

## **VALUING SOFTWARE AND INTERNET COMPANIES**

---

*California CPA Education Foundation 1999 High Tech Industries Conference*

*September 16, 1999 - Los Angeles Airport Marriott*

*September 17, 1999 - San Jose Doubletree Hotel*

*James P. Catty*

©1999

### **SOFTWARE IS EVERYWHERE**

To begin with the crassest possible announcement: "There's gold in them thare chips - microprocessor chips, that is"; one can make a darn good living not only by creating high tech companies, but also by valuing them. In both instances, "you've got to know The Territory"; establish what you are doing and take into account the characteristics and possibilities of the product. It is a vast field, encompassing many different disciplines and philosophies.

We would find it very difficult to live nowadays without all the sweeping electronic developments that have taken place in the last twenty year; we seem to be tied to them, "for better or worse", a phrase that may ring a bell with many of us in a different context.

There's much good in software, but sometimes it seems to this closet Luddite there is just about as much that's bad. Software enables airlines to crowd us in like sardines, call it "yield management" and present it as something for everyone's benefit; it gives us mobile telephones, which makes it impossible to hide anywhere - be it from agitated clients or bill collectors, and it clears checks within 24 hours; in the good old days, that process used to take two, sometimes three weeks. Long gone is the time when credit card charges from Europe or Asia needed at least six weeks to show up on your statement.

But software is also is a key factor in many "medical miracles". We all know someone with a pacemaker, have read about chip-con-trolled artificial limbs, or heard something equally astounding, which today is practically taken for granted.

On a lesser scale, software turns off the coffee maker when the brew is just right; we get instant replays during a sports event; supermarket shelves are kept stacked with goods we want to buy. Companies or individuals can share documents and ideas around the globe, we can watch Marlene Dietrich in a tailor-made commercial seven years after she died, and there are video games for pigs to play; those were developed at the University of Guelph in Ontario and cause them to gain weight faster. It's a revolution alright, and we are forced to get used to it as fast as our little grey cells can manage.

## **Valuing Software and Internet Companies**

### **Background**

Actually, this will be the third major revolution since 1776, when the Commonwealth of Massachusetts and a few likeminded colonies declared their independence from Britain. The first was the "Steam Age", which lasted over a hundred years; it resulted in the first passenger steam railroad in Northern England during 1825, followed in 1826 by the US first line being started in Baltimore.

Steam also made manufacture independent of water power; this allowed plants to be built away from the rivers, which till the middle of the 19th century had been the only economically feasible way to transport goods. The English economy soared, driven by a new technology rather than the discovery of mines - as in South Africa - or by a new crop - as in the West Indies.

The new invention culminated in superb railroad systems. Aided in 1835 by Samuel Morse's invention of the telegraph, between 1850 and 1860, railroad tracks in the US increased from 9,000 to 30,000 miles. The Midwest was connected with the east coast. For the next fifty years, the railroads dominated the economy: freight ton miles rose 9,700% and employment expanded by 2,300%. This is not all that different from the explosive growth of the Internet, with more yet to come.

The second, the "Machine Age", brought us two dominant innovations, the automobile and electricity. This led to the rail links being rapidly supplemented by the world's most extensive highway net, giving us a distribution system for goods, especially food, which in my view has no equal anywhere in the world.

The third is the "Digital Age" of Software and the Internet.

All this means that mankind had to adjust and was forced to change its thinking on a number of previous occasions. We've made it then, and we will likely make it now, but there is one vast difference: the two previous revolutions I mentioned did not have to contend with a rapacious government, the IRS, aggressive regulatory authorities and far-flung, well-informed shareholders.

We do! That's where the savvy valuator comes in, and that is what I will be talking about today. Doing your best for your client can definitely work out in your favour, if, as I said before, you take everything into account that would have a bearing on the value of the product.

### **Railroads, the Internet of the 19th Century**

Progress seldom comes without pain; as the Internet is starting to do, the railroads destroyed many traditional industries and created new ones. In particular, both the railroads and the Internet:

## Valuing Software and Internet Companies

- Reduced price differentials between distant markets recently, German exporters complained publicly about losing business to alternative suppliers whose prices, listed on the Internet, were significantly lower.
- Speeded-up economic activity now banking transactions and product purchases are not limited to predetermined "opening hours", but may be undertaken at any time.
- Transformed the sense of time the world is aware of activity as it happens rather than relying on "snail-mail" for information.
- Consumed huge quantities of high performance products railroads purchased immense amounts of steel, glass, copper and coal, as well as vast amounts of capital. The Internet is driving demand for increasingly powerful hardware and software. Intel is the US Steel of today.
- Created mass consumer markets modern, high volume retailers appeared after the Civil War, such as mail order merchandisers (Sears, Roebuck), grocery chains (A&P), and department stores (Macy's); each was based on a lower cost, modest profit but high volume business, creating the mass consumer market. Many prominent Internet enterprises, such as Amazon.com, use a similar business model.

### Introduction

The three traditional factors of production are Capital, Labor and Land (resources); the "Digital Age" has added "Information" to those three pillars. According to Business Week, August 31, 1998:

The information revolution will continue to boost productivity across the economy. Over the next 10 years, such information-dependent industries as finance, media, and wholesale and retail trade are expected to change the most.

Increasing globalization will simultaneously provide much larger markets and tough foreign competitors. The result: companies must become even more innovative while cutting costs.

While in my opinion the human brain is still unmatched by anything called "ARTIFICIAL INTELLIGENCE", processing large amounts of information can only be done by computers. As no computer can function without software, this means an increasing demand for the product.

It also means that there will always be some garden-shed wunderkind turning out new and exciting stuff, which he may believe to be worth a cool million or more, to be shelled out by eager investors. In reality, his discovery may be worth a tenth of that, or even nothing at all; it may already exist, if not on this continent, perhaps somewhere else.

I always mention a well-regarded real estate company that assured us their software had no competitors - none. We stopped our re-search after we had found 43 - not in their country, but in

## Valuing Software and Internet Companies

Europe and Asia, which turned their vast investment into a total write-off; that happened on several occasions, not just once, but, including questions, we only have 75 minutes to discuss "Valuing Software and Internet Companies", so we better continue.

To make the point again, I would like to amend the phrase "caveat emptor" into "caveat valuator"; in other words, do your homework. In preparing this presentation, I have relied not only on my experience of about a dozen years of valuing software, but also on many published and some unpublished sources and studies, including "The Software Industry Annual Report" from Deloitte & Touche LLP, of which I am an alumnae.

I have broken down this presentation into three sections:

- Part I           An Introduction to Software.
- Part II          Valuing Software Companies.
- Part III         Valuing Internet Companies.

### **PART I – WHAT IS COMPUTER SOFTWARE?**

The question is neither irrational nor foolish. Aside from ever increasing demand for speed supplied by constantly improved soft-ware, without such software, a computer is totally ignorant. The comment by Lady Ada Lovelace, Lord Byron's daughter, who financed Charles Babbage's mechanical predecessor of the computer, still applies:

"The Analytical Engine has no pretensions whatever to originate anything. It can only do whatever we know how to order it to perform."

That was in 1843, one hundred and two years before ENIAC, the first successful electronic computer, which, together with elementary software, took up the whole gymnasium at the University of Pennsylvania. Some of you may remember when spreadsheets and Financial Projections were done by hand, and using a slide rule was considered progressive. Now, the Pentium on my desk taking care of all that has more power than the whole mainframe at the Wall Street investment bank where I used to work some 38 years ago.

To put it simply, software instructs a computer what to do, how to do it, and how fast. Computers are expected to become even faster and cheaper in the future as they continue to adhere to "Moore's Law". In 1965, Gordon Moore, Co-founder of Intel, stated that,

## **Valuing Software and Internet Companies**

"The cost of computing power drops roughly 30% every year, and microprocessors double in power and speed every eighteen months."

By about 2004, this Law is forecast to come up against the Laws of Physics, but so far, I'm backing Moore.

### **Types of Software**

According to Webster's Dictionary, software is:

"Both the precise sequence of instructions that enable a computer to undertake a particular activity and the writ-ten code, flow charts, sub-routines, objects, languages, procedures, documentation, data, etc. that are used to prepare it".

Expanding this definition, there are two types of software: Systems Software and Application Software.

Systems Software allows a computer to function. It includes operating systems like Windows, as well as service and utility functions that handle activities such as data management, sorting, merging & conversion, system accounting, diagnostics, performance measurement, report generation and security control.

It is highly unlikely that you will ever have to value a Systems Software program on its own. There are only about 70 varieties in general use; the last new one was Linux in 1994. Normally, except for depreciation purposes, it is grouped with the related hardware. Therefore, we will not discuss it further.

Application Software supplies instructions for computers to carry out specific functions related to the management, storage and processing of data. In our profession, we all use it, for accounting, spread sheets and word processing.

The first two parts of this presentation deal with Application Software and some of the approaches and problems of valuing the organizations that create it. The third is closely related and covers one of the most rapidly growing uses of software, the Internet and the companies carrying on E-Commerce.

### **Categories of Application Software**

There are five main categories of Application Software; they are based on different technologies and serve distinct markets.

## Valuing Software and Internet Companies

- Enterprise: Products that control business processes and activities; they may serve a single vertical market (such as financial organizations), or supply a function (like accounting) to many industries.
- Packaged: Programs that run on personal computers or servers; normally used to improve individual productivity, such as word processors, spread sheets and personal information managers.
- Engineering: Systems that assist the design and production of items ranging from mechanical devices to food, computer chips and even other software.
- Edutainment: Programs usually running on PCs that offer entertainment or education, mainly oriented to the under-twenty crowd. The software for the video game created to encourage pigs to eat more and gain weight faster certainly falls into this category.
- Internet/E-Commerce: Software used for accessing the Inter-net, transmitting information between participants and entering into business transactions. This category is almost totally integrated with services, be they from a Telco, an ISP (Internet Service Provider), a Computer Reservations System or a bank ATM (Automated Teller Machine).

### What Makes Software Different From Anything Else?

In developed countries, and to some extent in developing countries, today's society is dependent on computers. Computers cannot function without software, which is effectively a capital item, but which is often expensed on purchase.

- The market life of any software is limited; generally, investors and tax authorities will accept two years. However, established programs can often be enhanced to prolong their lifespan over several versions. Those obviously improve the value of the software by increasing and extending the cash flow. In some cases, this is almost a new product which may require a new valuation.
- Software is the ultimate intellectual property: once it has been created, making and selling an infinite number of copies is easy and cheap, other than copyright and marketing expenses; therefore, it has a cost structure that is completely different from that of most goods and services.
- Barriers to entry are normally at the marketing, not at the code creation level. The logical deduction is that one first must find out if anyone really wants the product, and what advantage it may have for any group or sector.
- In most industries there are standards: the world agrees on the layout of car pedals; North America accepts one electric plug and line voltage; Europe, where there has been much more dissension than in the US, managed to do the same - albeit different from ours. Standards have also been negotiated for software, but with change happening so rapidly, most are determined by the market, followed by the agreements.
- Past losses and the level of shareholders' equity have little impact on the value of a software company, which depends on future prospects.

## Valuing Software and Internet Companies

- The major capital expenditure is on R&D, which is written off as incurred. In valuations, such amounts are capitalized to the extent that software assets have been created.
- Items such as "distribution channels" and "installed base of users" are important intangible assets that are frequently ignored by accountants and therefore do not normally appear in the financial records of a software company.
- The distribution of software has progressed from a stack of floppies to a CD-ROM to a quick and simple download from the Internet. This has substantially lowered costs and selling prices, while at the same time making it possible to conveniently serve worldwide markets.
- Some types of software, such as "search & retrieval engines", are turning into commodities and are available on the Inter-net, sometimes even for free.
- Over the last eighteen months, computer systems have become more complex, as they integrate more and more functions into products, such as, for instance, Supply Chain Management systems, which cover the critical path from ordering components to delivering the finished product.

### Typical Software Economics

Most industries show declining economies of scale: the bigger an organization or plant gets, the more layers of management and infrastructure are needed, at least, are created - or should I say, metastasize? With software, the opposite is true. Once developed, the only large ongoing expenses are for advertising and marketing; manufacturing and distribution costs tend to be fixed and rather low. Therefore, the product has increasing economies of scale, which is demonstrated by the following example based on competitive PC packaged products, from real companies:

	<b>Company M</b>	<b>Company C</b>
Product R & D	\$250 million	\$200 million
Software Selling Price/Unit	\$350.00	\$350.00
Variable Costs/Unit	\$50.00	\$50.00
Share of Market	80%	10%
Units Sold	8 million	1 million
Revenue	\$2.8 billion	\$350 million
Gross Profit	\$2.4 billion	\$300 million
S G & A (40%)	\$1.1 billion	\$140 million
Operating Contribution	\$1.3 billion	\$160 million
Return on R&D	520%	64%

This shows that whoever is first out of the gate, retains the lead, and temporary monopolies are quite normal.

## Valuing Software and Internet Companies

If you have seen the Charlie Chaplin classic "Modern Times", you will remember that at some point, the machines simply run away from him and he can no longer cope. A similar situation from the old Lucille Ball show is now being used in a commercial, with Lucy and Ethel stuffing candy, and the conveyer belt seems to get faster and faster. All I want to say by this is that with software, speed is everything. Unless it's happening now, and unless you can reliably value it NOW, everything is bound to change, from any edge over the competition to investors' enthusiasm.

### Accounting For (Software) Twinkies

"A dollar spent on a toaster doesn't reduce your wealth in the same way as one spent on a Twinkie. One lasts, the other doesn't. But where do toasters end and Twinkies begin in the information economy?"

That question was posed by Peter Huber, a writer for Forbes magazine; I don't believe he is a CPA, but he thought out a highly applicable philosophy for gauging the value of software, which, after all, is a CPA's job.

He writes that according to tax collectors and securities' regulators, land values last forever, brick and metal for ten or thirty years, and silicon chips for five. Windows are all pure Twinkie.

Then he reasons that possibly, Washington may have it backwards: only half the cost of Windows is to improve current productivity, while the other half forms the base for a subsequent version. A software's useful life depends to a great extent on your ability to hang on to your trained employees, which likely give you increased productivity year after year. If your accounts reflected this, your P&L statement would be different.

Huber goes on to say that when a company runs out of disk space or processing power, it keeps its old software and files and chucks the computer. With the Internet, a credit card company no longer needs offices in expensive Manhattan, but can locate anywhere cheap, even offshore. The Twinkie is eating the toaster.

Accountants don't know what to do about this, and neither do regulators, as no-one knows if anything has a real future value until the future arrives.

In customary fashion, tax collectors go the other way to maximize revenue; the IRS would like us to capitalize everything, from airline engine maintenance to advertising.

Does this by any chance mean that Washington is losing its grip on economic reality?

## Valuing Software and Internet Companies

### Value Drivers of Software Companies

In most businesses, selling prices are dictated by the market: you get a premium for a better product or a stronger brand, and a bigger margin by keeping costs down. Software is different: the amount you can charge for it depends on what it can do for the customer; margins are not dependent on costs, but on functionality. A critical part of the valuation process is to determine if the firm or its product has a special edge that enables it to charge a premium price for a product in high demand.

Some of the other factors to be taken into consideration:

#### *Positive Aspects*

- Markets - size & growth
- Technology - state of development
- Products - one or many
- Customer Base
- Positioning/Brand Names
- Delivery Mechanism
- Management/Staff
- R&D Team
- Development Program

Some of the Positive Aspects can also be *Risks*

- Competition
- Management
- Size
- Capitalization
- Product Range
- Dependence
- Location
- Ease of Entry
- Margins and their Variability
- Regulatory Situation
- Stage in Life-Cycle

Two other factors are the same as for other businesses, interest rates, and the enthusiasm of investors for the industry or group. At present, it is rather difficult to raise funds for mineral exploration, no matter how promising. This is partly due to low worldwide demand for metals, partly to the recent shenanigans in that industry.

## Valuing Software and Internet Companies

On the other hand, I know of a software producer in Ottawa, Canada, who, a few years ago, raised funds based on a value of 170 times revenues; at the time I considered the company at best to be worth eight times. Five years later, it was taken over for its tax losses. The moral is that you should never ignore the image factor, and the mood of investors at the time of the valuation.

### There Are No Rules of Thumb

In most industries, there are broad trends that are relatively easy for the valuator to grasp. Therefore, with numerous transactions, "Rules of Thumb" have become established. In the software industry, there are very few broad trends or long term effects, and for that reason, no universally applicable rules. In some way or other, nearly every situation is an exception.

The majority of software companies usually does not have a high value, according to the last six years' M&A statistics on "Computer Software, Supplies & Services", published by Mergerstat@:

	Transactions		P/E Offered		Value	Premium/Relative			Median Size
	#	%	(base)		\$mill	(base)			\$mill
		A		B		C	D	E	F
1993	173	6.5	43.5X	(3)	2,964	43.5%	(4)	1.12	na
1994	197	6.6	43.2X	(7)	13,275	59.1	(12)	1.41	10.5
1995	336	9.6	39.6X	(15)	25,962	43.3	(19)	0.97	8.6
1996	637	10.9	42.8X	(22)	20,287	39.1	(22)	1.07	10.5
1997	854	10.9	36.3X	(41)	22,085	37.1	(39)	1.04	7.4
1998	963	12.3	29.8X	(56)	52,678	55.2	(63)	1.36	9.2

### Notes

- A Software transactions as a percentage of all M&A transactions.
- B Number of profitable companies forming base for P/E Offered.
- C Premium over stock price for public companies
- D Number of public companies
- E Relative premium for software public companies over all public company transactions.
- F Value of median transaction.

This table shows that the proportion of all transactions that related to computer software companies nearly doubled over the six years; in the period their dollar value rose nearly eighteen times. It also demonstrates that the standard "metrics" of "Price/Earnings Ratio Offered" and "Premium Offered" have too small a base to be meaningful for valuing software companies.

Finally the differences between the mean values (\$54.7 million in 1998) and the median values (\$9.2 million that year) indicates that as well as some very large transactions, there are numerous

## **Valuing Software and Internet Companies**

small ones; in many of these an acquirer can improve its situation by buying technology rather than building it.

Regrettably for taxing authorities the statistics do not support the generally held view that software companies are extremely valuable; this position is often stated by the IRS with respect to Estate and Gift Taxes. Their fixation can have rather discouraging effects on:

- The tax position of employees receiving stock options;
- The attitude of entrepreneurs looking for funds;
- Divorce settlements in some States.

### **Products and Companies**

With a few glaring exceptions, most software companies are small; therefore, in many cases: The Product is the Company.

This has advantages as well as disadvantages. Products can be very lucrative while they flourish, but they are generally short lived. That means that unless the company constantly updates, enhances, even replaces the software, your client should not count on gains on the shares sufficient to put his children through college, or use them to set up trust funds for the grandchildren.

One hundred and fifty years ago, this great state of California was built on mining. When I am talking to politicians who don't understand technology - by no means a rare breed - I sometimes use mining companies as an analogy to software firms. Both start with an idea: mining with a prospect, the other with a software concept. Substantial amounts have to be spent on developing the potential ore body - the computer program - before any cash flow is generated. In many instances, there will be insufficient ore - or lack of interest in the software - to become commercially viable.

Once cash flow has started, much of it must be pumped back into further development; find more ore - enhance the software. Eventually, a mine runs out of ore, and a software concept, like DOS, has been passed by and ceases to generate cash flow.

For established entities, whether in mining or in software, the value of the company consists of the value of the products, plus its skilled staff, products (prospects) under development, opportunity and the intention to innovate, and its relationships with customers, distributors, suppliers etc.

### **Technology**

In assessing technology, the position of the product in its life cycle is fundamental; it may be driven by hardware capabilities or customer needs. In recent years, economic lives have become shorter and shorter, but as many organizations are laggards, there are still firms that use superseded products, with the "tail" becoming longer.

## Valuing Software and Internet Companies

Intranets within organizations and the Internet linking them are having a fundamental impact on the types of software purchased, and how it is applied. Although much has been said about it, I would quickly like to remind you that the Year 2000 will be here in less than four months, and if your client's software is not compliant, nothing much more needs to be said.

The degree of elegance of the solution is important, as it is a measure of how easy it is to modify and enhance the Source Code. This factor reflects the choice of Operating System and programming language, and the suitability of the architecture. Also to be considered are the quality of the Source Code, particularly its comments that explain the reasons for decisions, and the completeness of the documentation.

A crucial component is the programming team, the number of people, their experience and adaptability, as well as their ability to communicate internally, making sure that the various elements fit together and are properly tested, with all bugs being recorded and corrected.

The hardware and operating system chosen for a software program has a significant impact on its value, as it has a major influence on the market it can serve.

### The Market

- Size: Value increases with size due to increasing returns, while, except for advertising, costs remain fairly constant;
- Growth: Value is enhanced by a rapidly growing market;
- Usage: The more people use or might use a software product, the more valuable it is.

In valuing a software company, it is of considerable importance to determine where its products are in the market cycle. As developed by Geoffrey Moore in his book, "Crossing the Chasm", the market cycle is based on the type of users rather than the period during which the product has been available. The categories are:

- Innovators
- Visionaries (early adopters)
- The CHASM
- Pragmatists
- The Second Gap
- Conservatives
- Laggards

The CHASM is the boundary between success and becoming a living dead; some companies or technologies are never able to cross it, but once a product is starting to be bought by the

## Valuing Software and Internet Companies

Pragmatists, its value jumps substantially. Feedback from the field is the best way to know when this has happened. Some basic differences are set out below.

### **Visionaries**

Intuitive  
Support revolution  
Contrarian  
Break away from the pack  
Follow their own dictates  
Take risks  
Motivated by future opportunities  
Seek what is possible

### **Pragmatists**

Analytic  
Support evolution  
Conformist  
Stay with the herd  
Consult with their colleagues  
Manage risks  
Motivated by present problems  
Pursue what is probable

The delivery mechanisms required to satisfy Pragmatists are very different from those needed for Visionaries.

### **Size and Growth of the Market and Competition**

The potential size and possible growth of the market must be taken into consideration when valuing software. Rapidly changing technologies may permit a competitive product to take advantage of the existing program and add better features, something that may not be possible for the original. This will reduce its value.

The demonstrated size of the market for the competitive product and penetration by a specific technology are a guide to the probable market share of the product being valued.

Rates of growth vary widely, depending on the maturity of the technology and the market. A new solution presented to a stagnant market can totally change growth rates.

On the other hand, if there is no competition, there may be no market, and yet, enormous mass markets have been created for products nobody knew they wanted, such as hi-fi's, condos, cruises or health food stores. In 1950, Thomas J. Watson Jr., Executive VP of IBM, approved creating their first general purpose scientific computer, believing they "could find customers for as many as 30 machines".

Today, almost every piece of software is:

- Replacing an existing solution;
- Competing head to head with alternatives;
- Threatened by a novel approach.

All three situations may occur simultaneously.

## Valuing Software and Internet Companies

### Positioning

In valuing a software company, it is essential to understand the place each of its products occupies within two interrelated systems; first, the customers' alternative choices for a purchase, and second, more important as it determines the first, are the various companies interacting to make the "market".

The next section is based on "Crossing the Chasm" and on "Inside the Tornado" also by Geoffrey Moore, the best works I know on "Hi-Tech" marketing.

#### *Market-Makers' View of the Software Marketplace*

<b>New Market</b>	Imperialists v Natives	Explorers & Forty-niners
<b>Established Market</b>	Old Guard: <ul style="list-style-type: none"><li>• Gorillas</li><li>• Chimpanzees</li><li>• Monkeys</li></ul>	Barbarians v Citizens
	<b>Established Product</b>	<b>New Product</b>

Understanding this situation is important to a valuation, as a firm's future and the prospects for each product are influenced by management's perception. A firm that does not recognize itself as one of the industry's archetypes is likely to be considered just another 'no name' company, easily ignored by the market and not expected to be around for long. This can become a self-fulfilling prophecy, since survival requires a certain amount of industry support. Each role implies different power relationships, alliances, and competitors.

#### *Industry Archetypes:*

- The \$500 Billion Gorilla: The only question is whether he is a benevolent or a cruel dictator.
- Chimpanzees: A threat to the Gorilla and a target for Monkeys, Chimpanzees must secure their power bases by retrenching into niche markets, building up sufficient product advantage to ward off attacks, and telling everyone that while they are not interested in expansion, they are prepared to defend their turf to the death.
- Monkeys: Their goal is to be the low-cost supplier and the easiest to do business with.
- Imperialists: Members of the Old Guard who have extended established products into new markets, either geographically, by deeper penetration, or through adoption of a new platform.

## Valuing Software and Internet Companies

- Natives: The mirror image of the Imperialists; instead of new technology, they have access to the customer through superb distribution and communications channels.
- The Explorers: Oriented to new products and new markets, they are disquieting because they do not seek immediate profits and are in for the long haul.
- Forty-Niners: Farthest removed from other companies, they claim to have found gold and are recruiting partners to cross the CHASM and mine it.
- Barbarians: They attack a contested piece of the market with pincer movements, the way UNIX gradually wrapped it-self around mainframes.
- Citizens: Related to the Old Guard, they fight a war of attrition and counterattack with new technology to pre-serve their position.

### Y2K Problem

Over the past few years, a lot has been said about the Year 2000, which is suspected to cause problems with many computer programs. Until the 1970's, with computer memory and storage very expensive, two digits were being used for the year instead of four, such as "76" for 1976. We had faith that the software would have been replaced long before we had to face the problem. This did not happen, and we are now faced with the Y2K bug.

It's a litigator's dream; the Gartner Group, a US hi-tech research organization, estimates that worldwide, Y2K related law suits could ultimately reach US \$1 trillion in costs, more than their estimate for fixing the problems.

As the world struggles to make sure its existing computer systems are Y2K ready, spending on new software started to dwindle in the second quarter of 1999 for three reasons:

- Lack of funds for purchasing new software as the money has to be spent on fixing Y2K.
- Lack of manpower for implementation as the personnel is needed to fix Y2K.
- Management freezes all new IT projects until early 2000 for fear of introducing new problems.

Certain types of software are continuing to see good sales: E-commerce/Internet applications that extend traditional sales/supply chain operations and systems, and systems which quickly increase productivity or are required to remain competitive.

There is the strong likelihood that, after a certain wait-and-see period, in the second or third quarter of next year, new software purchases will accelerate as improvements to systems have to be made and there will be a degree of certainty that the bugs have been dealt with for good.

## **Valuing Software and Internet Companies**

### **Delivery Mechanism**

This is the link between the company and the customers. It includes marketing, sales, distribution, and customer support. As I have said before, marketing is the key: nothing sells itself. Unless the valuator is satisfied that management understands the market and how to reach it, he can have little or no confidence in its future. Keep in mind that marketing is rarely taught in Engineering, Science or Math Faculties which produce most software company managers.

There are many successful methods of selling software, from a dedicated direct-sales force to packages on the shelves of the local retailer. The length of the sales cycle determines the appropriate approach. PC packaged products, which have relatively low prices and can be sold in a few minutes, are normally handled through retailers. A sale of Enterprise software to a government agency can take as long as two years and requires dedicated, experienced sales engineers.

The distribution method must be geared to the needs of the sector. While direct selling is effective and gives good margins, it is very expensive. Channel marketing through Systems Integrators or VARs (Value Added Resellers) is less costly, but results in lower margins and requires a totally different structure. The Internet offers low-cost distribution, usually at reduced prices, and can be regarded as the software five-and-dime of the nineties. Sales by this means were roughly \$700 million in 1998, and are projected by Forrester Research to grow to \$3.1 billion in 2003.

### **Management**

A wide range of skills is of greater importance in a software company than in most businesses. When you value a software company, you must investigate the team that runs it; one-man shows simply don't fly. Not only must the team include individuals with experience in computer science, sales, marketing and finance, it is very helpful if they have a wide range of seemingly unrelated qualities and backgrounds, as this gives them an edge over the programmed automaton. Check if they are strictly nine-to-fivers, or if they are willing to hang around when necessary. Also, keep in mind that a failure, or even two, does not necessarily mean bad management, but may simply be part of the learning curve.

### **Approaches to Valuation**

As with more conventional businesses, three traditional approaches to valuation, cost, income and transaction, also apply to software firms. The original investment to create the product is usually surprisingly high, as it may have involved many blind alleys. On the other hand, the reproduction cost is normally low, as the methodology has been established, and there will be few sources of difficulties.

The Replacement cost of the software covers not only the recreation of the Source Code and Documentation, but also a factor for the "time-to-market", and the expense of re-establishing

## **Valuing Software and Internet Companies**

dealers and the customer base. As none of those costs are reflected on the Financial Statements, they have to be obtained from the company's records and other sources and taken into account in determining the Net Worth/Goodwill Value.

Traditionally, the income approach obtains a Net Income Value by capitalizing after-tax profit. Most software companies do not make profits, as their "capital expenditures" on R&D are expensed as incurred. This can only continue for so long; eventually they have to generate cash flow, be taken-over, or die. Therefore, income based values are reached by Capitalization of EBITDA, or, less commonly, EBITRAD (Earnings Before Interest, Taxes, R&D, Amortization and Depreciation).

Another commonly used approach is the Discounted Cash Flow (Adjusted Present) Value. This should be applied separately to each managerially relevant segment of the existing operation, so that each of them is valued separately. The tax-shield should be segregated and valued with a lower discount rate. Part of the DCF value is a figure for each identified potential opportunity.

As software companies usually incur losses, Transaction Based Values are normally established based on the multiple of revenues. In selecting the multiples, care must be taken to identify expected trends in revenues and the possibility of substantial variations.

### **Market Guideline Companies**

A standard valuation technique is the use of publicly traded guideline (comparable) companies; this approach assumes that trading prices in securities markets represent Fair Market Value. This may not be so, as demonstrated by John Kenneth Galbraith's comments to the London School of Economics on June 28, 1999:

"The U.S. is having another exercise in speculative optimism, following the partial reversal last year. When you hear it being said that we've entered a new era of permanent prosperity, with prices of financial instruments reflecting that happy fact, you should take cover."

"Let us not assume that the age of slump, recessions and depressions is past. Let us have both the needed warnings against speculative excesses, and awareness that ensuing slumps can be painful."

In 1997, Alan Greenspan, the Federal Reserve Chairman, sent a brief shudder through the stock market when he described "its irrational exuberance". Since then, the Dow Jones Industrial Average has risen about 75%, resulting in the Feds' stock market valuation model showing a 48% overvaluation based for the S&P 500 Index.

## Valuing Software and Internet Companies

In view of this market situation, drawing conclusions as to the value of privately owned companies from publicly traded comparables presents a great deal of difficulties, especially for high tech companies, compared with traditional "smoke stack" industries.

We have listed 35 software, computer service and Internet companies from the "Information Week 100 Index". The data includes comparisons of the 52-week highs and lows, as well as the decrease from the high to August 4, 1999, when I started writing this paper.

The table below shows the distribution of the high/low ratios and the decreases at August from the stocks 52-week highs. It suggests that the trading prices of Software and Internet at a particular moment do not necessarily represent "Fair Market Value".

	<b>High/Low more than</b>		<b>Decrease from High more than</b>		<b>Cumulative</b>	
	#	%		#	%	
6X	7	20.0	60%	9	25.7	25.7
5X	6	17.1	50%	5	14.3	40.0
4X	3	8.6	40%	3	8.6	48.6
3X	10	28.6	30%	1	2.8	51.4
2X	6	17.1	20%	7	20.0	71.4
1X	<u>3</u>	<u>8.6</u>	10%	<u>10</u>	28.6	100.0
	35	100.0		35	100.0	

## Valuing Software and Internet Companies

### Selected Publicly Traded Software & Internet Companies

Company	Price	52 weeks		High	Decrease
	<u>Aug. 4</u>	<u>High</u>	<u>Low</u>	<u>/Low</u>	<u>from High</u>
	\$	\$	\$		%
Adobe Systems	83.38	93.63	23.63	4.0	10.9
Amazon.com	88.04	221.25	21.67	10.2	60.2
America Online	87.75	175.50	17.25	10.1	49.9
Aspect Development	18.13	45.00	6.25	7.2	59.7
@Home	41.00	99.00	11.75	8.4	53.4
Baan Co.	12.69	40.75	6.88	5.9	68.9
BEA Systems	23.56	32.13	8.69	3.7	26.7
BMC Software	50.63	64.88	30.00	2.2	22.0
Checkpoint Software	64.88	72.50	10.88	6.7	10.5
Computer Associates	45.31	58.00	26.00	2.2	21.9
Computer Sciences	65.19	74.88	46.25	1.6	12.9
Documentum	14.25	54.13	9.38	5.8	73.7
Epicor Software	4.25	22.75	4.25	5.3	81.3
Hummingbird	16.50	25.25	14.00	1.8	25.8
Hyperion Solutions	17.25	37.38	9.88	3.8	53.9
IBM	118.50	139.19	55.38	2.5	14.9
Informix	7.00	14.00	3.50	4.0	50.0
i2 Technologies	26.19	48.38	9.25	5.2	45.9
J.D. Edwards	14.75	49.50	10.88	4.5	70.2
Keane	22.25	58.25	17.25	3.4	61.8
Kronos	47.13	54.50	16.67	3.3	13.5
Legato Systems	69.88	82.81	27.50	3.0	15.6
Lernout & Hauspie	31.38	52.13	25.76	2.0	39.8
Microsoft	84.94	100.75	43.88	2.3	15.7
Network Associates	16.63	67.69	10.06	6.7	75.4
Oracle	36.75	41.17	12.13	3.4	10.7
PeopleSoft	13.06	39.22	11.50	3.4	66.7
Rational Software	29.63	40.00	10.50	3.8	25.9
Saga Software	10.75	27.06	4.75	5.7	60.3
SAP	30.63	58.81	23.75	2.5	47.9
Sterling Software	23.81	30.63	18.56	1.7	22.3
Sybase	10.50	13.38	4.50	3.0	21.5
Symantec	27.88	32.25	8.69	3.7	13.6
Veritas Software	53.38	63.44	11.88	5.3	15.9
Yahoo!	121.00	244.00	29.50	8.3	50.4
High				10.2	81.3
Low				1.6	10.5
Median				3.8	39.8
Mean				4.5	39.1

## Valuing Software and Internet Companies

### Median Revenue Multiples

According to Broadview Associates, a specialized investment bank in Fort Lee, New Jersey, the Median multiples of Adjusted Price (less cash) divided by (trailing twelve months) Revenue for software company acquisitions in the last four years were:

	Q1	Q2	Q3	Q4
1995	1.57	2.00	2.91	2.77
1996	2.31	3.25	2.74	1.97
1997	3.36	2.65	2.83	2.37
1998	3.89	3.16	3.31	3.62

For the complete four year period:

For the Period	
1st Quarter Median	8.00 X
2nd Quarter Median	3.09 X
3rd Quarter Median	1.85 X
4th Quarter Median	0.79 X

From the first to the fourth quartile the ratio is 10 to 1.

### Do IPOs Make Good Guidelines?

Initial Public Offerings are one potential source of guideline companies. The total number of IPOs in the United States has declined in the last two years by 28% in 1996, and 40% in 1998. For technology companies, the drop was 32% each year; the number of software and Internet Companies also fell, but their share of the total increased.

	1996		1997		1998	
	#	%	#	%	#	%
Technology*	317	36.3	215	34.2	147	39.3
Other	557	63.7	413	65.8	227	60.7
Total	874	100.0	628	100.0	374	100.0
*-Software & Internet	79	9.0	67	10.7	54	14.4

Source: *IPO Monitor.com*

To use IPO offering prices in order to establish the value of private software companies is an enticing, but in our view, totally unsatisfactory approach. For a project in early 1998, a well-known valuation firm prepared a Study of 38 software IPOs in 1997. The purposes was to value a private company at December 31 of that year.

## Valuing Software and Internet Companies

Based on statistical analysis, the conclusion was that software IPOs were priced at 8.4 times past revenues, and that at that date, the private software company was worth that multiple. While the statistical relationship (correlation) was strong, no causal connection was demonstrated, and my experience as an investment banker in pricing IPOs did not agree with the conclusion.

The period chosen was the complete year, during which the stock market, as measured by the S&P 500, increased 31%. In a time of high "investor enthusiasm", revenue multiples of IPOs would be expected to rise; this did not occur, as shown by the median price/ sales multiples for each quarter:

	<b>Companies</b>	<b>1997</b>
First Quarter	9	9.8X
Second Quarter	11	6.8X
Third Quarter	8	9.9X
Fourth Quarter	9	8.5X
Jan 3, 1998	1	19.4X
Year	38	8.7X

This suggests that the market for small software IPOs, in the Study's sample, differs from the traditional stock market, as investors purchase such IPOs in the expectation of very rapid revenue growth and are willing to accept continued losses from the expensing of R&D and high market entry costs. Of the 38 companies in the Study, only 50% had profits at the date of the IPO; for eight, losses exceeded 40% of revenues.

My experience is that the stock market prices shares of technology companies based on their future prospects. The price drops that occur when companies fail to meet analysts' expectations support this view. Rapid growth is expected from small companies being brought to the market. IPO pricing is not based on the Financial Statements in the Prospectus, but on the Underwriters' anticipation for the future. Traditionally, IPOs have been priced on projected P/E ratios from publicly traded comparables, less a discount of between 10% and 20%.

Due to the rise in stock prices during the year, CVS felt that the only transactions applicable to a December 31, 1997 valuation were those in the second half of the year in firms that were about the same size as the private company; this reduced the sample to nine. For these, CVS recalculated the Price/Revenue ratios, using the IPO offering price, 1997 reported Revenues and the weighted average number of shares outstanding for the year.

The table below sets out, for each company, the growth in Revenues during 1997, and the Price/Revenue ratios from by CVS and the Other firm. They used the last year-end before filing, as shown in the "Red Herring" prospectus; we used the next year end after the IPO.

## Valuing Software and Internet Companies

Name	Sales	P/R Ratio	
	Growth %	CVS	Other
FlexInternational	157	7.1X	21.6X
Omtool	131	5.4	12.3
UBICS	127	2.6	7.1
Information Advantage	118	2.8	7.6
ProBusiness	92	2.9	8.9
Made2Manage Systems	72	1.1	3.4
Omega Research	64	7.9	13.6
TSI International	40	2.0	4.3
Tier Technologies	38	1.9	5.6
Mean	n/a	3.9	9.4
Median	92	2.8	7.6

The CVS numbers are similar to the median Price/Revenue ratios for the appropriate SIC codes in Ibbotson's Cost of Capital Quarterly 1997 Year Book, and those for acquisitions in 1997 from Mergerstat.

### Median Benchmark Ratios from Public Companies

The following four pages set out median benchmark ratios from public companies for four of the five classes of Application Software covering the last three years. Internet companies are discussed later.

## Valuing Software and Internet Companies

### *Enterprise (Business) Software*

	<b>1996</b>	<b>1997</b>	<b>1998</b>
<b>Operating</b>			
Gross Margin (%)	57.2	57.9	65
S G & A (%)	58.1	64.9	46.4
R & D (%)	17.6	17.9	12.6
Net Margin (%)	3.8	-1.4	10.6
<b>Financial</b>			
Current Ratio	2.6	2.6	1.7
Receivables (days sales)	99.6	95.8	103
Payables (days)	59.8	52.6	48.4
Working Capital (days)	156.4	177.5	95.5
<b>Efficiency</b>			
Asset Turnover (times)	1	1	1
Sales/Employee (\$'000)	160.2	136	205.1
Return on Assets (%)	6	0.8	18.5
Return on Equity (%)	7.4	0.8	21.4
<b>Valuation Multiples</b>			
Sales	2	2.8	3.6
Cash Flow	17.1	13.2	25.9
Net Income*	17.9	35.6	37.4
Book Value	2.7	4	8.5

*\* excludes loss companies*

*Source: Deloitte & Touche Financial Advisory Services Group*

## Valuing Software and Internet Companies

### *Packaged Software*

	<b>1996</b>	<b>1997</b>	<b>1998</b>
<b>Operating</b>			
Gross Margin (%)	68.5	68.7	70.7
S G & A (%)	68.1	74.0	62.5
R & D (%)	21.1	24.4	18.4
Net Margin (%)	(4.1)	(12.1)	3.7
<b>Financial</b>			
Current Ratio	2.4	2.4	2.2
Receivables (days sales)	66.6	77.1	58.3
Payables (days)	76.6	67.9	67.7
Working Capital (days)	189.4	157.5	163.7
<b>Efficiency</b>			
Asset Turnover (times)	0.9	1.0	1.0
Sales/Employee (\$'000)	146.7	146.6	274.2
Return on Assets (%)	(0.7)	(1.7)	10.1
Return on Equity (%)	(2.9)	(6.4)	7.3
<b>Valuation Multiples</b>			
Sales	1.7	2.0	2.1
Cash Flow	(0.8)	(1.1)	12.2
Net Income*	16.8	38.5	22.7
Book Value	2.5	3.2	4.2

*\* excludes loss companies*

*Source: Deloitte & Touche Financial Advisory Services Group*

## Valuing Software and Internet Companies

### *Engineering Software*

	<b>1996</b>	<b>1997</b>	<b>1998</b>
<b>Operating</b>			
Gross Margin (%)	78.1	71.8	76.3
SG&A (%)	62.3	64.7	61.9
R&D (%)	21.4	19.9	24.8
Net Margin (%)	(4.1)	5.2	8.6
<b>Financial</b>			
Current Ratio	2.4	2.4	2.1
Receivables (days sales)	74.0	75.8	76.0
Payables (days)	46.1	59.6	56.4
Working Capital (days)	166.4	161.0	124.6
<b>Efficiency</b>			
Asset Turnover (times)	0.9	0.9	1.0
Sales/Employee (\$'000)	174.3	173.0	217.8
Return on Assets (%)	11.1	7.3	12.2
Return on Equity (%)	8.0	4.9	11.0
<b>Valuation Multiples</b>			
Sales	2.2	2.0	2.6
Cash Flow	17.1	14.2	18.2
Net Income*	17.9	35.6	16.1
Book Value	2.7	4.0	3.4

*Source: Deloitte & Touche Financial Advisory Services Group*

## Valuing Software and Internet Companies

### *Edutainment Software*

<b>Operating</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>
Gross Margin (%)	56.9	36.8	50.2
SG&A (%)	64.2	60.7	47.1
R&D (%)	26.1	27.4	15.1
Net Margin (%)	(18.9)	(22.8)	5.1
<b>Financial</b>			
Current Ratio	2.1	1.6	3.1
Receivables (days sales)	82.7	82.0	62.5
Payables (days)	70.5	66.0	53.0
Working Capital (days)	153.3	107.4	142.6
<b>Efficiency</b>			
Asset Turnover (times)	0.8	0.9	1.3
Sales/Employee (\$'000)	152.0	141.2	448.7
Return on Assets (%)	(6.8)	(25.9)	15.4
Return on Equity (%)	(10.1)	(5.9)	12.5
<b>Valuation Multiples</b>			
Sales	2.0	2.0	3.3
Cash Flow	(0.8)	(1.2)	26.2
Net Income*	16.8	34.8	29.6
Book Value	2.5	3.1	4.4

*\* excludes loss companies*

*Source: Deloitte & Touche Financial Advisory Services Group*

### **The Internet**

As previously stated, we believe that the Internet will change much of the way business is done in North America. To quote Andy Grove, Chairman of Intel: "In five years' time, all companies will be Internet companies or they won't be companies at all".

The growth of the Internet has been enormous since the creation of browsers that allow easy surfing of the Worldwide Web in 1994. In June 1998, the Internet was estimated to be an "ecosystem" comprising 13 tetra bytes of data; this is almost as much as the contents of the Library of Congress, estimated at 20 tetra bytes.

The following table, using information from International Data Corporation Canada, sets out estimates of the number of Internet users, 16 years or over, for the years 1995 to 1998 in the major markets of the world. It also includes projections for the years 1999 to 2003. The tables shows that over the past four years the American share of the Internet dropped from 70% to 44% and is projected to decline to 35% in the next five years.

## Valuing Software and Internet Companies

Millions	Estimates				CAGR
	1995	1996	1997	1998	
US	9.7	23.2	38.9	62.8	58%
Europe	2.2	8.3	22.7	40.9	260%
Rest-of-World	2.0	6.7	25.2	38.5	271%
Total	13.9	38.2	86.8	142.2	121%
US Share	69.8%	60.7%	44.8%	44.2%	

  

	Projections					CAGR
	1999	2000	2001	2002	2003	
US	80.8	103.1	126	148.6	177.5	21%
Europe	63.5	87.3	114	135.7	168.5	28%
ROW	51.8	66	87.3	114.3	156.4	32%
Total	196.1	256.4	327.3	398.6	502.4	27%
US Share	41.2%	40.2%	38.5%	37.3%	35.3%	

In 1997 OECD countries represented 19% of the world's population, but 81% of internet users; in the next five years the other countries will show the greatest growth. By 2001, English speaking users will be a minority on the Internet; five years later, in 2006, of the more than a billion users, than 30% will be American. Nearly everybody (93%) who is connected to the Web employs E-mail; the other top-ten uses are:

	%
Research	83
Operating Website	71
Transferring Files	62
Marketing	42
Dealing with Suppliers	41
Shopping	40
Customer Service	38
Selling	36
Entertainment	30

While "Dealing with Suppliers" (businesses) is nearly as common as "Shopping" (consumers) the amounts spent on books, CDs, personal computers, etc. are much less than commercial purchases on the Internet, as shown by the following figures from Dataquest, a San Jose consulting firm, and Forrester Research, a Boston high tech market researcher:

## Valuing Software and Internet Companies

	US\$ billion		
	Estimated	Projection	
<u>US Business to:</u>	<u>1998</u>	<u>2003</u>	<u>CAGR</u>
Consumers	8	108	65%
Business	50	800	75%

In the five years to 2003, Forrester estimates that online sales of computer hardware will grow from about \$1 billion to approximately \$15 billion; software's performance will be less impressive, rising from around \$700 million to over \$3 billion.

In 1998, advertising was the Internet's principal source of revenue at roughly \$2.1 billion; it is expected to remain important reaching \$11.5 billion in 2003. Online advertising is now mainly banners on portals. By 2001, according to eBusiness Journal, 58% of advertising will be sponsorship, 26% banners, and 6% "Interstitials"; the remaining 10% will be "something new".

In 1998, the United States started to enter a period of hyper growth in E-Commerce, which is reflected in the rates shown above. However, the Internet is a worldwide phenomenon; according to Forrester, Canada, Britain and Germany are all likely to reach this state in 2000, with Japan, France and Italy following by 2002. On a world-wide basis, eMarketer, a New York research firm, projects Internet revenues will rise from \$98 billion in 1999 to \$1.2 trillion in 2003.

Companies are using the Internet for various purposes: some for direct connections with customers, others, to intensify relationships with trading partners. Cisco receives about 78% of its orders through the Internet; half of those pass through its systems with the customers' cheque the first documents touched by one of its staff.

Safeway allows hundreds of suppliers' direct access to its "data warehouse", giving them real time information about how their products are selling in every store. Companies able to take advantage of the Internet to lower their costs and improve customer service increase their returns and are given noticeably higher values.

### Classes of Internet Companies

CVS adopts nine main classes of Internet companies:

- Equipment Suppliers to whom the Internet is an important and growing part of their business.
- Backbone Operators that transmit the data around the world; It is unlikely that you will ever be asked to value any of them, as most are publicly-traded telephone companies.
- Facilitators such as Internet Service Providers that give Web access to individuals and companies; some of them also supply other services, such as Website hosting, Webpage

## Valuing Software and Internet Companies

design and telephone capabilities over the Internet. Recurring revenues have a great bearing on their value. Many are privately owned and may need a valuation.

- Portals which offer a broad range of information gathered from many sources, together with links to suppliers of goods and services. Mainly financed by advertising, this sector is also dominated by public companies and unlikely to generate valuation work.
- Virtual Retailers that sell goods or supply services to firms and consumers. This category, which comprises all ".com" companies, has a mix of public and private companies, some of which may require valuations.
- Marketplaces that assist buyers and sellers in finding each other, either through auctions or through "virtual agents". Many of those are private; at some point, they may need further financing, which will likely lead to a valuation.
- Consultants that assist organizations in becoming Internet-ready or act as their agents to sell advertising space. Unlike Facilitators they lack recurring revenue. Again, a few of these are public, but the private firms may require valuations.
- On-line Add-ons that comprise the Internet affiliates of existing organizations, such as retailers. These may be valued independently or as part of their parent.
- Software Publishers that develop and distribute the software needed for the "Net" to function.

### E-Commerce

One commonly used term with respect to the Internet is e-Commerce; this category includes businesses of four types: portals, virtual retailers, consultants, and on-line add-ons. However in our view there is more to e-Commerce than selling goods or information over the Internet. It is the process of re-defining how governments, citizens, businesses and consumers interact with each other. It is opening new markets, creating new communities of like-minded people regardless of location and is having five effects on commercial activity:

- Shifting power from sellers to buyers by granting direct access to price and product information, thus reducing the costs of changing suppliers and diminishing the role of the middleman.
- Increasing competition and lessening barriers to entry.
- Reducing transaction costs by 50% or more for organizations that can take advantage of directly reaching customers.
- Lowering profit margins as everybody knows what everybody else is charging; purchasers, acting through "Internet agents" can choose the appropriate combination of price and service.
- Enhancing the speed, range, and accessibility of information, allowing sellers of products to profitably add services.

## Valuing Software and Internet Companies

This may sound suspiciously like Utopia; it is more likely to be a series of nasty "street fights" where temporary monopolies will hold sway as better access to price and market information intensifies competition. However, differential pricing is likely to be common with increasingly rapid price changes.

The Internet is spawning thousands of new businesses every day, but they find generating profits much harder than in the conventional world; however, in 1999, e-Commerce is expected to add nearly two-thirds of a percentage point to US GDP. Lou Gerstner, chairman of IBM, describes the new "dot-com" companies as:

“...fireflies before the storm - all stirred up, throwing off sparks. The storm that's arriving - the real disturbance in the force - is when the thousands and thousands of institutions that exist today seize the power of this global commuting and communications infrastructure and use it to transform themselves. That's the real revolution.”

Jack Welch, chairman of GE, recently declared that the Internet was the biggest force he had seen in a long career; his firm has developed the Trading Process Network that enables its suppliers to easily and quickly bid for GE component contracts. This system, which handles over \$1 billion of transactions, has reduced procurement time by 50%, processing costs by 33%, and the cost of goods purchased by 5% and 50%, averaging 15%.

Many Internet businesses are based on advertising, whose expected growth was discussed above. In 2004, the Internet is projected to rival radio as the fourth largest US media, ahead of magazines and yellow pages, but behind TV, newspapers and direct mail. In that year, worldwide online expenditures are anticipated to be \$22 billion (8% of the total) for a 41% compound annual growth rate.

Advertising revenues will not be spread as widely as they are currently, but they are expected to go mainly to websites that actually deliver viewers. At present, about 15% of online advertising is performance-based, with the rest on a CPM (cost-per-thousand) click-through basis. By 2004, Forrester expects the performance portion to rise to 50%.

All of this activity has not produced significant returns. The 25 largest Internet companies (AOL, eBay, Yahoo!, etc.) collectively generated around \$5 billion in revenues and losses of \$1 billion in 1998; in comparison, IBM, which has a market capitalization of 20% of this group, had revenues of about \$20 billion from Internet and e-Commerce related activities, on which it makes money.

One important issue is online privacy, the subject of skirmishes between the United States and Europe over what EU regards as a lax US approach. This issue is central to the future of e-Commerce. Both businesses and government agencies need education in the field. Despite the

## Valuing Software and Internet Companies

proliferation of "privacy protection policies", there is understandable concern that self-regulation is, at best, a partial solution.

Business abuse is just one side of the issue; limits are also needed on governments' power to invade the privacy of citizens. As more and more people discover the ease with which personal information is captured and replicated, the pressure for tougher privacy protection will increase.

### Valuing Internet Companies

In valuing Internet companies, one must:

#### *Investigate the business model*

There are three traditional business models: the sale of goods, the supply of services, and the attraction of viewers for advertisers; all three are used on the Internet. As in broadcasting, the trend is to offer "free" sites, paid for by advertising. When Microsoft stopped charging for its online magazine, Slate, readership quadrupled and the lost revenue was more than replaced from increased advertising.

#### *Monitor trends in traffic, pageviews and unique visitors*

As most Internet companies are significantly dependent on advertising, an important statistic is pageviews, the number of screens of information pulled up by visitors to the Web-site; each pageview represents an advertising opportunity.

One way of comparing the relative values of Internet companies is the market capitalization divided by monthly pageviews; another is the market cap per unique visitor per month.

#### *Analyze the Website*

Far too many customers are discovering that the Internet's most compelling features, convenience and ease of use, are being offset by poorly designed Websites with cumbersome registration characteristics. Forrester Research found that two-thirds of consumers abandon their electronic shopping carts without making a purchase, due to the complexity of making a transaction.

Microsoft estimates that with every additional "click" needed to make a purchase, 20% of the audience disappears; this means that a Website that needs four clicks rather than one for a sale will lose nearly half its potential purchasers. As part of any valuation, it is essential to verify that the company has all legal ownership rights relating to its Website and trademark protection for its domain name.

#### *Track the growth in customers, revenues and market share*

If the number of customers is not growing faster than the number of users, the company is not likely going to last. The concept is to "Claim the Territory" and obtain market share. On the

## Valuing Software and Internet Companies

Internet, there are huge advantages to being first. People are creatures of habit; once they adopt a site as their homepage, they are unlikely to switch to another. A successful enterprise should achieve double digit growth in customers on a quarter-over-quarter basis, and triple digit year-on-year. Revenues should increase at least as fast as customers.

### *Understand the customers and their potential*

One approach to valuing an Internet company is to establish the characteristics of the customers and the long term potential revenue. Public company market capitalizations per customer suggest that an online security trader is worth about ten times a CD purchaser. The average sale per customer is also important and can vary widely among similar organizations. Among online stock brokers, Ameritrade clients, on average, outspend those of E\*Trade by \$75.00 a day.

### *Comprehend the process and cost of acquiring new customers*

There is no walk-by traffic on the Internet. Browsers must first be attracted to the website and then enticed to buy. Retailing on the Internet is more competitive than a local shopping centre and much more so than main street. One successful means of attracting visitors to a website is advertising both on and off the Web.

Banners on Portals combined with hyperlinks were the first. Some sites are now supplementing this with Web radio; there are about a thousand US Webcasters transmitting broadcast signals over the Internet: Yahoo!, through Broadcast.com, operates 385 of them. Radio is also an effective external medium; many people surf the Web and listen to the radio at the same time. Radio is also a good forum for the "warm and fuzzy" advertising necessary to build brands for Web start-ups. Some organizations also use billboards or magazines, but these do not appear to be as successful as other media.

The cost of getting customers is important and must be considered in relation to the revenues generated. A red flag goes up if a company spends more on acquiring a customer than it can make back in twelve months. The final factor is churn, which tends to be lower online than in conventional transactions. One bank found that the rate of retention among customers who bank primarily online was nearly five times as those using branches.

### *Determine the impact of the "Brand"*

The key determinant of the strength of a brand on the Internet is "does the concept meet a need?" The second is the degree of promotion leading to the ability to attract traffic reach, and "stickiness", the average time visitors spend on the site. This last factor varies widely.

In December, 1998, the stickiest site was "gamesville.com" with the average visitor spending 246 minutes in a month; "eBay.com" ranked second at 126, followed by "msn.com" (66), the top five were completed by "yahoo.com" (60) and "hotmail.com" (57), a free E-mail service owned by

## Valuing Software and Internet Companies

Microsoft. Gamesville's average visit was more than four times that of hotmail. This stickiness would be reflected in a higher value expressed in terms of the revenue multiple.

### *Establish the trend in margins*

Many Internet purchasers are price sensitive and, as a result, e-Commerce companies tend currently to have low margins. It is important to differentiate between websites selling products, such as amazon.com and those selling information, such as yahoo.com.

The margins of those selling products are limited in two ways. The first is that the selling prices cannot exceed those of bricks and mortar retailers, while there is a limit to the discounts that can be obtained on volume purchases. The second limitation is the need to operate a fulfilment organization.

On the other hand, the costs of acquiring and delivering information are low and declining. Therefore, a firm that can obtain a dominant position in a portion of the information market can see revenues rise without any significant increase in costs.

### *Estimate future cost structure*

Internet businesses have a different mix of fixed and variable costs than those of conventional organizations. Other than the continued development and enhancement of the Website, most costs are variable. The costs of constantly improving the Website and making it more entertaining is an important factor in determining the firm's value.

### *Assess the capabilities of management*

Just as with software companies, management is probably the greatest single factor in the success of an Internet business. This requires identifying a suitable business model, executing its speed, having developed the right technologies, and gained critical mass through the effective persuasion of customers, investors and partners.

Unfortunately, the effectiveness and creativity of a company's management cannot be reduced to a single number. The same criteria apply as for software; there must be a mix of talents and the individuals must appear smart, persuasive and focussed.

### *Forecast the nature of the "Franchise"*

Various e-Commerce firms are creating numerous types of franchises. Earlier we discussed the seven classes of Internet companies. Comprehending the class applicable to the business is the first step in understanding the nature of the franchise being created. Some will be seller-controlled, some buyer-controlled, and some based on dynamic supply and demand.

## Valuing Software and Internet Companies

Seller-controlled sites depend on offering the right products or services at a suitable price; this category includes nearly all of the "Internet retailers". Potential buyers look for products in general categories and are usually willing to browse through numerous locations before purchasing.

Buyer-controlled sites attract visitors who know what they want, how much they want to pay, or both. Supply and demand sites, such as the Internet auctions, are a common and growing segment.

### *Project potential cash flows*

In the end, "the one with the biggest cash flow wins". An important part of the valuation of an Internet business is to project potential cash flows some years in the future based on estimated revenue growth and potential margins. This involves more guesswork than for traditional industries and we find it useful to develop at least three scenarios.

In the 1970s, the First Chicago Method evolved to value Venture Capital investments in development-stage companies. This is useful in valuing Internet companies, as is the "theoretical earnings multiple analysis" found in Wall Street investment studies.

### *Ensure all factors are considered*

Many investors compare Internet businesses based on the price/ revenue multiple. These vary widely. "Pratt's Stats" list fifteen Internet company sales, of which only one had earnings. The price/revenue multiples varied from 0.42 to 155; the median was 1.52, while the mean was 29.6.

Deciding the appropriate level in such an enormous range requires considering all factors, both quantitative and qualitative. Some of the items which we have not discussed and may be appropriate are: speed, culture, knowledge, customer relationships, reward systems, partners, suppliers, competitors and proprietary technology.

### *Verify Security and "Crash" Protection*

Concern about security is one of the most common objections to e-Commerce; in reality it has been less of a real problem than server crashes due to more customers trying to access it than the effective capacity of the system. Unless appropriate safeguards are in place problems are inevitable.

## Welcoming Change

Most people resist change; this can manifest itself in many forms, ranging from complete denial to open hostility. Sometimes the resistance proves effective and the status quo lives on; more often, the resisters become road kill.

## **Valuing Software and Internet Companies**

### **One Last "Caveat Valuator"**

If you are valuing a software company that does not have a dominant market share and somehow discover that Microsoft is planning to enter the category, ask your client to immediately call a board meeting to discuss drastic changes to his Business Plan.

A number of possibilities are open: try to find out if Microsoft would consider purchasing your product. This has been known to happen - I was involved in one such highly successful deal. Their philosophy is if you can get it for reasonable money, why spend time and effort developing it yourself?

Once upon a time, David did manage to slay Goliath, but it was so unique, it made history; it is unlikely to happen again.

On the other hand, you might investigate prospecting for gold in Colombia, preserving brandied peaches on a large scale, or offer to purchase the Russian space-station MIR to be placed alongside the Queen Mary in Long Beach as a new sight-seeing sensation.

### **Sources of Information**

To keep up with new trends in Software which is essential for its valuation one should read or visit as many of the following as time allows:

- Periodicals: PC Week, Computerworld, Information Week, PC Magazine, PC World, Windows magazine, etc.
- The Internet
- Industry consulting groups: Gartner, IDC, DataQuest
- Trade shows: Comdex, Supercomm, Networld+Interop, CEBIT (Hamburg)