

# VALUING SOFTWARE AND SOFTWARE COMPANIES

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## **Types of Software**

There are two types of software: Systems Software and Application Software.

Systems Software is special; there are only about 70 types in general use, but every computer needs it to function. It includes not only the operating system, but also service and utility functions, such as data management, sorting, merging & conversion, system accounting, diagnostics, performance measurement, report generation, and security control. As it is highly unlikely that you will ever have to value Systems Software, we will not discuss it.

Application Software is that required by any computer to carry out specific functions related to the management, storage and processing of data. We all use it in our offices, for accounting, spread sheets and word processing.

This presentation deals with Application Software and covers some of the problems of valuing it and the organizations that create it. There are various types of Application Software based on different technologies and serving distinct markets.

- Enterprise: Software products on various platforms that control business processes and functions. They may serve one vertical market (such as Financial Services), or provide a function (such as Document Retrieval Management or an Accounting System) in many vertical markets.
- PC Packaged: Software that runs on a personal computer and is normally used to improve individual productivity, such as word processors, spread sheets and personal information managers.
- Engineering: Software on various platforms that assists in the design and production of items ranging from food to mechanical devices, computer chips and, yes, even other software.
- Edutainment: Software usually running on PCs that offers entertainment or education, mainly oriented to the under twenty crowd. The above mentioned video games for pigs also falls into that category, but I refuse to draw any parallels to couch potatoes.

## Valuing Software and Software Companies

### What Makes Software Different From Everything Else?

- Society is dependent on computers which can't function without software; it is therefore needed by nearly every business and millions of consumers.
- The market life of any particular piece of software is limited, generally assumed to be about two years by investors and tax departments; this is very important when valuing it. However, established programs can often be enhanced to prolong their lifespan over several versions.
- Software is the ultimate intellectual property. Once it has been created, making as many copies as are wanted is easy and cheap; it has therefore a cost structure completely different from that of most goods and services.
- The barriers to entry are normally at the marketing, not the development level. This means that one first must find out if anyone really wants the product, and what advantage it has 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. Standards also exist for software, but as change happens so rapidly, most are determined by the market, before the official bodies can complete their work.
- Past losses and the amount of shareholders' equity have little importance on software companies' values; in general, these depend on future prospects.
- The major capital expenditure is on R&D, which is written off as incurred. For valuations, such amounts are capitalized to the extent that software assets have been created.
- Factors such as "distribution channels" and "installed base of users" are important intangible assets that do not normally appear in the financial records of a software company.
- Downloading from the Internet is having a profound effect on deployment rates and pricing policies of the whole industry.
- Some types of software, such as "search & retrieval engines", are becoming commodities available on the Internet, sometimes free.

### 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. With software, the opposite is true. As manufacturing and distribution costs tend to be fixed and rather low once development is completed, it has increasing economies of scale. This is demonstrated by the following example based on a PC packaged product:

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	<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%

The result is that whoever is ahead tends to get further ahead, and temporary monopolies are quite normal.

### There are No Rules of Thumb

- In many industries, there are broad trends that are relatively easy for the valuation analyst to understand, as well as the long term effects that have a bearing on that sector of the economy. With numerous transactions, "Rules of Thumb" have become established.
- There are very few broad trends or long term effects in the software industry and certainly no such universally applicable rules. Nearly every situation is an exception in some way or other.
- There are lots of Software companies, but they usually don't have a high value, as shown by the statistics on Software Acquisitions for the last three and a half years:

	<b>Transactions</b>	<b>Median Size</b>
\$ million		
1994	137	10.5
1995	253	8.6
1996	290	10.5
1997 (to June 30)	171	7.3

Those statistics may not seem out of the ordinary until it comes to specifics, such as the position taken by the IRS; very often, looking to public comparables, they IRS assumes that a software company's value is too high, a fixation that can have rather disagreeable effects:

- The tax position of an employee granted an option;
- Discouraging investors and curtailing the ability to raise financing;
- In some States, adverse impact on divorce proceedings.

## **Valuing Software and Software Companies**

### **Products and Companies**

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, the opportunity and intention to innovate, and its relationships with customers, distributors, suppliers etc.

### **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 and replaces the software, your client should not count on gains on the shares putting his children through college, or using them to set up trust funds for the grands.

For larger entities, the Value of the Company consists of the Value of the Products, plus:

- The Franchise Value of the organization
- Skilled staff
- Products under Development
- Relationships with Customers, Distributors, Suppliers, etc.
- Opportunities for Innovation

In most businesses, selling prices are dictated by the market with margins determined by costs. With software, the price is based on what it can do for the customer; therefore, price, not cost, is the determinant of profit and key to value.

Our Case Study deals with these items.

# Valuing Software and Software Companies

## Factors Affecting a Valuation

- Technology
- Markets
- Delivery Methods
- Management
- The special edge that enables the firm to charge a premium for a product in high demand.

### *Technology*

The product life cycle is fundamental:

- It may be driven by hardware capabilities or customer needs
- Economic lives have been decreasing
- Yet the "tail" is becoming longer
- Intranets within organizations and the Internet linking them are having a fundamental impact
- There is a shift from in-house creation (BUILD) to customization of packaged products (BUY)
- The Year 2000 will be here in 26 months

The degree of elegance of the solution is important:

- The choice of Operating System and language
- The suitability of the architecture
- The quality of the Source Code and completeness of its documentation and comments
- Ease of modification

The programming team:

- Number of people
- Their experience
- Purpose-oriented internal communications

### **The Platform/Operating System:**

- A trend to move from mainframe to Client/Server
- The importance of networking
- Growth of NT v UNIX

### **The Market**

- Size: Value increases with size due to increasing returns
- Growth: Value is enhanced by a rapidly growing market
- Usage: The more people use or might use a product, the more valuable it is

## Valuing Software and Software Companies

### *Market Cycle:*

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

The CHASM can be enormous; some companies/technologies are never able to cross it.

#### **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

Once a product is starting to be bought by the Pragmatists, its value jumps.

### *Size and Growth of Market*

- Every piece of Software uses a selected set of technologies; in this industry, technologies change very rapidly. When a new technology is introduced, it may allow a competitive product to offer better features. Depending on circumstances, the original product may not be able to take advantage of the new technology, because certain elements may be mutually exclusive. In this case, the potential market will be reduced and the value decreases
- The demonstrated size of the market for the competitive product and the 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 in a stagnant market can totally change growth rates

### **Competition**

If there is no competition, there may be no market. On the other hand, enormous mass markets have been created for products nobody knew they wanted, such as hi-fi's, condos, cruises or health

## Valuing Software and Software Companies

food stores. In 1950, Thomas J. Watson Jr., Executive Vice President of IBM, approved creation of their first general purpose scientific computer, as they thought they "could find customers for as many as 30 machines". At the time, there were probably only a dozen computers in existence.

Almost every piece of software is:

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

All three threats may occur simultaneously

### Positioning

- Determines the place the software occupies within two interrelated systems:
- The customer's choices for purchase
- Companies interacting to make a market
- For valuation analysts, the second system is more important, as it determines the first

### *Market-Maker's View of the 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>• Monkey</li></ul>	Barbarians v Citizens
	<b>Established Product</b>	<b>New Product</b>

Understanding this situation is important to the valuation analyst, as a firm's future and the prospects for the product are influenced by Management's perception of itself. Each role implies different power relationships, alliances, and competitors.

A firm that does not recognize itself as one of the 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.

## Valuing Software and Software Companies

### Software: The 'B' Movie

- The Old Guard - Gorilla: The only question is whether it is a benevolent or cruel dictator; altruism rarely enters the picture
- The Old Guard -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 they are not interested in expansion but prepared to defend their turf to the death
- The Old Guard -Monkeys: Their goal is to be the low-cost supplier who is 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
- Natives: The mirror image of the Imperialist; 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 profit and are in for the long haul
- Forty-Niners: The most different 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 itself around mainframes
- Citizens: Related to the Old Guard, they fight a war of attrition and counter-attack with new technology to preserve their position

### Delivery Methods

#### *Marketing*

- Nothing sells itself
- Does management understand the market and how to reach it
- Marketing is rarely taught in Engineering, Science or Math Faculties

#### *Distribution*

Is the distribution method geared to the needs of the sector?

- Direct selling is effective, with good margins, but very expensive
- Channel marketing through Systems Integrators or VARs (Value Added Resellers) requires a totally different structure
- The Internet offers low-cost distribution, usually at reduced prices; it can be regarded as the software five-and-dime of the nineties

## Valuing Software and Software Companies

### *Sales Cycle*

- Its length determines the appropriate selling method
- PC packaged products can be sold in a few minutes
- A sale of Enterprise software to a government agency can take as long as two years

### *Capital*

- How much capital is needed to see the company through its product and sales cycles?

## Management

### *Range of Talents*

- A wide range of skills is of greater importance in a software company than in most businesses
- One-man shows don't fly

### *Track Records*

- It is very difficult to analyze how much was due to the individual and how much to the team and circumstances
- A failure, or even two, do not necessarily mean bad management, but may become part of the learning curve

### *Enthusiasm and Tenacity*

- Is everyone willing to put in the hours and accept the risks necessary to make a software company grow

### *Realism*

- Do the projections look like a hockey stick
- A \$5 million company can grow by more than 100% for a couple of years, but not a \$100 million business; very few firms go from nothing to \$50 million in two years

### *Ownership*

- How much of the company does management own
- Outside ownership and directors are essential to avoid complacency and ensure responsiveness to the market

### *Avoid*

- In this industry, beware of sharp dressers, and don't let bankers or lawyers make the decisions; "grunge is good"

## Valuing Software and Software Companies

### Approaches to Valuation

#### *Cost Based*

- Original cost to create the product; this is usually very high as it may involve many blind alleys
- Reproduction Cost of Software; this is generally very low
- Replacement Cost of Software and Documentation, reflecting not only the expenditures to recreate, but also "time to market" and the cost of re-establishing the user/dealer base
- Net Worth/Goodwill Value

#### *Income Based*

- Capitalization of Net Income (Net Income Value)
- Capitalization of EBITDA (Earnings Before Interest, Taxes, Depreciation & Amortization)
- Discounted Cash Flow (Adjusted Present Value):
  - Use managerially relevant segments for the existing operations and value each of them separately
  - Segregate the tax shield
  - Identify potential opportunities

#### *Transaction Based*

- Multiple of Revenues
  - Trends
  - Substantial variations

### 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.

The power to recognize change early and understand the forces behind the trend is one of life's greatest gifts. Taking advantage of upcoming change before it permeates common knowledge has laid the foundation for many fortunes.

### A Caution

If you are in the software industry, do not have a dominant market share, and Microsoft is entering your category, call a board meeting and consider drastic changes to your Business Plan.

## Valuing Software and Software Companies

### Median Revenue Multiples

According to Broadview Associates, a specialised investment banking firm located in Fort Lee, New Jersey, the Median Adjusted Price/ Revenue multiples for software company acquisitions in the last four years were:

	<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>
<b>1995</b>	1.57	2.00	2.91	2.77
<b>1996</b>	2.31	3.25	2.74	1.97
<b>1997</b>	3.36	2.65	n/a	n/a

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

### 1996 Median Benchmarks from US Public Companies

	<b>Enterprise</b>	<b>Packaged</b>	<b>Engineering</b>	<b>Entertainment</b>
<b>Operating</b>				
Gross Margin (%)	57.2	68.5	78.1	56.9
S G & A (%)	58.1	68.1	62.3	64.2
R & D (%)	17.6	21.1	21.4	26.1
Net Margin (%)	3.8	(4.1)	5.2	(18.9)
<b>Financial</b>				
Current Ratio	2.6	2.4	2.4	2.1
Receivables (days)	99.6	66.6	74.0	82.7
Payables (days)	59.8	76.6	46.1	70.5
Working Capital (days)	156.4	189.4	166.4	153.3
<b>Activity</b>				
Asset Turnover (times)	1.0	0.9	0.9	0.8
Sales/Employee (\$'000)	160.2	146.7	174.3	152.0
Return on Assets (%)	6.0	(0.7)	11.1	(6.8)
Return on Equity (%)	7.4	(2.9)	8.0	(10.1)
<b>Valuation Multiples</b>				
Sales	2.0	1.7	2.2	2.0
Cash Flow	12.8	(6.7)	17.1	(0.8)
Net Income	15.1	(0.1)	17.9	(0.8)
Book Value	3.0	2.6	2.7	2.5

*Source: Deloitte + Touche*

## **Valuing Software and Software Companies**

### **Sources of Information**

- 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)

### **CREATION OF VALUE IN A SOFTWARE COMPANY – STAGE 1: SUMMARY OF 1994 VALUATION REPORT**

#### **Background**

In July, 1994, Joiner Inc. ("Joiner", or the "Company"), a systems integrator concentrating on E-mail systems for Financial Institutions, engaged Corporate Valuation Services Limited ("CVS") to value the Company as at its fiscal year end, May 31, 1994. Joiner was owned by three partners with holdings of 40%, 40% and 20% respectively; one 40% owner wished to retire. The purpose of the Valuation Report was to establish the amount to be paid for his shares.

The cash available for their purchase was limited, as the Company was relatively small (revenues of \$2,900,000) and in the process of becoming a products rather than services business. Therefore, the partners had agreed that \$1,250,000 of the value would be converted pro rata into non-voting, non-participating Class A shares, with a stated value of \$0.05 a share, but redeemable at \$10.00 each. The remaining common shares, held by the retiring partner, would be purchased equally by the other 40% shareholder and a number of key employees.

#### **The Company**

Joiner had been formed in 1985 as a supplier of electronic office automation services; its corporate mission was "to develop, market and support electronic messaging connectivity throughout the world". Between 1987 and 1992, in conjunction with Soft-Switch, Inc., it developed five messaging Gateways; these connected LAN-based electronic mail ("E-mail") systems directly with other such systems, with host-based units relying on IBM's messaging protocols ("SNADS" or "PROFS"), or with "Soft-Switch Central E-mail Systems". These products were sold exclusively by Soft-Switch to Fortune 500 companies; Joiner was not permitted to sell them, but could use them in its systems integration business.

Soft-Switch's exclusive distribution rights expired in 1992, and the Company began creating a direct sales organization for these products; this was in competition with Soft-Switch, which retained a non-exclusive license to use the technology in its own systems.

## Valuing Software and Software Companies

In 1992, one customer, a major life insurance company, acquired a smaller competitor; this newly merged organization found itself dealing with five different E-mail systems, both LAN and host-based. The Company was invited to propose a solution to the problem. It installed Gateways, linking the various systems, and also developed the initial version of a "Directory Exchange". This per-mitted users of one E-mail system to enter E-mail addresses on another system in their normal format, as the Directory Exchange synchronized the directories of all five E-mail systems.

As well as selling Gateways and a Directory Exchange, in 1994, the Company became a Value Added Reseller (VAR) of "OpenMail", a Hewlett-Packard UNIX-based E-mail system. The objective was to offer large organizations a complete range of communication solutions that would link LAN, UNIX, and host-based E-mail systems and other messaging applications.

### Operating Results

<b>Year Ended May 31</b>	<b>1991</b>	<b>1992</b>	<b>1993</b>	<b>1994</b>	<b>1995</b>
<b>\$'000</b>					<b>Proj</b>
<b>Revenues</b>					
Products	230	544	1,264	1,312	2,600
Services	<u>1,919</u>	<u>1,837</u>	<u>1,532</u>	<u>1,577</u>	<u>650</u>
	2,149	2,381	2,796	2,889	3,250
<b>Expenses</b>					
Operating	1,871	2,210	2,249	2,203	2,770
R & D	<u>93</u>	<u>221</u>	<u>293</u>	<u>464</u>	<u>625</u>
	<u>1,964</u>	<u>2,431</u>	<u>2,542</u>	<u>2,667</u>	<u>3,395</u>
Pre-Tax Profit (Loss)	185	(50)	254	222	(145)
Income Tax	<u>(43)</u>	-	<u>(47)</u>	<u>(56)</u>	-
Net Income	<u>142</u>	<u>(50)</u>	<u>207</u>	<u>166</u>	<u>(145)</u>

### Situation Analysis

#### *Strengths*

- No further R & D breakthroughs are necessary, only continued product development and improvements to create a Directory Exchange linking virtually all types of E-mail
- Very strong technical staff with considerable expertise and product management skills
- Excellent SNADS and PROFS gateway products
- Automated problem tracking system for customer support
- Experienced and dedicated Management that understands the IBM "glasshouse" mentality
- Distribution rights for OpenMail.

## Valuing Software and Software Companies

### *Weaknesses*

- Most of the existing products run on O/S 2, the others on Windows, so the developers have good experience in these, but lack UNIX and TCP/IP skills
- Only a collection of products, not an integrated product line
- Numerous versions of each product, each with limited documentation and information
- Scalability of Directory Exchange not yet demonstrated
- Customers require significant product support
- Nobody has the responsibility for testing and quality assurance
- No effective sales channels for new products
- Senior Management lacks marketing skills and international experience
- Projected losses in both 1995 and 1996 may lead to diminished support from bankers.

### *Opportunities*

- Complete backbone messaging solution
- To supply VARs and OEM customers with integrated product line that will globally interconnect over 50% of all E-mail users.

### *Problems*

- Possible loss of key people
- Slow growth of OpenMail; Hewlett-Packard could change its marketing model
- International vulnerability concerning patents and trademarks
- Lack of acceptance by large companies due to small size
- Customer dissatisfaction because of inability to put products into production on schedule
- Leap-frogging by competitors will require continued product improvement.

## Capitalization Rate

### *From Comparables*

The closest comparable US company is Attachmate, which Joiner considers to be its major competition. Attachmate filed an Initial Public Offering in May 1994. However, CVS does not consider it an appropriate comparison for the Company, as it had revenues in 1993 of \$145 million and 1993 profits of \$21,900,000 (\$0.88 a share).

The Attachmate IPO price was estimated to be between \$13.00 and \$15.00, reflecting Capitalization Rates of 6.8% to 5.9%. As the Company is a much smaller, private firm, and a minority interest is to be sold, the applicable Capitalization rate would be increased to between 9.9% and 10.8%.

## **Valuing Software and Software Companies**

### **Build-Up Approach**

The specific risks applicable to the Company are as follows:

#### *Management*

Experienced and dedicated but with limited marketing knowledge; with the changing nature of the business, this area will be crucial to the Company's success.

#### *Size*

The Company is small and competes against larger and better known entities; its target customers, Fortune 2000 companies, tend to be concerned about continuity among suppliers.

#### *Product Range*

At the Valuation Date, the Company did not have a complete product range, but offered a number of individual items; additional products are expected to be developed and an integrated suite for backbone messaging completed by May, 1995.

#### *Dependence*

The proposed strategy involves the Company becoming dependent on the success of Hewlett-Packard's OpenMail. This is a UNIX product, and there is a substantial possibility that PC-based LANs rather than UNIX products will replace mainframe E-mail.

#### *Location*

Joiner is located in Canada and competes in the international market. The bulk of its costs will be in Canadian dollars and much of its revenue in US funds. At present exchange rates, the Company is competitive; however, its profitability would be adversely affected by any strengthening of the Canadian currency.

#### *Ease of Entry*

The connectivity business, which links proprietary products from Joiner with those of other vendors, does not require substantial physical resources, as it is based on intellectual property. Therefore, there are few barriers for an experienced programming team to commercialize in-house developed products; 12% of organisations with E-mail use "home grown" messaging software.

## Valuing Software and Software Companies

As shown below, the Build-up approach gives a Capitalization Rate of 9.7%.

	%
<i>Risk Free (10-year Bond) Rate</i>	7.3
<i>Equity Risk Premium</i>	<u>13.3</u>
<i>Base Return</i>	<u>20.6</u>
<i>Specific Risks</i>	
Management	1.0
Capitalization	0.0
Size	1.0
Product Range	1.0
Dependence	3.0
Environmental Impact	0.0
Government Regulations	0.0
Location	0.5
Ease of Entry	1.0
Profit Margins	0.0
Technology in Use	<u>0.0</u>
Total	<u>7.5</u>
<i>Discount Rate</i>	28.1
<i>Growth Rate</i>	<u>(17.5)</u>
<i>Capitalization Rate</i>	<u><u>10.6</u></u>
<i>Earnings Multiple</i>	<u><u>9.4</u></u>

### *Transaction Based Value*

For a Transaction Based Value, CVS looked at acquisitions in late 1993 and early 1994, four in the connectivity industry and three general software companies. All the transactions related to businesses much larger than the Company, and therefore their price/sale ratios need adjustment. The transactions were:

<b>\$ Million</b>		<b>Date</b>	<b>Sales</b>	<b>Price</b>	<b>Price/Sale</b>
<b>Connectivity</b>					
SoftSwitch	Shares	6/94	23.6 E	54.6	2.31
KEA System	Assets	12/93	9.6	10.1	1.05
Beyond Inc.	Shares	3/94	9.0 E	17.5	1.94
DaVinci	Shares	6/94	5.0 E	8.5	1.70
<b>General Software</b>					
KnowledgeWare	Shares	7/94	130.0	143.0	1.10
Pilot	Shares	4/94	37.0	40.0	1.08
Rapid Entries	Shares	12/93	5.6	7.5	1.34
<i>E - Estimate</i>					

## Valuing Software and Software Companies

The Company is noticeably smaller than KEA or any of the other firms considered, and only a minority interest will be sold. In view of this, CVS believes that the appropriate price/sales ratio is 0.566, based on applying a minority discount of 23%, and a size discount of 30% to the KEA ratio. On this basis, with fiscal 1994 revenues of \$2,889,000, the Transaction Based Value of the Company is \$1,635,000.

### *Net Worth/Goodwill Value*

<b>Financial Position</b>	<b>\$,000</b>
Cash	144
Receivables	592
Tax recovery	471
Prepaid	<u>16</u>
	1,223
Equipment-net	<u>204</u>
	<u>1,427</u>
Payables	157
Deferred Revenue	<u>180</u>
	<u>337</u>
Net Worth	<u>1,090</u>
	<u>1,427</u>

### **Value of R & D**

Most software companies write off R & D as incurred; however, it usually has a significant value; this is especially true when, as with Joiner, the business is changing from a supplier of services to a marketer of products. Based on an average life of eighteen months for a computer program, the first approximation of the value of the R & D is 50% of the expenditures incurred during the last three years, after tax at the Company's effective rate of 23%.

### **Value of Installed Base**

The other unrecorded asset of the Company is its installed base. At May 31, 1994, there were 720 installations, including those sold by Soft-Switch, for which the Company receives royalties. Based on the cost of acquiring a customer, each of these is worth at least \$250, giving a value of \$180,000 for the installed base.

## Valuing Software and Software Companies

### Indication of Fair Market Value

Three approaches were considered, which gave results ranging from \$1,635,000 to \$1,711,000, with a mean of \$1,664,000.

		<b>\$'000</b>
<b>Net Income Value</b>		
1994 Net Income	<u>166</u>	
Capitalized at 9.2%		<u>1,711</u>
<b>Transaction Based Value</b>		
1994 Revenue	<u>2,889</u>	
Multiple 0.566		<u>1,635</u>
<b>Net Worth/Goodwill Value</b>		
1994 Tangible Net Worth	1,090	
Three years R & D less 50%	489	
Less Tax at 23%	(112)	
Installed Base	<u>180</u>	<u>1,647</u>

### Conclusion

Our conclusion was that the Fair Market Value of all the shares was \$1,650,000; this was allocated \$1,250,000 to the new class A shares and \$400,000 to the common. Therefore, the purchasing partner and employees had only to spend \$160,000 to buy out the retiring individual.

### Questions

As a valuation analyst, do you agree with the approaches selected?

Would you consider the information supplied sufficient?

## CREATION OF VALUE IN A SOFTWARE COMPANY – STAGE II: SUMMARY OF 1996 FINANCING

### What Happened?

In the fall of 1994, Joiner asked CVS for advice as to how to in-crease the value of the enterprise. At that time, Management had become aware of the problems of developing for more than one operating system: OpenMail used UNIX, some of the Gateways and Directory Exchange ran on OS/2, while the remainder of the products were on Windows.

An analysis of the principal E-mail systems showed that in 1995 new products would be introduced by Microsoft (Exchange), Lotus (Notes 4.0) and Novel (Open Messaging Environment). As all of

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these ran on Windows NT, which in version 3.5 was becoming a widely accepted, improved product, CVS recommended that Joiner standardize on this platform for all its proprietary products.

Late in 1994, an approach was made to Joiner by Control Data Systems, a systems integrator serving Fortune 100 companies. Control Data wished to make use of the Company's talents and was prepared to invest \$925,000 for a 50% interest; the funds would be used to redeem Class A shares. As the objective was to make use of the Company's systems integration experience and not continue development of the products, the approach was rejected. However, the offer indicated that the organization and installed base could have a higher value than reflected in the 1994 Valuation Report.

### Operating Results

The results for the two fiscal years to May 1996, as shown in the table below, were disappointing. The major reason was that Directory Exchange, due to be completed in October 1995, did not enter Beta testing until March 1996. At the same time, sales of existing products dropped off sharply, which was mainly due to increased competition following IBM's acquisition of Lotus and its subsidiary, Soft-Switch in 1995.

While Management was successful in controlling operating costs, it could not offset the poor sales; these problems were accentuated by the resignation of the VP Sales, who left to start his own business in late 1995. Based on this record, investors doubted that Joiner would reach its 1997 projections.

Year Ended May 31	1995 (Proj)	1995 (Actual)	1996 (Proj)	1996 (Actual)	1997 (Proj)
					\$000
<b>Revenues</b>					
Products	2,600	2,264	4	1,590	4,270
Services	<u>650</u>	<u>742</u>	<u>500</u>	<u>627</u>	<u>780</u>
	<u>3,250</u>	<u>3,006</u>	<u>504</u>	<u>2,217</u>	<u>5,050</u>
<b>Expenses</b>					
Operating	2,770	2,356	4,000	2,360	3,080
R&D	<u>625</u>	<u>876</u>	<u>900</u>	<u>639</u>	<u>925</u>
	<u>3,395</u>	<u>3,232</u>	<u>4,900</u>	<u>2,999</u>	<u>4,005</u>
Pre-Tax Profit (Loss)	<u>(145)</u>	<u>(226)</u>	<u>(4,396)</u>	<u>(782)</u>	<u>1,045</u>

### Changes in the Market

As LANs became more prevalent in the mid-1990s, E-mail was one of the major applications. In 1995, the number of electronic mail boxes grew by 75% to more than 90 million, of which about 62 million were in the United States and Canada.

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This rapid growth resulted in a number of problems:

- The largest supplier, IBM/Lotus, with over 20% of installed E-mail boxes, uses four different addressing schemes (cc:mail, Notes, PROFS and SNADS), none of which are compatible with those of Microsoft (MS Mail and Exchange), the second largest supplier.
- Merger activity had resulted in large corporations operating multiple E-mail platforms.
- There is a limited number of means of exchanging messages and documents between users of different E-mail systems.
- It is extremely difficult to efficiently manage the addresses of large groups of E-mail participants within a large organization using several systems so that everyone can communicate with everyone else.

The last problem, directory synchronization, had become such a significant issue by early 1996 that, in a survey by Forrester Research (Boston) of 34 Fortune 1000 companies, 29 (85%) listed "no directory synchronization" as their answer to the question "what prevents further rapid growth of E-mail?"

In view of this and the collapse of the market for OpenMail, the Company changed its focus and made Directory Exchange its principal product, aiming at the target market of Fortune 2000 companies and their foreign equivalents. A survey of 180 technical managers at such organizations indicated that E-mail is one of the three application areas where spending would increase by over 50% in 1996. Many of these firms are planning to implement strategic Client/ Server applications consisting of Notes 4.0 or Exchange.

These new products are incompatible with nearly all existing E-mail systems; therefore, to obtain major corporate sales, IBM/Lotus and Microsoft had to provide easy, flexible migration solutions that automatically converted the directories and other services to their new platforms, while ensuring reliability and efficiency.

The Company had successfully installed version 1 and version 2 of its Directory Exchange at a number of major companies, such as ManuLife Financial, Hertz, and Fidelity Investments. Version 3, which was designed to totally automate the process and be fully compatible with "Notes 4" and "Exchange", was successfully beta tested by USA Today and Exxon in the spring of 1996. Joiner in-tends to piggy-back Directory Exchange version 3 on the extensive sales campaigns underway by Lotus and Microsoft for their new products.

Running on Windows NT and intended to support tens of thousands of users, version 3 allows the SysOp to monitor and manage the whole Directory Exchange process from one single point; it enables the administrator to start, monitor and stop the directory synchronization process at any time, as well as creating the message and trace logs that track and record delivery errors and problems.

## **Valuing Software and Software Companies**

### **Competition**

Joiner's primary competitors are Soft-Switch (a unit of IBM/Lotus), Worldtalk, and Control Data Systems. The Soft-Switch product, "Lotus Messaging Switch" requires a Data General minicomputer. Including software, these systems cost a minimum of \$150,000, compared with the Company's alternative at about \$50,000. As Soft-Switch uses the Company's technology to link LAN E-mail to host-based systems, Joiner receives revenue from virtually all Soft-Switch sales.

Worldtalk entered the directory synchronization market in 1993. Although it is competitive with the Company's product on price for LAN E-mail, it does not have connectivity to IBM and other host-based systems.

Control Data also participates in directory synchronization as part of its message switching business. However, it is primarily a systems integrator and offers labour intensive solutions, which are generally not economic for Fortune 2000 customers.

### **Transaction-Based Value**

Since 1994, prices paid for software companies have increased sharply. According to an industry database from The Corum Group Ltd. in Bellevue, Washington, the average transaction in privately held software companies then took place at 1.5 times their revenues, less liabilities; by March 1996, two years later, this ratio had increased to about 2.2 times.

Because of sales dropping off and delays bringing Directory Ex-change version 3 to market, the Company's financial position had deteriorated. At its year-end, May 31, 1996, it had liabilities of \$1,152,000 and not only no working capital, but also almost no shareholders' equity. Applying a price/sales ratio of 2.2 to revenues of \$2,217,000, gives \$4,877,000 before the deduction of liabilities, and \$3,725,000 as a Transaction-Based Value of Joiner's shares.

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### Net Worth/Goodwill Value

Financial Position	\$,000	
	<u>1994</u>	<u>1996</u>
Cash	144	-
Receivables	592	503
Tax recovery	471	632
Prepaid	<u>16</u>	<u>8</u>
	<u>1,223</u>	<u>1,143</u>
Equipment-net	<u>204</u>	<u>91</u>
	<u>1,427</u>	<u>1,234</u>
Payables	157	606
Bank Overdraft	-	331
Deferred Revenue	<u>180</u>	<u>215</u>
	<u>337</u>	<u>1,152</u>
Net Worth	<u>1,090</u>	<u>82</u>
	<u>1,427</u>	<u>1,234</u>

### Value of R&D

From its own resources, between 1992 and 1996, the Company spent \$2,493,000 on R & D. In Canada, R & D expenditures by Canadian controlled companies are eligible for Scientific Research and Experimental Development (SR & ED) tax credits at the rate of 35%; such tax credits are paid in cash to a private company. Joiner qualifies, and, as shown in the Balance Sheet, was to receive a substantial tax recovery.

Adjusting the \$2,493,000 charged to R & D for the tax credits gives \$3,835,000 as the total R & D in the five years, with \$3,146,000 spent on Directory Synchronization. A further \$540,000 had been budgeted for fiscal 1997 to ensure a state-of-the-art product.

In view of the Company's lead in this area, and that it would take any competitor at least twelve months to create a similar product, CVS believes that the value of the R & D was at least \$3,146,000, the accumulated expenditures on Directory Synchronization.

### Value of Installed Base

The other unrecorded asset is Joiner's installed base. At May 31, 1996, there were 1,042 installations, including those sold by Soft-Switch. Based on the approach by Control Data, they were worth at least \$350 each, giving a value of \$365,000 for the installed base.

## Valuing Software and Software Companies

### Conclusion

Based on the numbers set out above, the Net Worth/Goodwill Value of the Company was \$3,593,000.

	<b>\$'000</b>
Net Worth	82
Products	3,146
Installed Base	<u>365</u>
	<u>3,593</u>

The two methods used gave values of \$3,725,000 and \$3,593,000, with a mean of \$3,659,000.

In April, 1996, the directors of Joiner, with the assistance of a Big Six accounting firm, decide to establish a holding company for the current shareholders and to offer 25% of the existing company for \$1,000,000. This is equivalent to a value of \$3,000,000, for a minority discount of 18% from the mean value.

### Actual Financing

The first venture capitalist to review the situation felt that \$1 million was not enough, that at least \$1,500,000 was required, and offered \$1,850,000 for 40%; this valued the existing shares at \$2,775,000, a 24% discount. The Board rejected this and sought a better offer.

A glowing report from Exxon on the Beta test, which was followed by a production order, allowed the Company to convince two venture capital firms that a \$3,500,000 value was appropriate. In July, 1996, one offered \$1,500,000 for preferred shares, with Warrants to convert to 30% of the common shares. The Warrant price would be adjusted downwards if Joiner missed its projections for 1997 and 1998. The transaction closed in early August.

### Questions

1. If you had been the valuation analyst for the venture capitalist, would you have considered this deal fair? If so, why?
2. If not, what would you have advised your client to do?

## **CREATION OF VALUE IN A SOFTWARE COMPANY – STAGE III: SUMMARY OF 1997 SALE**

### Here's How the Plot Thickened.....

The Company did very well; Directory Exchange crossed the CHASM, as the product spurred revenue growth from \$409,000 in the first quarter of fiscal 1997, to \$1,318,000 in the third quarter.

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With sales for the last quarter forecast at \$2,000,000 based on orders on hand, at least \$4,921,000 (97% of the \$5,050,000 projected) would be achieved for the year. With better sales, even though R & D was increased to an annual rate of \$1 million, profitability had been restored.

At the pre-tax level, the Company moved from a loss of \$306,000 in the first quarter to a profit of \$227,000 in the third; for the last quarter, the projected profit was \$775,000. In February, marketing and support deals were entered into with Amdahl, a subsidiary of Fujitsu K.K., and Digital, mainly for Europe; this gave the Company's products a twenty-four hours a day, seven days a week support capability virtually everywhere.

### Approach by Microsoft

In mid-March, Microsoft approached the Company, offering to purchase it for \$16 million. I responded with the attached memo, with the names and amounts changed, suggesting a value to Microsoft of \$34 million.

As an intermediary, the Company engaged an investment bank, which came up with \$33,500,000, based on 1996 acquisition prices; it also used a comparison with publicly traded Worldtalk, which gave between \$25,470,000 and \$36,904,000, with a mean of \$31,187,000.

<b>1996 Acquisitions</b>				<b>\$ million</b>	
<b>Buyer</b>	<b>Target</b>	<b>Price</b>	<b>Revenue</b>	<b>Price/ Revenue</b>	
Filenet	Soros	102.5	15.0	6.83	
Integrated Systems	Epilogue	20.0	3.3	6.06	
Worldtalk	Deming	6.3 0.	3	12.60	
Weighted	Average	128.8	18.8	6.81	

Applied to Joiner's trailing twelve month (TTM) revenues of \$4,921,000, the weighted average Price/Revenue ratio gives \$33,512,000 as the Acquisition Value.

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<b>Worldtalk Comparisons</b>	<b>\$'000</b>	
	<b>TTM</b>	<b>Run-rate</b>
	<b>3/31/97</b>	<b>3/31/97</b>
Market Capitalization	61,974	61,975
Annualized Revenue	15,896	17,600
Price/Revenue ratio	<u>3.90</u>	<u>3.52</u>
Joiner Revenue to 5/31/97	4,921	8,000
Implied Value	19,186	28,170
Private Company Discount	15%	15%
Subtotal	16,308	23,945
Control Premium	50%	50%
Adjusted Value	24,462	35,917
Cash	<u>1,000</u>	<u>1,000</u>
Acquisition Value	<u>25,462</u>	<u>36,917</u>
Mean Acquisition Value Rounded	<u>31,200</u>	

### Questions

1. If you were a valuation analyst for Microsoft, what value would you have put on the business?
2. Why?
3. What percentage of my Acquisition Value of \$34 million did Microsoft pay? (a) 96? (b) 92? (c) 90? (d) 88? (e) 87? (f) did not acquire.

## Valuing Software and Software Companies

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March 18, 1997

TO : President of Joiner  
BY FAX : (416) 999-9999

COPY : Venture Capitalist  
BY FAX : (415) 999-9999

FROM : James P. Catty

TOTAL PAGES: 5

Re: Value of Joiner to Microsoft

Following our discussions this morning, I am setting out my views of the value the acquisition of Joiner has to Microsoft. All amounts are in US dollars, unless otherwise stated.

It appears that IBM considers Notes to be a strategic vehicle, not only as a messaging mechanism, but also as a means of distributing mainframe data and applications. They are quoted as having 1,000 programmers dedicated to converting PROFS applications to Notes at the rate of about 100 to 200 per month.

From a strategic point of view, the acquisition can give Microsoft four advantages:

1. "Notes Containment" An acquisition would immediately add a tested Notes/Exchange connector and Notes/Exchange Directory Synchronization capabilities to Exchange, in time for Version 5.5 in September, 1997. Migration tools for Notes applications, using these technologies, will be available in three months.

There is no doubt that Microsoft could build all of these and successfully roll them out. The question is how long it would take, including testing, and how many seats of Notes, rather than Exchange, would be sold in that period.

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In my view, as development must, in part, be sequential, it would take Microsoft at best twelve and probably about eighteen months to have all three products fully tested and commercially available. In the same period, Joiner could roll out at least two upgrades of all of them.

Currently, Notes has about nine million seats, compared with around two million for Exchange. In the next year, Notes expects to add another six million seats. With full Notes connector capabilities integrated into Exchange Version 5.5, Microsoft should have a reasonable chance of obtaining 50% of these seats. For this analysis, I have used 25%, or 1,500,000 additional seats of Exchange.

A further potential market for Microsoft, with Notes capabilities integrated into Exchange Version 5.5, is represented by the many users of Notes as a Mailer rather than a Workgroup product; these are estimated at two-thirds of the total In-stalled Base. With the better mail transport of Exchange, and Joiner's calendaring ability, available through its license to use the Attachmate software recently acquired by Control Data Systems, it is likely that a large number of existing Notes Mail users would like to convert to an Exchange backbone; my estimate is 1,000,000 over time.

Thus a "Buy" rather than "Build" approach gives Microsoft the potential of selling a further 2,500,000 seats of Exchange, which otherwise would go to Notes, as a result of the much faster time to market. Using an average revenue of \$40 per seat, this opportunity could generate \$100 million in potential revenue for Microsoft, and create at least a \$10 million value for Joiner.

2. "Plucking the Low Hanging Fruit" There are more than 40 million seats of host-based mail systems looking for a migration path.

Some of these enterprise systems are mainframe-based and some are LAN based; all are candidates for Exchange. However, Microsoft considers itself a "shrink wrap" company without the capability of supplying service at the level expected by "glass house" operations. Recent agreements with Digital and Amdahl (pending) will supply Joiner products with 7/24 service capability throughout the world.

Joiner has already built connectors for nearly all of the host-based systems so that they can co-exist with and migrate to Exchange. By integrating these and the Directory Synchronization capability into Exchange Version 5.5, Microsoft could outflank IBM, as that firm must rely on Soft-Switch to integrate any orphan (non-IBM) systems into Notes.

Over the next two years, this capability has the potential of adding between 16,000,000 (40%) and 24,000,000 (60%) seats of Exchange. Using the minimum, and ascribing a value of only \$1.00 per potential seat, this opportunity adds \$16,000,000 to the value of Joiner.

## Valuing Software and Software Companies

The first two strategic advantages give a value of \$26,000,000 for Joiner:

	<b>\$'000</b>
Notes Containment	10,000
Low Hanging Fruit	<u>16,000</u>
	<u>26,000</u>

There are also two other medium to longer term strategic advantages of an acquisition: "Soft-Switch Displacement" and "Application Distribution".

3. "Soft-Switch Displacement" An integral part of IBM's emerging strategy is the use of Soft-Switch installations for linking disparate mail systems. At present, there are about 700 of these, with 400 using technology licensed from Joiner.

Recently, Joiner has started developing software running on NT platforms that handle all the Soft-Switch functions including those in the Soft-Switch ATK (Application Tool Kit) Utilities. These capabilities should be available in three months.

Many companies find Soft-Switch installations difficult to manage as they run only on Data General platforms, and would like to replace them with Joiner Software Systems on an NT platform that also runs Exchange on the same server.

Installation of such Systems would be undertaken by system integrators. Based on a retail price of \$100,000 (\$60,000 to Microsoft) and replacement of 350 (50%) Units, the potential revenue is \$21,000,000; this should add \$2 million to the value of Joiner.

4. "Application Distribution" IBM has positioned Notes as a data and application distribution mechanism. This creates an opportunity for Microsoft to replace IBM 3270 terminals with PCs and BackOffice.

For Texaco, Joiner is developing an NJE Connector that will allow Host Applications to be distributed by Microsoft Ex-change Server. NJE is embedded in every IBM native host operating system. Once Joiner replaces Soft-Switch's ATK (see item 3), all components required to link IBM hosts to Exchange Server will be available to Microsoft on an Acquisition.

Conservatively estimated, there are 5,000 installations using mainframe applications; over time, about 25% could switch to Microsoft Exchange distribution facilities. This type of software is sold through system integrators and would retail for about \$200,000, of which

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\$100,000 a copy would come back to Microsoft. For 1,250 installations, this represents a potential \$125 million in longer term revenue.

In my view, the Value of Joiner to Microsoft is \$34 million, made up as follows:

	<b>Potential Revenue</b>	<b>Value</b>
	Seats of Exchange	\$'000
Notes Containment	2,500	10,000
Low Hanging Fruit	<u>24,000</u>	<u>16,000</u>
	<u>26,500</u>	<u>26,000</u>
Soft-Switch Displacement	21,000	2,000
Application Distribution	<u>125,000</u>	<u>5,000</u>
	<u>146,000</u>	<u>33,000</u>
Cash		<u>1,000</u>
		<u>34,000</u>

### Comparables

The best comparables to Joiner among public companies are World-talk, with a market capitalization of about \$80 million, and the smaller ISOCOR, at \$41 million.

Worldtalk is about 2.9 times the size of Joiner, with December, 1996 revenues of \$14.2 million, compared with Joiner (May, 1997) of \$4,900,000. Worldtalk has a better distribution system but considerably inferior products; in fact, they license certain technologies from Joiner. On a comparative sales basis, Joiner is worth \$27,600,000. Adding a 20% control premium and the \$1 million of cash gives a takeover value of \$34 million.

While having a smaller capitalization than Worldtalk, ISOCOR is bigger than Joiner, with sales about the same as Worldtalk. It uses OEM distribution, resulting in lower margins. In our view, ISOCOR is worth only about 20% more than Joiner, as it does not have any similar strategic products. The major reason for the premium is that ISOCOR is a public rather than a private company.