prod Dev			Kaiser		1								Jul-95
PSI Star	Jan-83	Electronics	A/M	Shipping			Kaiser Aerospace		5								Aug-88
Intevac	Oct-90	Electronics	Public	Profitable	Nov-95	12	Kaiser Aerospace		LBO								Oct-90 Nov-95
Agee Associates	Feb-87	Semiconductor	P&I	Shipping			Kanamatsu		3								May-90
Concord																	
Communications	Aug-86	Networking	P&I	Shipping			Kanamatsu		1								Aug-86
Diamon Images	Sep-83	Semiconductor	P&I	Profitable			Kanamatsu		Seed								May-84
Four PI Systems	Apr-86	Electronics	A/M	Profitable	Mar-93	<1	Kanamatsu		4 Mezz								Jan-90 Apr-91
Gebex	Aug-85	Semiconductor	OFB				Kanamatsu		1	2							Jul-85 Aug-86
Wireless Access	Nov-91	Networking	P&I	Shipping			Kawasaki Steel		2								Mar-93
Literal	Jan-83	Data Storage	P&I	Shipping			Kawasaki Steel		2								Mar-91
Pointcast	Jan-92	Software	P&I	Shipping			Knigh-Ridder		Corp								Jul-96
Millitech	Jan-82	Electronics/Micro	P&I	Shipping			Kollmorgen		2	3							Dec-88 Dec-92
Innovus	Jan-83	Semiconductor	A/M	Shipping			Kollmorgen Corp.		1								May-84
Surface Mounted Technology		Electronics/PCB	A/M				Kollmorgen Corp.		1								
C-Cube Systems	Jul-88	Semiconductor	Public	Shipping	Apr-94	36	Kubota		1	2 Mezz							Jan-89 May-90 Dec-92
Tricord Systems	Aug-87	Networking	Public	Shipping	Mar-93	33	Kubota		Corp								Jun-91
Mycogen	Dec-82	Agriculture	Public	Shipping	Jun-87	17.6	Kubota		IPO								Jun-87
Accelgraphics	Nov-94	Electronics	P&I	Shipping			Kubota		1								Jun-95
Stardent	Nov-85	Computer	OFB	Shipping			Kubota		2	3 Debt							Nov-86 Sep-88 May-89
Exabyte	Jun-85	Data Storage	Public	Profitable	Oct-89	28	Kubota		IPO								Oct-89
MIPS Computer	Jan-84	Computer	Public	Profitable	Dec-89	63	Kubota		4	5							Oct-87 Aug-88
Metal	Jan-82	Industrial Control	P&I	Profitable			Kubota		1								Oct-82
RASNA	Nov-87	CAD	A/M	Profitable	Aug-95	180	Kubota		Corp Corp	4							Jun-89 Dec-90 Nov-91
Solidworks	Dec-93	CAD	P&I	Prod Dev			Kubota		2								Dec-95
Synthesis Software Solutions	Jan-88	Software	A/M				Kubota		1								Dec-88
Teleos																	
Communications	Mar-87	Networking	A/M	Shipping	Jan-96	165	Kyocera		Corp								Dec-90
Synekrion	Jul-81	Electrical Power	A/M	Shipping			Kyocera		3	5							Apr-85 Dec-87
Laserdata	Oct-82	Computer	A/M	Restart	Dec-95		Kyocera		Corp								Jul-91
Sandisk	Jun-88	Semiconductor	Public	Profitable	Nov-95	31.7	Kyocera		1								May-89
Micro Linear	Oct-83	Semiconductor	Public	Profitable	Oct-94	28.1	Kyocera		3	4							Mar-86 Feb-88

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								I	II	III	IV	V	I	II	III	IV	V
Xilinx	3-84	Semiconductor	Public	Profitable	Jun-90	25	Kyocera	4					Aug-88				
Pictetel	Aug-84	Multimedia	Public	Profitable			Kyocera	2	3	5	6		Jul-87	Aug-88	May-89	Nov-89	
Waterscale																	
Integration	Aug-83	Semiconductor	P&I	Profitable			Kyocera										
Vitec	Jan-83	Semiconductor	A/M	Profitable			Kyocera	1	2	3			Apr-84	Aug-85	Feb-87		
Complete PC	Jul-86	Computer	A/M	Profitable			Kyocera	1	2				Apr-88	Oct-89			
Counterpoint																	
Computers	Jun-84	Computer	A/M				Kyocera	3	4				Dec-85	Aug-87			
AMBI	Jan-82	Telecommunications	O/FB				Kyocera	3					Apr-85				
Lapine Technology	Jan-83	Data Storage	A/M				Kyocera	2					Aug-85				
Tivoli Systems	Aug-89	Networking	Public	Profitable	Mar-95	35.4	Legent Corp.	Mezz					Jan-93				
Software Clearing House	Jan-79	Software	P&I	Profitable			Legent Corp.	Corp					Nov-93				
Central Point																	
Software	Nov-82	Software	A/M	Profitable	Apr-94	56	Legent Corp.	Corp					Oct-92				
Power Computing	Nov-93	Computer	P&I	Shipping			LG Electronics	2					May-95				
Photon Dynamics	May-86	Semiconductor	Public	Profitable	Nov-95	23	LG Electronics										
Chromatic							LG										
Research	Sep-93	Semiconductor	P&I	Prod Dev			Semiconductor										
Sandisk	Jun-88	Semiconductor	Public	Profitable	Nov-95	31.7	Semiconductors	Corp					Feb-95				
Superconductor																	
Technologies	Mar-87	Materials	Public	Shipping	Mar-93	15	Lockheed	Seed	3				Mar-87	Jul-91			
Alpharel	Jan-81	Computer	Public	Shipping	Jun-87	20	Lockheed	2					Oct-86				
Inference	Jan-83	Software	Public	Profitable	Jun-95	24.4	Lockheed	2	3	4	Mezz		May-89	Dec-90	Oct-91	Apr-93	
Cherokee Data																	
Systems	Mar-84	Optical Data	A/M	Profitable			Lockheed	1					Jan-86				
Sybase	Nov-84	Software	Public	Profitable	Aug-91	49.6	Lotus	Corp					Nov-89				
Arity	Jan-84	Software	P&I				Lotus	1					Jan-85				
Cell Care	Jan-78	Medical	P&I	Shipping			Lotus	1									
Ilkos Systems	Oct-84	Semiconductor	Public	Profitable	Sep-90	15.2	LSI Logic	3	4				Mar-87	Mar-88			
Synthesis Software																	
Solutions	Jan-88	Software	A/M				LSI Logic	1					Dec-88				
Sequent Computer																	
Systems	Jan-83	Computer	Public		Apr-87	25.5	LSI Logic	2	3				May-84	Mar-85			
Optimal Networks							Madge										
Whitree Network	Aug-93	Networking	P&I	Shipping			Networks	2					Aug-95				
Technologies	Feb-93	Networking	P&I	Shipping			Madge										
							Networks	2					Nov-94				

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								I	II	II	IV	V	I	II	III	IV	V
Gyrations	Jun-89	Computer	P&I	Shipping			Madge Networks	Corp					Apr-93				
Affymax	Jun-88	Biotech	Public	Prod Dev	Dec-91	80	Marion Merrell Dow	3					Jun-91				
Creative Biomolecules	Jan-81	Biotech	Public	Shipping	Dec-92	21	Marion Merrell Dow	3 Mezz					Jul-89	Oct-91			
Gensia Pharmaceuticals	Nov-86	Biotech	Public	Prod Dev	Jun-90	31	Marion Merrell Dow	4					Feb-90				
Cortech	Dec-82	Biotech	Public	Prod Dev	Nov-92	32	Marion Merrell Dow	Corp					Feb-90				
Protek	Dec-84	Biotech	P&I	Prod Dev			Marion Merrell Dow	Corp					Dec-89				
Alteon	Jan-86	Biotech	Public	Prod Dev	Nov-91	45	Marion Merrell Dow	Corp					Dec-90				
Mattson Technology	Nov-88	Semiconductor	Public	Shipping	Sep-94	24	Marubeni	Corp					Dec-90				
ARCSYS	Feb-91	CAD	Public	Shipping	Jun-95	31	Marubeni										
EO Computer	Jul-91	Computer	OFB	Shipping			Marubeni	Corp					Sep-92				
Davinci Graphics Pacific	Nov-87	CAD	OFB	Shipping			Marubeni	1					Oct-89				
Communications Sciences	Apr-87	Telecommunications	A/M	Profitable	Dec-92	68.5	Marubeni	3					Nov-91				
Epoch Systems	Dec-86	Data Storage	A/M	Profitable			Marubeni	Corp					Feb-91				
Ion Beam Systems	Jan-82	Semiconductor	OFB	Shipping	May-93	43.5	Matsushita	Corp					Apr-92				
3DO	Sep-91	Computer	Public	Shipping			Matsushita	Corp					Sep-92				
EO Computer	Jul-91	Computer	OFB	Shipping			Maxwell Communication	2					Mar-90				
Physicians Computer Network	Aug-83	DP/Med	Public	Profitable	Nov-91	36	Maxwell Communication	0					Jan-86				
Spectrum Holobyte	Jan-86	Electronics	A/M	Profitable			Maxwell Communication										
Spacehab	Aug-84	Space	Public	Profitable	Dec-95	45	McDonnell Douglas										
Sybase	Nov-84	Software	Public	Profitable	Aug-91	49.6	McDonnell Douglas										
Sensym	Jan-82	Instrument	A/M	Shipping			Med-Tech	1					Feb-84				
Ribozyme Pharmaceuticals	Feb-92	Biotech	IPO Rd	Prod Dev		20	Med-Tech	Mezz					Jun-95				

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								I	II	III	IV	V	I	II	III	IV	V
Catheter Technology		Medical	A/M				Med-Tech	1					Mar-84				
Brooks Fiber Properties	Jan-93	Telecommunication	Public	Shipping	May-96	204.4	Media Communications	Later					Feb-95				
OmniAmerica Information Storage		Broadcasting	P&I	Shipping			Media Communications	1					Apr-94				
Devices	Dec-87	Semiconductor	Public	Profitable	Feb-95	30	Medtronic	3 Mezz					Feb-93	Oct-93			
Urourge	Mar-94	Medical	P&I	Prod Dev			Medtronic	Seed	1				Jun-94	Sep-95			
Spectranetics	Aug-85	Medical	Public	Beta	Jan-92	33.8	Medtronic	1	2	3			Jan-86	Oct-89	May-91		
Hybridon	May-89	Biotech	Public		Jan-96	50	Medtronic	3	4				Nov-92	Mar-93			
Versaflex Delivery	Jan-84	Medical	A/M		Jan-90	90	Medtronic	ACQ					Jan-90				
Ostex	Jan-89	Biotech	Public	Shipping	Jan-95	33.3	Merck	Corp					Aug-93				
Biosite Diagnostics	Jan-88	Biotech	P&I	Shipping			Merck	Mezz					Dec-92				
Global Pharmaceuticals	Apr-93	Pharmaceuticals	Public	Prod Dev	Dec-95	14.025	Merck	IPO					Dec-95				
Immunologic Pharmaceuticals	May-91	Biotech	Public	Prod Dev	May-91	20	Merck	1	2				Jul-88	Oct-89			
Tularik	Dec-91	Biotech	P&I	Prod Dev			Merck	Corp					Feb-94				
Crop Genetics International	Nov-81	Agriculture	Public		Mar-87	23.2	Merck	Seed	1				Sep-83	May-85			
Sybase	Nov-84	Software	Public	Profitable	Aug-91	49.6	Metaphor Computer										
UUNET Technology	Apr-87	Telecommunication	Public	Shipping	May-95	66.2	Microsoft	Corp					Mar-95				
Individual Natural Language	Jan-89	Online Service	Public	Shipping	Mar-96	35	Microsoft	Corp					Oct-95				
	May-84	Software	P&I	Shipping			Microsoft	1	2	3	4		Aug-87	Aug-88	Mar-89	Oct-90	
Academic Systems	Mar-92	Software	P&I	Shipping			Microsoft	2					8/94				
Citrix Systems	May-89	Software	Public	Profitable	Dec-95	37.5	Microsoft	3	4				Nov-91	Feb-93			
Santa Cruz Operations	Jan-79	Software	Public	Profitable	May-93	75	Microsoft	3					Sep-87				
Lightspan	Sep-93	Education	P&I	Beta			Microsoft	2					Feb-95				
Partnership Human Engineered Software		Software	O/FB				Microsoft	1					Aug-83				
Quantum Health Resources	Aug-88	Medical/Retail	Public	Profitable	Apr-91	30	Miles Laboratories	Mezz					Mar-90				

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								I	II	III	IV	V	I	II	III	IV	V
Onyx Pharmaceuticals	Apr-92	Biotech	P&I	Prod Dev			Miles Labs	Corp					May-94				
Vitesse Semiconductor	Jul-84	Semiconductor	Public	Profitable	Dec-91	28.8	MIPS Computer	2	3				Jan-88	Aug-89			
Athenix	Feb-90	Computer	OFB	Beta			MIPS Computer	1	2				Sep-90	Jul-91			
Forte Software	Feb-91	Software	Public	Shipping	Mar-96	45.15	Mitsubishi	Mezz					Mar-95				
Paradigm Technology	Feb-87	Semiconductor	Public	Shipping	Jun-95	31.4	Mitsubishi										
Verisign	Mar-95	Software	P&I	Shipping			Mitsubishi	1					Apr-95				
Cymer Laser Technology	Jan-86	Semiconductor	P&I	Shipping			Mitsubishi	Corp					Apr-91				
Photonic Integration Research	Jul-87	Semiconductor	P&I	Shipping			Mitsubishi										
Hands On Technology	Nov-92	Advertising	P&I	Shipping			Mitsubishi	Seed					Dec-92				
Siscan Systems	Jan-80	Semiconductor	OFB	Shipping			Mitsubishi	2					Nov-86				
Via Technologies	Feb-87	Semiconductor	OFB	Shipping			Mitsubishi	Corp					Jul-90				
Kalob	Feb-87	Data Storage	OFB	Shipping			Mitsubishi	3					May-90				
Microrim	Jan-81	Software	A/M	Shipping			Mitsubishi	4					Oct-85				
Reference Technology	Mar-82	Data Storage	A/M	Shipping			Mitsubishi	4	5				Nov-85	Nov-86			
Aurora Systems	Jan-80	Computer	A/M	Shipping			Mitsubishi										
Spacehab	Aug-84	Space	Public	Profitable	Dec-95	45	Mitsubishi										
Anatel	Sep-83	Process Control	P&I	Profitable			Mitsubishi	1	2				Aug-84	Nov-88			
Suprex	Aug-82	Instruments	P&I	Profitable			Mitsubishi	1	2				May-88	Nov-91			
Spectragraphics	Jun-81	Computer	P&I	Profitable			Mitsubishi	1	2				May-82	Sep-83			
Chisholm	Aug-83	Computer	P&I	Profitable			Mitsubishi	1					Jan-85				
Tellos	Jun-87	Biotech	Public	Prod Dev	Mar-92	20	Mitsubishi	2					Mar-89				
Rendition	Apr-94	Semiconductor	P&I	Beta			Mitsubishi	2					Nov-95				
Tera Microsystems	Nov-89	Semiconductor	OFB	Beta			Mitsubishi	2					Jun-91				
Lasertrak	Jan-84	Data Storage	OFB				Mitsubishi	1	3				Jun-85	Nov-86			
Speech Plus	Jan-83	Computer	A/M				Mitsubishi	2					Jan-85				
Surgene Technologies		Agriculture	A/M				Mitsubishi										
General Wireless	Jun-94	Telecommunication	P&I	Startup			Mitsui	2					Jun-95				
Zoran	Dec-81	Semiconductor	Public	Shipping	Dec-95	27.7	Mitsui	2	3	4			Oct-85	Mar-87	Oct-89		

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Nexgen	Nov-86	Computer	Public	Shipping	May-95	43	Mitsui		1	2	3		Apr-87	Apr-88	Nov-90		
Microsystems	Nov-86	Computer	Public	Shipping	May-95	43	Mitsui		1	2	3		Apr-87	Apr-88	Nov-90		
Pagemart	Jun-89	Telecommunicat	P&I	Shipping			Mitsui	Mezz					Sep-94				
Wireless Access	Nov-91	Networking	P&I	Shipping			Mitsui	3					May-94				
Fourth																	
Communication																	
Network																	
Ergenics	Jan-84	Multimedia	P&I	Shipping			Mitsui	1					Feb-94				
Autofuel	Nov-88	Materials	P&I	Shipping			Mitsui	2					Mar-93				
Momenta	Nov-88	Energy	P&I	Shipping			Mitsui	2					Mar-90				
Advanced Power	Aug-89	Computer	OFB	Shipping			Mitsui	3 Mezz					Apr-91	Dec-91			
Technology	Nov-84	Power/Energy	A/M	Shipping			Mitsui										
Optotech	Apr-84	Data Storage	A/M	Shipping			Mitsui	3	4				Jul-88	Aug-90			
Raster Graphics	Jun-87	Computer	P&I	Profitable			Mitsui	5					Jul-88				
Reflection							Mitsui	1					Nov-88				
Technology	Sep-87	Computer	P&I	Profitable			Mitsui	Seed	1	2			Sep-87	Nov-89	Aug-90		
Complete PC	Jul-86	Computer	A/M	Profitable			Mitsui	Seed					May-87				
Gain Electronics	Oct-85	Semiconductor	OFB				Mitsui	1					Aug-85				
Micronix	Jan-81	Semiconductor	OFB				Mitsui										
3D/FX Interactive	Jul-94	Semiconductor	P&I	Prod Dev			Mitsui Comtek	1					Mar-95				
Nurture	Mar-87	Biotech	P&I	Shipping			Monsanto	3	4	Mezz			May-92	Jun-92	Dec-93		
Asyst Technology	May-84	Semiconductor	Public	Profitable	Sep-93	12	Monsanto	1	2	Mezz			Aug-85	Nov-87	Nov-89		
Novellus Systems	Jan-83	Semiconductor	Public		Aug-88	15.2	Monsanto	1	2				Jul-85	Nov-86			
Pearlnet	Jan-91	Telecommunicat	P&I	Shipping			Motorola	Debt					May-93				
Shipnet Systems	Jan-88	Telecommunicat	P&I	Shipping			Motorola	Later					May-90				
Echelon	Jan-88	Networking	P&I	Shipping			Motorola	Corp Corp Corp					Feb-92	Jan-93	Feb-94		
Shoreland																	
Communications	Feb-90	Telecommunicat	A/M	Shipping			Motorola	1	2	3			Feb-90	Aug-90	Jun-92		
Stratacom	Jan-86	Networking	Public	Profitable	Jul-92	17.5	Motorola	3 Corp					Jul-87	Dec-87			
Network Computing																	
Devices	Feb-88	Networking	Public	Profitable	Jun-92	30	Motorola	Corp					May-90				
Xcellenet	Jan-86	Networking	Public	Profitable	Apr-94	22	Motorola	Corp					Oct-91				
Cleanet																	
Communications	Jan-84	Communication	Public	Profitable	Oct-94	83.4	Motorola										
Airnet																	
Communications	Jan-94	Telecommunicat	P&I	Prod Dev			Motorola	1 Later					Jan-94	Jun-95			
Wireless Access	Nov-91	Networking	P&I	Shipping			MTel	1	2	3			Sep-92	Mar-93	May-94		
Nationwide																	
Wireless Network	Jul-93	Telecommunicat	P&I	Prod Dev			MTel	1					Jan-93				

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Genus	Feb-82	Semiconductor	Public		Nov-88	10	Murray Electronics		3				Nov-86				
Cohesive Network	Jan-82	Telecommunication	A/M				Murray Electronics		1				Sep-84				
Aspen Peripherals		Data Storage	A/M	Shipping			National Advanced Systems		3 Bridge				May-87	Nov-88			
Aweida Systems		Computer	A/M				National Advanced Systems		1	2				Feb-86			
Aprisa Multimedia	May-93	Education	P&I	Prod Dev			National Computer Systems		2				Nov-94				
Profitis Software Library		Software	OFB				National Computer Systems		Seed				Nov-84				
Paradigm Technology	Feb-87	Semiconductor	Public	Shipping	Jun-95	31.4	National Semiconductor		Restart				Jun-94				
Synaptics	Jan-86	Software	P&I	Shipping			National Semiconductor		Later	Later			Nov-94	Nov-95			
Krysalls	Jan-86	Semiconductor	A/M	Shipping			National Semiconductor		2				Jan-88				
Sensym	Jan-82	Instrument	A/M	Shipping			National Semiconductor		1				Feb-84				
SDA Systems	Jan-83	CAD	A/M	Shipping			National Semiconductor		1				Jan-84				
Brooktree	Aug-81	Semiconductor	Public	Profitable	Apr-91	42	National Semiconductor		2				Feb-84				
Waterscale Integration	Aug-83	Semiconductor	P&I	Profitable			National Semiconductor										
Network Peripherals	Mar-89	Networking	Public	Profit	Jun-94	12	National Semiconductor		1	2			Aug-90	Jun-91			
Graphic Software Systems	Jan-81	Software	A/M	Shipping			NEC										
Sandisk	Jun-88	Semiconductor	Public	Profitable	Nov-95	31.7	NEC		Corp				Feb-95				
Benchmark	Mar-89	Semiconductor	Public	Profitable			NEC		3				Sep-93				
Culinary Brands	Jun-86	Food	OFB	Shipping			Nestle		2				Jul-87				
Transcend	Jan-93	Biotech	P&I	Beta			Nestle		1	2			Apr-94	Sep-95			

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								I	II	III	IV	V	I	II	III	IV	V
Advanced Computer Communications	Jan-76	Networking	A/M	Shipping	Dec-93	15	Newbridge Network	0									
Adicom Wireless	Dec-95	Telecommunications	P&I	Prod Dev			Newbridge Network	1					Dec-95				
Illustra Information Technologies	Aug-92	Software	A/M	Shipping	Feb-96	465	Nichimen	3					May-95				
Cellico	Jan-88	Medical	P&I	Restart			Nichimen	Seed	1	3	Restart		Jan-88	Aug-90	Feb-92	Oct-94	
Genpharm International	Dec-88	Agriculture	P&I	Prod Dev			Nichimen	Later					Jul-94				
Lapine Technology	Jan-83	Data Storage	A/M				Nichimen	2					Aug-85				
Cymer Laser Technology	Jan-86	Semiconductor	P&I	Shipping			Nikon	Corp					May-90				
Electroscan	Oct-85	Instruments	P&I	Shipping			Nikon	Corp					?				
DSP Group	Jan-84	Semiconductor	Public	Shipping	Feb-94	28	Nippon	2					Jun-89				
Harmonic																	
Lightwaves	Jun-88	Optics	Public	Shipping	May-95	35.1	Nippon	4					Dec-93				
Cardiometrics	Oct-85	Medical	Public	Shipping	Nov-95	19.8	Nippon	6	Mezz				May-93	Nov-94			
Wireless Access	Nov-91	Networking	P&I	Shipping			Nippon	2	3				Mar-93	May-94			
Crystal Dynamics	Jun-92	Multimedia	P&I	Shipping			Nippon	Mezz					Jul-95				
Intra Sonix	May-87	Medical	P&I	Shipping			Nippon	5					Sep-92				
Apix	Aug-89	Electronics	P&I	Shipping			Nippon	2	3	Mezz			Feb-92	Jan-94	Apr-95		
Areal Technology	Feb-88	Data Storage	P&I	Shipping			Nippon	2	3	4			Feb-89	Apr-90	Sep-91		
GO	Sep-87	Software	OFB	Shipping			Nippon	2	3	4	Mezz		Nov-88	May-90	Apr-92	Apr-93	
Harvest Software	Jan-89	Networking	OFB	Shipping			Nippon	2	3	Bridge			Aug-90	Feb-93	May-93		
Coactive Computing	Jun-91	Networking	OFB	Shipping			Nippon	2	3				Sep-92	Apr-93			
Digital FX	Jan-88	Multimedia	OFB	Shipping			Nippon	6					May-92				
Ink Development	May-91	Software	A/M	Shipping			Nippon	2					Dec-92				
Accufiber	Jan-84	Sensors	A/M	Shipping			Nippon	2					Feb-88				
Innovus	Jan-83	Semiconductor	A/M	Shipping			Nippon	1	4				May-84	Aug-85			
Ultra Network Technologies	Jan-86	Networking	A/M	Shipping			Nippon	4					Dec-89				
Synergy Computer Graphics	Jul-84	Computer	A/M	Shipping			Nippon	3	4				Jul-87	Nov-88			
Redwood Design Automation	Jan-91	CAD	A/M	Shipping			Nippon	2					Mar-93				
Censtor	Oct-81	Data Storage	P&I	Restart			Nippon	Later	Reg D				Oct-92	Mar-94			
Photon Dynamics	May-86	Semiconductor	Public	Profitable	Nov-95	23	Nippon	3					Nov-91				

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Quickturn Design Systems	Jul-97	CAD	Public	Profitable	Dec-93	40.8	Nippon		4				Sep-91				
Netsolve	Jan-88	Telecommunication	P&I	Profitable			Nippon		3				Jul-91				
Anatel	Sep-83	Process Control	P&I	Profitable			Nippon		3				Jul-91				
Epilaxx	Feb-84	Optics	A/M	Profitable			Nippon		ACQ				Apr-90				
Optical Sensors for Medicine	Apr-89	Medical	Public	Prod Dev	Feb-96	32.5	Nippon						Jul-95				
Targeted Genetics	May-94	Biotech	Public	Prod Dev	May-94	12	Nippon		1				Jun-92				
Cell Genesys	Apr-88	Biotech	Public	Prod Dev	Jan-93	38.5	Nippon		2				Oct-91				
Eshop	May-91	Online	P&I	Prod Dev			Nippon		2	3			Dec-92	Oct-95			
Silicon Video	May-91	Computer	P&I	Prod Dev			Nippon		3				May-95				
Neocrin	Jun-92	Biotech	P&I	Prod Dev			Nippon		2	3	4		Dec-93	Feb-95	Dec-95		
Tulanik	Dec-91	Biotech	P&I	Prod Dev			Nippon		2				Jun-92				
Metasyn	Jan-92	Biotech	P&I	Prod Dev			Nippon		Corp				Jan-92				
Corvita	Dec-86	Medical	Public	Beta	Oct-94	12.5	Nippon		Mezz				Jan-93				
Inhale Therapeutic Systems	Jul-90	Biotech	Public	Beta	May-94	16.1	Nippon		1	2			May-92	Apr-93			
Penederm	Mar-87	Biotech	Public	Beta	Nov-93	22	Nippon		3				Jun-91				
Simtek	Jan-87	Semiconductor	Public				Nippon		Seed				Jan-87				
Syntro	Jan-81	Medical	Public				Nippon										
Focus Semiconductor Systems	Jun-84	Semiconductor	OFB				Nippon		3	5			Dec-86	Sep-88			
Crystal Technologies	Jan-83	Communication	OFB				Nippon										
Auspex Systems	Dec-87	Networking	Public	Profitable	May-93	60	Nissho Electronics		Corp	Mezz			Jun-90	Jan-92			
Cimilinc	Jan-81	Process Control	P&I	Profitable			Nissho Electronics		Corp				Mar-92				
Calera Recognition Systems	Jan-82	Computer	A/M	Shipping	Dec-94	37.5	Nixdorf Computer		1				Nov-83				
Ferix	Jan-81	Computer	OFB				Nixdorf Computer		3				Nov-84				
Paradigm Technology	Feb-87	Semiconductor	Public	Shipping	Jun-95	31.4	NKK		5	6	7		Dec-90	Nov-91	Aug-92		
Raster Graphics Telios	Jun-87	Computer	P&I	Profitable			NKK		1				Nov-88				
Pharmaceuticals	Jun-87	Biotech	Public	Prod Dev	Mar-92	20	Norsk Hydro		corp				Dec-90				
Avid Therapeutics	Nov-91	Biotech	P&I	Prod Dev			Norsk Hydro		3				Dec-94				
Canji	Jan-90	Biotech	A/M	Prod Dev	Feb-96	54.5	Norsk Hydro		Seed	1	2		Sep-90	Nov-91	Apr-93		

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Centigram	Jan-77	Telecommunication	Public	Shipping	Oct-91	19.4	Northern Telecom	Later					Aug-90				
Clinicom	Feb-85	DP/Medical	Public	Shipping	Apr-92	6.45	Northern Telecom	1	2				Jun-87	Feb-89			
NAC	Feb-84	Telecommunication	OFB	Shipping			Northern Telecom	Seed					Jul-84				
Telwatch	Nov-86	Networking	OFB	Shipping			Northern Telecom	2	3				Jul-87	Oct-89			
Canstor	Oct-81	Data Storage	P&I	Restart			Northern Telecom	Recap					May-90				
Micro Linear	Oct-83	Semiconductor	Public	Profitable	Oct-94	28.1	Northern Telecom	3	4				Mar-86	Feb-88			
Banyan Systems	Aug-83	Networking	Public	Profitable	Aug-92	28	Northern Telecom	Mezz					Mar-89				
Digital Research	Jan-76	Software	A/M	Profitable	Jul-91	100	Northern Telecom	4					Mar-88				
Amnet	Jan-81	Networking	A/M	Profitable			Northern Telecom	1	2	3			Dec-85	Jul-87	Dec-91		
Forum Systems	Apr-82	Computer	A/M	Prod Dev			Northern Telecom	3					Mar-86				
Alphacom		Computer	OFB				Northern Telecom	1					Nov-83				
Crystal Technologies	Jan-83	Communication	OFB				Northern Telecom										
Crystal Technologies	Jan-83	Communication	OFB				Northern Telecom										
Speech Plus	Jan-83	Computer	A/M				Northern Telecom	2					Jan-85				
Geoworks	Sep-83	Software	Public	Shipping	Jun-94	9	Novell	3					Feb-94				
Reach Software	Apr-90	Networking	P&I	Shipping			Novell	1	2				Oct-92	Dec-93			
Cooperative Solutions	Jan-89	Software	OFB	Shipping			Novell	Mezz					Nov-91				
Serius	Jan-89	Software	A/M	Shipping	Jun-93	17.25	Novell	1	2	ACQ			Jan-92	Aug-92	Jul-93		
Beyond	Jul-88	Software	A/M	Shipping			Novell	3					Jan-93				
ON Technology Corp.	Jul-92	Software	Public	Profitable	Aug-95	42	Novell	Mezz					Jun-94				
Gupta	Nov-84	Networking	Public	Profitable	Feb-93	39.6	Novell	3					Apr-90				
Bitrieve Technology	Jan-94	Software	P&I	Profitable			Novell	0					Jan-94				
Voicecek	Jan-81	Telecommunication	P&I	Shipping			NYNEX Ventures	2 Recap	2	3			May-90	Apr-91	Jul-91	Sep-91	

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Starlight Networks	Mar-90	Networking	P&I	Shipping			NYNEX Ventures		1	2	3	Mezz	Jun-91	Apr-92	Apr-93	Aug-95	
Fluent Broadband Technologies	Aug-89	CAD	A/M	Shipping	Jul-93	17.5	NYNEX Ventures		1	2			Apr-90	Aug-91			
	Jul-88	Telecommunications	Public	Beta	Jun-93	63	NYNEX Ventures		3				Dec-91				
Star Semiconductor	Mar-88	Semiconductor	O/FB	Shipping			Okura		4				Dec-92				
Vanatage Analysis Systems	May-86	CAD	A/M	Profitable	Dec-92	30	Okura		Corp				Oct-89				
Proxim Document Technologies	Apr-84	Networking	Public	Shipping	Dec-93	18	Orient Semiconductor		Recap				Apr-91				
	Feb-88	Computer	Public	Shipping	Feb-92	4.5	Orient Semiconductor		3				Feb-91				
Microrim Support Technologies	Jan-81	Software	A/M	Shipping			Pacific Telecom		4				Oct-85				
	Jan-83	Instrument	A/M	Shipping			Pacific Telecom		1	3			Jul-84	Aug-86			
Catalina Marketing	Jan-83	Source Data	Public	Profitable	Mar-92	44	Pacific Telecom		Mezz				Aug-88				
Lan-Tel	Jan-84	Telecommunications	O/FB				Pacific Telecom		1	2			Feb-86	Feb-87			
Thesys Memory Products		Semiconductor	O/FB				Pacific Telecom		2				Jun-84				
Evotek		Data Storage	O/FB				Pacific Telecom		1				May-83				
Commterm	Jan-75	Telecommunications	A/M				Pacific Telecom		2				Jun-84				
Genvec	Dec-92	Biotech	P&I	Prod Dev			Parke-Davis		0				Dec-92				
Leukosite	Aug-92	Biotech	P&I	Prod Dev			Parke-Davis		Corp				Nov-94				
Ribozyme	Feb-92	Biotech	IPO Rd	Prod Dev		20	Parke-Davis		Corp				Apr-93				
Pharmaceuticals	Mar-91	Biotech	A/M	Prod Dev			Parke-Davis		1				Mar-93				
Theragen	Mar-84	Optics	A/M				Penn Central		1	2	3	4	Mar-84	Jun-85	Jun-87	Nov-88	
Licon	Jan-84	Instrument	A/M				Penn Central		2				Aug-85				
Visionetics																	
DAMA Telecommunications		Electronics	A/M				Penn Central		2				Aug-84				
Chemcore	Feb-93	Medical	P&I	Startup			Perkin Elmer		Seed				Mar-94				

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Redwood																	
Microsystems	Jul-91	Materials	P&I	Shipping			Perkin Elmer	1	2	3			Nov-91	Aug-93	Dec-94		
Etec Systems	May-89	Semiconductor	Public	Profitable	Oct-95	42	Perkin Elmer	0					May-89				
Cyberonics	Nov-87	Medical	Public	Shipping	Feb-93	24	Pfizer	3	4	Mezz			May-90	Nov-91	Oct-92		
Oncogene Science	Mar-83	Medical	Public	Shipping	Sep-91	17.6	Pfizer	IPO					Oct-91				
Theratech	Jan-85	Biotech	Public	Shipping	May-92	9.4	Pfizer	IPO					May-92				
Aprax	May-85	Medical	Bankrupt	Shipping			Pfizer										
Oral Research Labs		Pharmaceuticals	A/M	Shipping	Jun-88	250	Pfizer	2	Acq				Jan-87	Jun-88			
Optia Food																	
Ingredients	Apr-91	Food	Public	Prod Dev	Mar-92	20.4	Pfizer	Corp					Jun-91				
Ligand																	
Pharmaceuticals	Oct-87	Biotech	Public	Prod Dev	Nov-92	41	Pfizer	Corp					Sep-92				
Mycro																	
Pharmaceuticals	Feb-92	Biotech	P&I	Prod Dev			Pfizer	4					Feb-95				
Norian	Jan-85	Medical	P&I	Beta			Pfizer	Corp	4				Aug-90	Aug-92			
Anadigics	Apr-84	Semiconductor	Public	Shipping	Apr-95	25.5	Phillips	5	6	7	Later		Jan-89	Sep-90	Sep-91	Aug-92	
Superconductor																	
Technologies	Mar-87	Materials	Public	Shipping	Mar-93	15	Phillips	3					Jul-91				
Gyrations	Jun-89	Computer	P&I	Shipping			Phillips	Corp					Apr-93				
Digital Planet	Jan-88	Cable	O/FB	Shipping			Phillips	1	2	3	4	5	Jun-90	Mar-91	May-91	Aug-91	Mar-92
Raytel Medical	Feb-90	Medical	Public	Profitable	Dec-95	20	Phillips	2	3				May-85	Feb-90			
Object Design	Jul-88	Software	P&I	Profitable			Phillips	2	3	4	Mezz		Jun-90	Jul-91	Mar-92	Mar-94	
Selective Software	Oct-86	Software	O/FB	Profitable			Phillips	1	2				Aug-89	Apr-90			
Logic Modelling																	
Systems	Aug-87	CAD	A/M	Profitable			Phillips	2	4				Oct-88	May-91			
Tera Microsystems	Nov-89	Semiconductor	O/FB	Beta			Phillips	2					Jun-91				
Metaphor Computer																	
Systems	Oct-82	Computer	A/M	Shipping	7/91	109	Proctor & Gamble	4					Aug-86				
Genta	Feb-89	Biotech	Public	Prod Dev	Dec-91	25	Proctor & Gamble	2					Jul-91				
Intouch Group	Feb-90	Source Data	P&I	Profitable			Raster Ops	3					Aug-92				
Sharevision	Jun-91	Multimedia	A/M	Beta			Raster Ops	2	3				May-92	Oct-92			
Milek Surgical																	
Products	Jan-85	Medical	Public	Shipping	Oct-91	14.4	Raychem	1	2	3	4		Mar-88	Apr-89	Jan-91	Jan-91	
Landec	Nov-86	Biotech	Public	Shipping	Feb-96	33.6	Raychem	1	2	3	Mezz		Apr-88	Nov-89	Sep-91	Jun-93	
Menlo Care	May-85	Medical	A/M	Shipping	May-95	56.5	Raychem	Seed	1	2	3		Jun-85	Jun-86	Jun-88	Oct-90	
Luxtron	Jan-78	Optics	A/M	Profitable			Raychem	2					Apr-84				
E/O Networks	Aug-92	Telecommunications	P&I	Beta			Raychem	1	2				Dec-93	Feb-95			

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Sepracor	Jan-84	Medical	Public	Shipping	Sep-91	40	Raytheon	4					Apr-87				
Perceptive																	
Biosystems	Nov-87	Instruments	Public	Shipping	May-92	17.5	Raytheon	1	2	3			Mar-89	Dec-89	Sep-91		
Beta Phase	Jul-85	Electronics	Public	Shipping			Raytheon	1	2				Mar-88	Sep-89			
Steinbrecher	Jan-74	Telecommunications	P&I	Shipping			Raytheon	1					Aug-87				
BIT	Jul-83	Semiconductor	P&I	Shipping			Raytheon	Rest					Feb-92				
Windata	Jun-90	Networking	P&I	Shipping			Raytheon	Later					Nov-95				
Millitech	Jan-82	Electronics/Micro	P&I	Shipping			Raytheon	2	3				Dec-88	Dec-92			
Mosaic Systems	Jul-82	Electronics/PCB	OFB	Shipping			Raytheon	5 Recap					Feb-87	Jan-90			
Crosscheck																	
Technology	Oct-87	Electronics	P&I	Restart			Raytheon	2					Dec-89				
Lisp Machine	Jan-80	Computer	A/M		Sep-87	2	Raytheon	Mezz					Sep-85				
Micro Linear	Oct-83	Semiconductor	Public	Profitable	Oct-94	28.1	Rockwell	3					Mar-86				
Technology Development	Jan-77	Electronics	Public		Feb-86	3.3	Rockwell	IPO					Feb-86				
Adesa Biomedical	Jan-85	Biotech	P&I	Shipping			Rohto Pharmaceuticals Corp						Dec-91				
Multigen		CAD	P&I	Shipping			Safeguard Scientifics	LBO					Mar-95				
Coherent Communications	Jan-68	Telecommunications	Public	Profitable	Jun-94	16.5	Safeguard Scientifics	1									
Videosever	Feb-91	Software	Public	Profitable	May-95	44.6	Safeguard Scientifics	2	3				Oct-92	May-94			
USData	Nov-94	Software	Public	Profitable	Jun-95	13.25	Safeguard Scientifics	LBO					Nov-94				
NU Millenia			P&I	Prod Dev			Safeguard Scientifics	1					Jun-95				
Systemics	May-88	Medical	Public	Shipping	Aug-91	36	Sandoz	ACQ					Feb-92				
Cytel	Jul-88	Biotech	Public	Prod Dev	Nov-91	52	Sandoz	Corp					Sep-89				
Microcide																	
Pharmaceuticals	Dec-92	Biotech	P&I	Prod Dev			Sandoz	1					Jan-93				
Bioprint	Apr-91	Biotech	P&I	Prod Dev			Sandoz	Corp					Nov-93				
Molecular Devices	Jul-83	Medical	Public	Profitable	Dec-95	25.3	Schering	1	2				Feb-85	Jun-86			
Procyte	Jul-86	Biotech	Public	Prod Dev	Nov-89	10	Schering	2					May-89				
Cephalon	Aug-87	Biotech	Public	Prod Dev	Apr-91	59	Schering	Corp					May-90				
Pharmacia	Mar-93	Biotech	Public	Prod Dev	Dec-95	41.6	Schering	Corp					Dec-94				
Anthra																	
Pharmaceuticals	Jan-89	Biotech	P&I	Beta			Schering	Corp					Sep-95				
Verity	Mar-88	Software	Public	Shipping	Oct-95	40	Seagate										

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Sandisk	Jun-88	Semiconductor	Public	Profitable	Nov-95	31.7	Seagate	Corp	Corp				Jan-93	Feb-95			
Caps	Mar-94	Multimedia	P&I	Beta			Sega	1	2				Nov-94	Dec-95			
Anamartic		Data Storage	P&I				SGS-Thompson	3					May-90				
Waterscale																	
integration	Aug-83	Semiconductor	P&I	Profitable			Sharp	3					Jan-86				
David Systems	Jun-82	Telecommunication	A/M	Profitable	Aug-94	4	Sharp	2	3	5			Jan-85	Aug-85	Nov-89		
Greyhawk Systems	Apr-84	Computer	A/M	Prod Dev			Sharp	Corp					May-88				
Ncube	Jun-83	Computer	P&I	Shipping			Shell	1					Mar-85				
Agripio Biosciences	Feb-89	Agriculture	P&I	Shipping			Shell	Recap					Feb-89				
Superwave							Shell	2					Apr-87				
Technology	Jan-83	Electronics	OFB	Prod Dev			Shin Etsu										
Syntro	Jan-81	Medical	Public				Chemical										
Cymer Laser							Shin Etsu										
Technologies	Jan-86	Laser	P&I	Shipping			Chemical	1	2				May-88	Jun-89			
Quantum Medical																	
Systems	Jan-82	Medical	A/M	Shipping			Siemens	ACQ					Jul-90				
X-Cyte	Feb-84	Source Data	P&I	Profitable			Siemens	1					Feb-84				
Level One																	
Communications	Nov-85	Semiconductor	Public	Shipping	Aug-93	37.4	Silicon Systems	5					Mar-93				
Smartflex Systems	Sep-93	Electronics	Public	Profitable	Jul-95	33.6	Silicon Systems	Later					Apr-94				
Dyned International	Jun-88	Software	P&I	Shipping			Simon & Schuster	0					Jun-88				
Caps	Mar-94	Multimedia	P&I	Beta			Simon & Schuster	2					Dec-95				
Laserscope																	
Biomedical	Jan-82	Medical	Public	Profitable	Nov-89	16	SmithKline	2					Mar-84				
Human Genome																	
Sciences	Jun-92	Biotech	Public	Profitable	Dec-93	27	Smithkline	Corp					May-93				
Zynaxis Cell																	
Science	Jul-88	Biotech	Public	Prod Dev	Jan-92	22.5	Smithkline	1	2				Jun-88	Nov-90			
British Biotechnology																	
Corp	Jan-86	Biotech	Public	Prod Dev	Jul-92	57	Smithkline	IPO					Jul-92				
Ocean Genetics	Feb-86	Agriculture	OFB				Smithkline	1					Feb-86				
Cytotech	Jan-83	Medical	A/M				Smithkline	1					Oct-85				
Pointcast	Jan-92	Software	P&I	Shipping			Softbank	Corp					Jul-96				

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Electric Classifieds	May-84	Multimedia	P&I	Shipping			Softbank		2				Dec-95				
Yahoo	Apr-84	Internet	P&I	Shipping			Softbank		Corp				Nov-95				
GT Interactive Software	Sep-92	Multimedia	Public	Profitable	Dec-95	140	Softbank		IPO				Dec-95				
Unitech Telecom	Jun-91	Networking	P&I	Profitable			Softbank										
Dyned International	Jun-88	Software	P&I	Shipping			Sony		0				Jun-88				
Vitelec	Jan-83	Semiconductor	A/M	Profitable			Sony		2	3	4	5	Aug-85	Feb-87	Jun-88	Nov-88	
Cycorn	Jan-85	Telecommunication	A/M	Shipping			Southwestern Bell		1				Apr-87				
Blonumerik																	
Pharmaceuticals	May-92	Pharmaceuticals	P&I	Prod Dev			Southwestern Bell		2				Oct-94				
Gigabit Logic	Jan-81	Semiconductor	A/M	Shipping			Standard Oil		1	2			Nov-82	Mar-85			
Numerix	Jan-82	Computer	A/M	Shipping			Standard Oil		1								
Sylvan Learning Centers	Jan-79	Education	Public	Shipping	Dec-93	22	Sterling										
AAavid Thermal																	
Technologies	Jan-65	Energy	Public	Profitable	Jan-96	21.8	Sterling		Later				Oct-93				
Shape	1/85	Data Storage	P&I				Sterling		LBO				Dec-94				
Advantage Production Technology																	
Technology	Oct-88	Semiconductor	OFB	Shipping			Sumitomo		Corp				Jul-90				
Mosaic Systems	Jul-82	Electronics/PCB	OFB	Shipping			Sumitomo		Recap				Jan-90				
Image Data	Jan-84	Telecommunication	A/M	Shipping			Sumitomo		Corp				Jan-90				
Nchip	May-89	Semiconductor	A/M	Shipping			Sumitomo		Corp				May-91				
Cochlea	Jan-83	Electronics	A/M	Shipping			Sumitomo		2				Nov-89				
Crosscheck Technology																	
	Oct-87	Electronics	P&I	Restart			Sumitomo		Corp				Dec-93				
Ortel	Apr-80	Optics	Public	Profitable	Oct-94	49.4	Sumitomo		Corp				Mar-90				
Medical Sterilization	Jan-83	Medical	Public	Profitable			Sumitomo		1	2			Dec-89	Dec-90			
Read-Rite	Feb-83	Electronics	Public	Profitable	Nov-91	50.9	Sumitomo		Corp				Jun-91				
Synopsis	Dec-86	CAD	Public	Profitable	Feb-92	29	Sumitomo		Corp				Dec-90				
Athens	Jun-83	Semiconductor	A/M	Profitable	Dec-94	20	Sumitomo		4				Nov-89				
Novoste	Jan-87	Medical	P&I	Prod Dev			Sumitomo		Corp	Corp			Jun-88	Oct-90			
Cognisense	Oct-91	Electronics	P&I	Prod Dev			Sumitomo		1				Feb-92				
Tularik	Dec-91	Biotech	P&I	Prod Dev			Sumitomo		Corp				Feb-95				
Metasyn	Jan-92	Biotech	P&I	Prod Dev			Sumitomo										
Ges																	
Pharmaceuticals	Apr-89	Biotech	OFB	Prod Dev			Sumitomo		R&D				Apr-89				

PORTFOLIO COMPANY	FOUNDED	BUSINESS	STATUS	STAGE	IPO DATE	IPO VALUE (MILL \$)	INVESTOR	INVESTMENT ROUND					DATE OF INVESTMENT				
								I	II	III	IV	V	I	II	III	IV	V
Integral Peripherals	Oct-90	Data Storage	P&I	Shipping			Sumitomo America	1	2	3	4		Mar-91	Dec-91	Oct-92	Feb-94	
Regeneron Pharmaceuticals	Jan-88	Biotech	Public	Prod Dev	Apr-91	99	Sumitomo Chemicals	Corp					Mar-89				
Integral Peripherals	Oct-90	Data Storage	P&I	Shipping			Sumitomo Japan	1	2	3	4		Mar-91	Dec-91	Oct-92	Feb-94	
Integrated Device Technology	Jan-80	Semiconductor	Public				Sysorex	4					May-83				
Imagic		Multimedia	OFB				Sysorex	2					Mar-83				
Speech Plus	Jan-83	Computer	A/M				Sysorex	1					Mar-83				
Panoramic	Jan-83	Software	OFB	Shipping			Tandem Computer	4 Rest					Nov-88	Aug-90			
Triplex	Jan-81	Process Control	A/M	Shipping			Tandem Computer	1	3				Mar-86	Aug-88			
Networth	Jan-85	Networking	Public	Profitable	Nov-92	17.6	Tandem Computer	Corp					Nov-91				
"@Home"		Internet	P&I	Startup			TCI						Aug-95				
Netscape	Apr-94	Internet	Public	Shipping	Aug-95	140	TCI	Corp					Apr-95				
Classic Sports Network	May-94	Media	P&I	Shipping			TCI	2					Apr-95				
Academic Systems	Mar-92	Education	P&I	Shipping			TCI	2					Aug-94				
Lightspan																	
Partnership	Sep-93	Education	P&I	Beta			TCI	2					Feb-95				
Triquint																	
Semiconductor	Aug-81	Semiconductor	Public	Profitable	Dec-93	22	Tektronix	Mazz IPO					Nov-93	Dec-93			
Planar Systems	Apr-83	Computer	Public	Profitable	Dec-93	21	Tektronix	IPO					Dec-93				
Milton	Jan-90	Process Control	P&I	Profitable			Tektronix	Seed					Jan-90				
Ateq	Jan-84	Semiconductor	A/M	Profitable			Tektronix	3	4				Apr-86	May-87			
Sequent Computer Systems	Jan-83	Computer	Public		Apr-87	25.5	Tektronix	3					Mar-85				
Unitech Telecom	Jun-91	Networking	P&I	Profitable			Telco Systems										
Advanced Fibre Communications	Jun-92	Telecommunications	P&I	Shipping			Tellabs	2	4				Oct-93	Oct-94			
Telling Systems	Oct-85	Telecommunications	A/M	Shipping	Jun-90	5	Tellabs	3					Oct-87				
Promptus Communications	Jan-89	Communication	P&I	Profitable			Tellabs	Corp					Mar-93				
Agripio Biosciences	Feb-89	Agriculture	P&I	Shipping			Tenneco	Recap					Feb-89				

PORTFOLIO COMPANY	FOUND ED	BUSINESS	STAT US	STAGE	IPO DATE	IPO VALUE (MILL \$)	INVESTOR	INVESTMENT ROUND					DATE OF INVESTMENT				
								I	II	III	IV	V	I	II	III	IV	V
Computer Integrated Manufacturing		Process Control	A/M	Shipping			Tenneco	2					Feb-86				
Computer Integrated Manufacturing		Process Control	A/M	Shipping			Tenneco	2					Feb-86				
Optographics	Oct-82	CAD	A/M	Profitable	Sep-93	10.7	Tenneco	3	4				May-87	Nov-88			
Optographics	Oct-82	CAD	A/M	Profitable	Sep-93	10.7	Tenneco	3	4				May-87	Nov-88			
LifeCell	Jul-86	Medical	Public	Prod Dev	Feb-92	7	Tenneco	1					Jul-86				
LifeCell	Jul-86	Medical	Public	Prod Dev	Feb-92	7	Tenneco	1					Jul-86				
Neogen	Jul-87	Agriculture	Public		Aug-89	6	Tenneco	1	2				Jul-85	May-87			
Neogen	Jul-87	Agriculture	Public		Aug-89	6	Tenneco	1	2				Jul-85	May-87			
JB Systems	Jan-83	Process Control	P&I				Tenneco										
JB Systems	Jan-83	Process Control	P&I				Tenneco										
Communications Office Machines		Telecommunications	OFB				Tenneco	1					May-85				
Communications Office Machines		Telecommunications	OFB				Tenneco	1					May-85				
Evans Blocontrol	Jan-79	Agriculture	OFB				Tenneco	1					Dec-86				
Evans Blocontrol	Jan-79	Agriculture	OFB				Tenneco	1					Dec-86				
Computer Technology	Jan-80	Source Data Coll	IPO Reg				Tenneco	1					Jul-86				
Computer Technology	Jan-80	Data Collection	IPO Reg				Tenneco	2					Jul-86				
Maxwell Hybrids	Jan-86	Agriculture	A/M				Tenneco	Seed	1	2			May-86	Jan-87	Jan-88		
Maxwell Hybrids	Jan-86	Agriculture	A/M				Tenneco	Seed	1	2			May-86	Jan-87	Jan-88		
C -Cube Systems	Jul-86	Semiconductor	Public	Shipping	Apr-94	36	Instruments	Mezz					Dec-92				
Open Market	Apr-94	Internet	P&I	Prod Dev			Time										
Netscape	Apr-94	Internet	Public	Shipping	Aug-95	140	Time Warner	Corp					Apr-95				
Pointcast	Jan-92	Software	P&I	Shipping			Times Mirror	Corp					Jul-96				
Uniftech Telecom	Jun-91	Networking	P&I	Profitable			Tohoku Kohden										
Paidos Healthcare	Apr-91	Medical	P&I	Shipping			Tokos Medical	1	2				Jun-91	Jan-94			
P. Jeza Biomedical	Jan-85	Biotech	P&I	Shipping			Tokos Medical	Corp	Mezz				Dec-91	Dec-94			
Wireless Access	Nov-91	Networking	P&I	Shipping			Toshiba	3					May-94				
Verifex																	
Semiconductor	Jan-84	Semiconductor	A/M	Shipping	Apr-91	25	Toshiba	Corp	Acq				Dec-89	Apr-91			
TME	Apr-83	Medical	P&I	Restart			Toshiba										
Synergy Semiconductor	Jan-87	Semiconductor	IPO Reg	Profitable			Toshiba	Corp					Jan-91				

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Chromatic Research	Sep-93	Semiconductor	P&I	Prod Dev			Toshiba		
Level One									
Communications	Nov-85	Semiconductor	Public	Shipping	Aug-93	37.4	Transamerica	4	Jul-88
Triconex	Mar-84	Process Control	Public	Profitable	Mar-92	26	Transamerica		
Microbeam	Oct-84	Semiconductor	OFB				Transamerica	4	Aug-88
Earth's Best	Jul-87	Food	P&I	Shipping			Transpac	Debt Rest	Sep-92 Apr-93
ESS Technologies	Jan-84	Multimedia	Public	Profitable	Oct-95	105	Transpac	Corp	May-93
Open Market	Apr-94	Internet	P&I	Prod Dev			Tribune Co.		
America Online	May-85	Internet	Public	Profitable	Mar-92	23	Tribune Co.	3	Jun-88
Checkfree	Jan-81	Data Services	Public	Profitable	Sep-95	86.4	Tribune Co.	IPO	Sep-95
Corsair									
Communications	Dec-94	Telecommunications	P&I	Shipping			TRW	0	Dec-94
Sybase	Nov-84	Software	Public	Profitable	Aug-91	49.6	TRW	1	Apr-85 Feb-86 Dec-86 Aug-87 Apr-88
CP Clare	Jan-75	Electronics	Public	Profitable	Jun-95	50	TRW	2	Aug-86
Simborg Systems	Feb-84	Networking	A/M		Jan-90		Ungermann Bass	1 2	Feb-87 Dec-87
Kaspia Systems Advanced	Jan-95	Networking	P&I	Startup			Ungermann-Bass	Seed	Jul-95
Computer Communications	Jan-76	Networking	A/M	Shipping	Dec-93	15	Ungermann-Bass	2	Mar-91
Linkware	Jan-74	Networking	A/M				Ungermann-Bass	2 3	May-84 Feb-85
Procase	Apr-87	CAD	P&I	Shipping			Union Carbide	2 3	Sep-89 Apr-91
Genesis Health Ventures	Jan-81	Medical	Public	Profitable	Jun-91	14.4	Union Carbide	3 Mezz	Jan-89 Jun-90
Ucar International		Materials	Public	Profitable	Aug-95	326.8	Union Carbide		Aug-95
International Diagnostic Systems	Jan-85	Agriculture	P&I	Profitable			Union Carbide	1	Aug-93
GO	Sep-87	Software	OFB	Shipping			US West	2 3 4 Mezz	Nov-88 May-90 Apr-92 Apr-93
Syntelligence	Jan-83	Software	OFB	Shipping			US West		
Touch									
Communications	Mar-85	Networking	OFB	Shipping			US West	3	May-89
Support Technologies	Jan-83	Instruments	A/M	Shipping	Jan-89		US West	3	Aug-86
Presentation Technologies	Mar-85	Computer	A/M	Shipping			US West	Bridge	Sep-90

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								I	II	III	IV	V	I	II	III	IV	V
Tessco Technologies	Jan-82	Telecommunications	Public	Profitable	Sep-94	22.8	US West		2				Mar-87				
Security Dynamics	Jan-84	Source Data	Public	Profitable	Dec-94	35.2	US West	out									
Ingres	Jan-80	Software	Public	Profitable	May-88	28	US West		6				May-87				
Redman Industries	Jan-87	Construction	Public	Profitable	Sep-93	71.5	US West	IPO					Sep-93				
Johnston America Industries	Oct-91		Public	Profitable	Jul-93	52.5	US West	LBO					Oct-91				
Photon Kinetics	Jan-79	Instruments	A/M	Profitable	Mar-92	12	US West		2				May-87				
Transform Logic	May-83	Software	Public				US West	Bridge					Sep-89				
Caddex	Jan-82	Computer	A/M				US West		4				Nov-85				
Looking Glass Technology	Jan-92	Software	P&I	Shipping			Viacom		2				Aug-95				
Spectrum Holobyte	Jan-86	Electronics	A/M	Profitable			Viacom		2				Mar-93				
Knowledge Adventure	Aug-91	Software	P&I	Profitable			Viacom/Paramount		2				Jun-93				
Onyx Pharmaceuticals	Apr-92	Biotech	P&I	Prod Dev			Warner Lambert	Corp					May-95				
Avid Therapeutics	Nov-91	Biotech	P&I	Prod Dev			Warner Lambert	Corp					Sep-93				

Legend

P&I Private and Independent
 A/M Acquired / Merged
 Corp Round with only Corporate Investors
 LBO Leveraged Buyout
 Mezz Mezzanine Financing, Generally Pre IPO
 Prod Dev Product Development
 DP / Med Medical Data Processing

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