



## The valuation of SoftwareCo's intangible assets using the adjusted contemporaneous value method

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## I. PURPOSE AND OBJECTIVE OF THE VALUATION

As the knowledge (or information) economy grows at a rapid rate, intangible assets become the engines of corporate growth, development and renewal. In recent years, there has been much attention paid to the problem of valuing these assets for the purpose of enhancing corporate transparency, so as to provide investors better insights as to the true value of a company.

Unfortunately, there is much confusion about intangible assets, what they are and most importantly, how to value them. At Knowledge Trust, we have been working assiduously on these problems for several years, and we have a series of solutions to these important questions. From an analytical viewpoint, the twin problems that are most vexing are measurement and reporting. The measurement problem is centered upon the ability to provide estimates of the value of any particular intangible asset in any particular corporate setting. We have solved this problem with our Adjusted Contemporaneous Value Method. The problem of reporting has also been solved with our proposed Corporate Intangible Assets Statement (CIAS). Nine major studies have been completed in the past several years that have concluded that these problems **cannot** be solved in a global sense. These studies have concluded that any measurement and/or reporting requirements that have been proposed are valid only for individual companies or, at best, a particular sector of the economy. **We roundly disagree, and the purpose of this document is to present the results that we have generated regarding the value of the intangible assets of the SoftwareCo Corporation. Our objective is to demonstrate the validity of the Adjusted Contemporaneous Value Method by presenting results that engender confidence in the method.**

The results are those generated by an outsider's view of the company, and all of the raw input to the valuation exercise was garnered from open sources, principally the Internet. The valuation included SoftwareCo's assembled workforce, which raises a critical point. While an assembled workforce cannot be considered an asset under the rules and conditions set by the Financial Accounting Standards Board, that does not mean that an assembled workforce can't be considered a key asset in determining the total value of a company. In fact, it is likely the most important asset in such a determination, and the Adjusted Contemporaneous Value Method permits the valuation of the workforce in total as well as the determination of the worth of individual employees. However, while an outsider can estimate the total value of a company's intellectual capital, only those inside the company can accurately value individual employees. Thus, while we have estimated the total value of SoftwareCo's intellectual capital, and the resulting mean value, we clearly are unable to value individual employees. However, we could facilitate an exercise in which SoftwareCo's management could determine the value of each employee in the company. Indeed, that is the intended use of the method, namely, to assist management in the process whereby it derives the value of each of the company's intangible assets.

Knowledge Trust's taxonomy of intangible assets is found in Exhibit I. **This taxonomy is based upon the distinctive nature in which these assets are managed strategically for corporate financial gain.** Thus, it differs from other taxonomies that we are aware of, but those taxonomies

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were developed for purposes other than for those purposes that are centered upon strategic management. **Through the strategic management of intangible assets, the profit margins of the company's products and services are enhanced, thus increasing the value of the company as a whole.**

The author is a systems engineer, and a systems technologist. He is also a corporate and business strategist and planner with a background in the commercialization of technology. He has had experience in most areas of investment banking, particularly as related to the strategic management of intangible assets. He is not a business appraisal professional. Nonetheless, the document attempts to conform to Standard 10 of the Uniform Standards of Professional Appraisal Practice.

## EXHIBIT I

### AN ECONOMIC DEVELOPMENT-RELATED TAXONOMY OF INTANGIBLE ASSETS

- FRANCHISES
- BRAND NAMES
- TRADE NAMES
- SALES MARKS
- TRUST MARKS
- INTELLECTUAL PROPERTY
  - PATENTS
  - COPYRIGHTS
  - FILMS
  - SOFTWARE
  - R&D
- PERMITS
- LEGAL RIGHTS
  - TAX INCENTIVES
- TRADE SECRETS
- INTELLECTUAL CAPITAL
  - HUMAN CAPITAL
  - STRUCTURAL CAPITAL
    - DATABASES
    - SOFTWARE PACKAGES
  - (CUSTOMER CAPITAL)

## EXHIBIT I (CON'T)

### AN ECONOMIC DEVELOPMENT-RELATED TAXONOMY OF INTANGIBLE ASSETS

- COST STRUCTURE
- REVENUE GENERATING HUMAN BEHAVIOR
  - CUSTOMER LOYALTY
  - GOODWILL
  - LISTS (CUSTOMER/CONTACT/AFFINITY GROUPS, ETC.)
  - SURVEYS (PREFERENCES, ETC.)
- PLANS
  - BUSINESS
  - FINANCIAL
  - MARKETING
  - MANUFACTURING
  - OPERATIONS
  - STRATEGIC

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## II. THE SOFTWARECO CORPORATION FROM AN INTANGIBLE ASSET VIEWPOINT

The SoftwareCo Corporation develops, manufactures, and licenses software-based products and services. Its span of influence is worldwide, and has strategic domination of most, if not all, of the markets in which it has a presence. It does not have franchises, but it does have an extensive network of alliances and ventures with other companies, many of which provide application software for SoftwareCo's Windows operating system. SoftwareCo has nearly 100 registered trademarks and approximately 1800 registered patents.

By the very nature of its business, SoftwareCo must rely heavily upon its intellectual capital to produce new products and to continually upgrade its current products. This can only be accomplished through a robust research and development program that is executed by highly skilled technical professionals that are well treated by their employer. Otherwise, the long-term outlook for the company would be diminished accordingly.

Likewise, SoftwareCo relies upon its customer-generated goodwill and loyalty, as well as the trust that the purchasing public, both other companies and individuals, places in its products and services in order to continue its growth and profitability.

Due to its strategic dominance in the marketplace, SoftwareCo's cost structure is not the imperative to its profitability that it otherwise would be in a more competitive environment. Nonetheless, as competition grows in every segment of the economy, and as the global economy shows signs of a serious recession, SoftwareCo's cost structure will grow in importance in the years just ahead.

SoftwareCo reportedly protects its trade secrets and competitive advantage with well-structured employee confidentiality agreements as well as the execution of non-compete agreements for departing employees. Permits, as interpreted in the legal sense, are not believed to play any significant role in the operation of the company. For example, it is assumed that SoftwareCo does not have any hazardous material usage, for which it would need permits.

As previously mentioned, SoftwareCo's competitive position is such that it dominates the markets that it serves. In order for this dominance to continue, the company must have a first-rate business strategy development process. The assumption herein is that such a process is indeed in place, and that the manifestation of this process is in the form of a set of highly correlated plans as listed in the taxonomy of Exhibit I.

It is with this set of assumptions that the SoftwareCo Corporation's intangible asset base was valued by asset class.

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### III. ASSET VALUATION EXERCISE AND RESULTS

The valuation of the intangible assets of the SoftwareCo Corporation employs a series of proprietary procedures developed by Knowledge Trust. The procedures constitute the Adjusted Contemporaneous Value Method, which consists of a blend among the traditional cost, income and market methods of valuation. As such, not all of the details of how the actual values were determined will be presented herein. The Method is, however, available for licensing. In that instance, all details as to how to perform intangible asset valuation for a particular company will be provided.

The Adjusted Contemporaneous Value Method consists of two major tasks. The first task is to compute the contemporaneous value of an asset class. There are thirteen asset classes in the taxonomy that is presented in Exhibit I.

SoftwareCo possesses all of these asset classes except franchises. Thus, twelve asset classes were valued. The computed contemporaneous value of an asset class is based upon the performance of the company's stock on a quarterly basis over a five-year period. In the instant case presented herein, the results are for the value of each class of SoftwareCo's intangible asset base for the five-year period ending December 31. Thus, the results herein are for the 5 year period of January through December. Financial results from eighteen quarters out of the twenty possible were used. The financial results from two quarters were not available. We do not believe that this would change the results in any demonstrable manner.

As stated above, the results herein are those of the contemporaneous values of each SoftwareCo intangible asset class. The values presented, however, are not the total value of the assets. In order to get the total value of said assets, the contemporaneous values would have to be adjusted up or down, based upon the company's view of the future economic benefits of the asset. This obviously would require access to all of the details of SoftwareCo's planning process, an option that clearly was not available to us.

**The contemporaneous value is computed by allocating the amount of SoftwareCo's market value less its book value averaged over the five-year period. The total amount that was allocated was \$284.48 billion**, and does not include any recognized goodwill or intangible assets, as neither was found on SoftwareCo's balance sheet over the five-year period. Exhibit II shows the asset classes to which this amount was allocated, and the amount that was allocated to each class. Market value was computed by multiplying the total number of shares outstanding (5.39B shares) times the stock price at the end of each quarter. Book value was assumed to be shareholder's equity at the end of each quarter. The quantity of market value less book value is considered by the investment community to be a reasonable estimate of the value of a company's unrecognized intangible assets. Thus, it is this value that was used as the basis for determining an estimated value of SoftwareCo's intangible assets.

The valuation exercise employs methods found in soft decision-making (a discipline within management science), hedonic valuation, and option pricing theory. It is important to note that **soft** decision processes are employed. It

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is not possible to value a particular asset down to the dollar. The Adjusted Contemporaneous Method is intended to provide an **estimate** of the value, usually referred to as an appraisal, of an asset in a particular corporate setting.

An asset may have a significantly different value in a different corporate setting. For example, a software designer at SoftwareCo has greater worth to SoftwareCo than that same individual would have designing software in an insurance company. Software design is critical to the success of SoftwareCo, where as such is not the case at an insurance company. The business models are obviously totally different.

A hedonic valuation method was used to allocate the above referenced \$284B. Thirteen criteria were used that encompass seven classes of strategic performance parameters, such as risk, return, and liquidity. A soft decision engineering tool was then used to translate the subjective analysis of each asset class under each criterion into weighting factors. The weighting factors were then summed to yield a total value of the weighting factors. The percentage that each asset class contributed to the total was then computed. This percentage for each asset class was then multiplied by \$284.48B to yield the value for each asset class that is shown in Exhibit II.

The hedonic valuation method employed has been used in numerous tasks in several Fortune 100 companies over the past 30 years. Without exception, the results have always been deemed highly useful by senior management. The applications of the method have included the relative value of numerous billion-dollar space system programs, centered in three product lines, at a particular point in time. That company's senior management considered the exercise to be exceedingly helpful in its resource allocation process.

In order to realize an estimate of the total value of the asset classes in Exhibit II, the values would have to be adjusted up or down to reflect management's expectations of the future economic benefit to be derived from each asset class, and indeed from each asset in each class. This is accomplished using option pricing theory in a manner that we have not seen done anywhere in the literature on real options theory.

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## EXHIBIT II

**THE VALUATION OF SOFTWARECO CORPORATION'S  
INTANGIBLE ASSET BASE BY ASSET CLASS**

<b>ASSET CLASS</b>	<b>VALUE</b>
■ BRAND NAMES	\$23.33B
■ TRADE MARKS	\$20.48B
■ SALES MARKS	\$17.92B
■ TRUST MARKS	\$24.18B
■ INTELLECTUAL PROPERTY	\$28.73B
■ INTELLECTUAL CAPITAL	\$36.13B
■ PERMITS	\$16.50B
■ LEGAL RIGHTS	\$17.35B
■ TRADE SECRETS	\$23.04B
■ COST STRUCTURE	\$28.16B
■ REVENUE GENERATING HUMAN BEHAVIOR	\$22.19B
■ PLANS(INCLUDES STRATEGY DEVELOPMENT AND PLANNING PROCESS)	\$26.46B
TOTAL	\$284.47B

**IV. ANALYSIS OF INTANGIBLE ASSET VALUATION RESULTS**

The results of Knowledge Trust's valuation of SoftwareCo's intangible assets yielded, in our view, interesting and credible results. It is important to remember that the results in Exhibit II are for the **contemporaneous value** of each asset class, not the total value of each asset class that would result if the values were to be adjusted to reflect expectations of future economic benefit. If this were to be done, then the adjusted contemporaneous value of the asset class would result, and the full effect of our new asset valuation method would result.

The total value of \$284.47B differs from the \$284.48B that was used in the allocation process due to round-off errors in the computational process. While \$10M is a large amount of money, it is not statistically significant when compared to \$284.48B. Computations of higher fidelity would clearly eliminate this problem. However, the objective of this exercise was to provide an example of the use of the Adjusted Contemporaneous Value Method, and thus the round-off errors were deemed acceptable, given the stated objectives. In a contractual valuation exercise, such errors would be eliminated.

A "sanity check" on the results in Exhibit II was performed. The number of SoftwareCo employees as of 6/30/X was 47,600. This number was used as the total number of employees on 12/31/X. While not likely correct, it is deemed sufficiently close to the true number of employees on 12/31/X for the purpose of the referenced sanity check. If the total estimated value of the company's intellectual capital is divided by 47,600, the result is \$759,030. This value is assumed to be the total mean value of an employee's salary, benefits and allocated structural capital costs over the current useful life of the employee.

As a mean value, this estimate seems eminently reasonable. Needless to say, the standard deviation will be quite high. Those that work in the company

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cafeteria will clearly have a value much lower than, say, a product line manager.

To determine an estimate of the value of each employee, we have developed a series of templates that have job titles assigned to him or her. The same criteria that were used to yield the estimate of \$36.13B as the value of the company's intellectual capital are used to value each template. The criteria are applied yet again to each individual associated with each template to get an estimate of the value to SoftwareCo of each individual in the company.

The results would be shared with each employee, and he or she would be given the opportunity to challenge the assumptions that were used to estimate his/her value. If the employee was not satisfied with the results after this process was completed, then he/she could decide rather or not to remain at SoftwareCo. While this process may seem arduous, it is as objective and fair as is possible, and thus it will enhance employee morale because those that are most responsible for the company's success will be valued accordingly.

Note that the inverse relief from royalty asset valuation method can be used to determine an employee's estimated annual salary. The only inputs required for this computation are the total value of the employee's intellectual capital, and the number of years until the employee is obsolete if he or she does not remain professionally current. Note further that this approach for determining estimated annual salary will yield a higher salary for an employee in a position in which technology, or regulations, etc. are changing rapidly, thus requiring the employee to invest time and money to remain current vis-à-vis his or her job function. This approach has the additional benefit of compensating those employees who must make personal sacrifices to remain current, which can only add to the morale of such high-value employees.

The dynamic range of the values is approximately 2.19. That means that the highest valued asset class (intellectual capital) is approximately 2.19 times the lowest valued asset class (permits). While this range of values may not be considered very wide, it is important to remember that each class of assets is important to SoftwareCo's ability to do business, and thus one would expect that each class would make a significant contribution to the company. This indeed proved to be the case.

The valuation of a company's intangible assets has many uses. For example, if a case can be made that one or more of the asset classes is worth more than the allocated value, then, in turn, the CEO has a foundation for making the case to the investment community that the stock price should be higher. Also, if a company has a large **intangible** asset base, but a small **tangible** asset base, such as in a high tech start-up, an unbiased valuation of the intangible assets may serve as additional collateral for an operations credit line.

Other uses of the valuation of a company's intangible assets are possible. It is also important to consider that the dynamic range of the values would likely grow if they were adjusted to reflect expected future economic benefits.

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Many questions have arisen by the reviewers of our work. A frequent question is what happens if economic or other circumstances result in a major change in the value of an asset? Simply, the total value of the intangible asset base would be recomputed and another allocation exercise would be done to account for the changes in the company's circumstances and/or any given intangible asset within the company.

## V. CERTIFICATION

I certify that, to the best of my knowledge and belief:

- The statements of fact contained herein are true and correct.
- The reported analyses, opinions, and conclusions are limited only by the reported assumptions and limiting conditions, as identified herein, and are my personal, unbiased professional analyses, opinions and conclusions.
- I have no present or prospective interest in the assets that are the subject of valuation, and I have no interest, relationship or bias with respect to any party involved with these assets.
- I did not receive compensation for this valuation exercise, as its intent is to demonstrate the results generated by a new valuation technique- the Adjusted Contemporaneous Value Method.
- My analyses, opinions, and conclusions were developed, and this report has been prepared to the best of my ability, in conformity with the Uniform Standards of Professional Appraisal Practice.
- No one provided significant professional assistance to the undersigned in the preparation of this report.
- Certified to on this day of 4 March 200X.

For Knowledge Trust,

/s/ \_\_\_\_\_

Neil F. Keehn  
President

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## APPENDIX

### RAW DATA USED IN THE VALUATION EXERCISE

Note: If this report had been generated under contract in which monetary compensation had been paid, this Appendix would include all of the raw data that was used in generating the results presented in the report. However, since this report is intended to demonstrate the capabilities of Knowledge Trust and its president, the raw information used is omitted.



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#### ***About the Author:***

Neil spent the first 22 years of his career utilizing cutting-edge technologies to develop solutions to unusually difficult problems relating to national defense and intelligence missions, several of which became multi-million dollar Government-funded programs. Beginning with an effort to compute a monetary value for each of these advanced system concepts, he gravitated to the strategic management of corporate intangible assets and liabilities for which he has developed numerous tools and systems over the past 15 years. For example, Neil has developed a chart of accounts for all corporate intangible assets in any industry using the concept of strategic performance parameters found in the strategic management literature. Several studies in the U.S. and Europe determined that such a universal solution to the reporting of corporate intangible assets to be infeasible.

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