Property Tax Intangible Asset Valuation Insights

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Valuation of the Assembled Workforce Intangible Asset for Property Taxation Purposes

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Most industrial and commercial organizations recognize their employees—and other forms of human capital—as a valuable intangible asset. Recognizing the value of a company's assembled workforce is not a new concept. Companies often analyze the value of their human capital intellectual property (e.g., an assembled workforce) for a variety of transactional, financing, accounting, taxation, and litigation purposes. This discussion describes and illustrates the valuation of a typical taxpayer company's trained and assembled workforce intangible asset.

Introduction

With regard to ad valorem property taxation, conflicts between corporate taxpayers and taxing authorities often arise regarding the value of the corporate taxpayer's human capital. This is because many states (and other taxing jurisdictions) exclude the value of intangible assets from the taxpayer's property base on which ad valorem taxes are paid.

Corporate taxpayers with property in such jurisdictions have a particular motivation to recognize the intangible asset value of their assembled workforce. That is because intangible assets such as an assembled workforce should be excluded from the taxpayer's overall assessment value in jurisdictions where intangible assets are exempt from ad valorem property taxation.

The value of a company's trained and assembled workforce generally falls into a class of intangible assets referred to as human capital intangible assets. The category of human capital intangible assets also includes:

1. contracts with employees (or former employees), such as employment contracts;
2. "personality" or other entertainment industry contracts;
3. sports player contracts; and
4. covenants not to compete and noncompete agreements.

This discussion focuses on (1) the human capital intangible asset elements of a trained and assembled workforce and (2) on the typical valuation methods used to estimate the value of a company's trained and assembled workforce.

Valuation of Human Capital Intangible Assets

This discussion encompasses the various types of human capital intangible assets. Some of these human capital intangibles qualify as intellectual property. Of course, like general commercial intangible assets, many human capital intangibles do not qualify as intellectual property. The most common type of human capital intangible is a business unit's trained and assembled workforce.

The assembled workforce intangible asset is the employer's expectation that experienced employees will report to work tomorrow morning. The employer also expects that these employees:

1. are trained in how to perform their duties and responsibilities,
2. know how to operate any equipment for which they are responsible,
3. are knowledgeable of the goals and protocols of the subject organization, and
4. are experienced working with and communicating with each other.

So, the assembled workforce is the employer's expectation of effective and efficient future employee services. And, the employer may be a company in any industry (large or small), a professional services firm, or a professional practice.

Human capital intangible assets may also include several contract-related intangible assets. Common examples of contract-related human capital intangible assets include employment agreements/contracts, player agreements/contracts, and employee covenants not-to-compete. Such intangible assets give the employer:

1. the right to receive some benefit in the future—e.g., the employment of a professional or athlete or
2. the right to avoid some problem in the future—e.g., competition from a former employee.

Another type of contract-related human capital intangible includes professional licenses. Examples include the license (or right) to practice accountancy, law, medicine, dentistry, architecture, teaching, and various other professions. Such human capital licenses:

1. are assigned to a specific individual,
2. are issued by a government or other regulatory agency,
3. require demonstration of specific personal competencies to obtain, and
4. generally increase the earning capacity of the licensed professional.

The economic analysis of professional licenses is often complicated by the fact that such licenses often have no secondary market. That is, they have little or no value to anyone other than the individual to whom they are granted. Nonetheless, the analysis of professional licenses can be a major area of controversy in family law disputes.

There are often intellectual property components to human capital intangibles. For example, employees are often aware of a company's most valuable (and most guarded) trade secrets. In fact, the know-how component of a company's assembled workforce is often that company's most significant competitive advantage.

For that reason, employers often request employees to sign nondisclosure, confidentiality, and similar agreements. As they relate to the employer's proprietary trade secrets, those agreements provide evidence of the company's intellectual property.

The focus of this discussion relates to the valuation of human capital intangibles for ad valorem property taxation purposes. However, the analysis of human capital intangibles (and their intellectual property component) encompasses both (1) economic damages analysis and (2) intercompany transfer price analysis.

Economic Damages Analysis

Employers often claim that they suffered economic damages when an employee does not honor an employee agreement, a confidentiality agreement, or a noncompete agreement. A joint venture partner may claim economic damages when its partner does not provide the human capital it promised in a joint venture (or development or commercialization agreement). And, the human capital that was not provided may include skilled or unskilled labor, management talent, or engineering or other technical expertise.

In addition, a sports franchise or entertainment company may allege economic damages if a professional athlete, actor, musician, or other entertainment did not honor a personal services contract. Similarly, a manufacturing or service company may experience damages if an athlete or other celebrity did not honor a product endorsement contract.

In each of these instances, the aggrieved party may need to quantify (1) lost profits and/or (2) decreased economic value due to the fact that the human capital intangible asset was not provided as agreed. There are several generally accepted economic damages methods. As with other intangible assets, the decreased economic value related to human capital intangibles may be quantified by reference to (1) the "but for" method, (2) the before and after method, or (3) the benchmark/yardstick method.

Transfer Price Analysis

The value of human capital services is a common intercompany transfer price problem. This problem arises within a single business unit or taxpayer related to management information and product/service pricing issues. For example, how much of the Widget Division management, accounting, and product development personnel costs should be allocated as product overhead and included in each widget's cost of goods sold? This problem is even more complicated when a company's human capital resources provide cross-border services to two or more business units in international tax jurisdictions.

This need to calculate an intercompany transfer price for human capital services is common for multinational corporations that have both domestic and international business operations. In such companies, corporate management personnel may perform administrative, treasury, accounting, management information, product development, legal, and various other services for business units (i.e., taxpayers) in several countries.

The country that provides the human capital resources should receive taxable income commensurate with the services provided. And, the country that receives the human capital resources should recognize tax deductible expense commensurate with the services received.

U.S. Treasury Regulation 1.482-2(b) is specifically related to determining the appropriate cross-border transfer price for human capital services provided between two

international controlled entities (i.e., international taxpayer entities controlled a common parent).

A Trained and Assembled Workforce

Many corporate CEOs have publicly stated that the assembled workforce is one of their company's most valuable assets. However, few companies incur the effort or expense to periodically quantify the value of their assembled workforce intellectual property. Numerous court cases have concluded that an entity's assembled workforce is a discrete intangible asset that has a measurable value.

For example, in *Ithaca Industries, Inc.* v. *C.I.R.*,[1] the U.S. Court of Appeals for the 4th Circuit held that an assembled workforce was a discrete intangible asset with an ascertainable value. Ithaca Industries related to the income tax amortization of an acquired assembled workforce. While the Appeals Court concluded that the Ithaca Industries workforce had an ascertainable value, it concluded that the subject taxpayer had not proved an ascertainable remaining useful life (RUL).

In an ad valorem property tax case involving Burlington Northern Railroad, the Federal District Court allowed a property tax exemption related to the value of the railroad's assembled workforce intangible asset.[2] In *Burlington Northern R.R. Co.* v. *Bair*, the District reduced the value of the taxpayer's overall taxable unit value for (or business enterprise value) the value of the exempt assembled workforce intangible asset.

In these and other cases, the courts have concluded that:

1. a company's assembled workforce is a discrete intangible asset and
2. the human capital intangible asset has a measurable value.

Of course, the challenge for the analyst is to use objective and replicable approaches, methods, and procedures to estimate the value of a company's assembled workforce.

Human Capital Valuation Approaches, Methods, and Procedures

There are generally accepted approaches, methods, and procedures for the valuation of human capital intellectual property—such as a trained and assembled workforce. The specific methods for the valuation of an assembled workforce are encompassed in the three generally accepted approaches for the valuation of all intellectual property. The three valuation approaches are (1) the sales comparison approach, (2) the income approach, and (3) the cost approach. Each of the three approaches has the same objective: to arrive at a reasonable indication of value for the subject intellectual property. The individual valuation methods within each approach will be described below.

The sales comparison approach (also called the market approach) is based on the related economic principles of competition and equilibrium. These economic principles conclude that, in a free and unrestricted market, supply and demand factors will drive the price of an investment to a point of equilibrium. The principle of substitution also directly influences the market approach. This is because the identification and analysis of equilibrium prices for substitute investments will provide important evidence to the analyst with regard to the indicated value for the subject human capital (e.g., the assembled workforce).

The income approach is based upon the economic principle of anticipation (also called the principle of expectation). In this approach, the value of the subject human capital (e.g., the assembled workforce) is the present value of the expected economic income to be earned from the ownership of the subject property. As the name of this economic principle implies, the investor "anticipates" the "expected" economic income to be earned from the property. This expectation of prospective economic income is converted to a present worth—that is, the indicated value of the assembled workforce.

There are numerous alternative definitions of economic income. If properly analyzed, many different definitions of economic income can be analyzed to provide a reasonable value indication for the subject human capital. The income approach requires the analyst to estimate the investor's required rate of return on the property generating the prospective economic income. The required rate of return will be a function of many economic variables, including the risk—or the uncertainty—of the expected economic income.

The cost approach is based upon the economic principle of substitution. The principle of substitution asserts that an investor will pay no more for an investment than the cost to obtain (i.e., either purchase or construct) an investment of equal utility. For purposes of this economic principle, utility can be measured in many ways, including functionality, desirability, and so forth. The availability (and the cost) of substitute investments is directly affected by shifts in the supply and demand functions with regard to the universe of substitute investments. Unlike fungible tangible assets, often there are few reasonable substitutes for many types of intellectual property. Accordingly, in the case of unique intellectual property, the application of the cost approach may have limitations.

Analysts typically attempt to value human capital using all three valuation approaches—in order to obtain a multidimensional perspective on the subject intellectual property. The final value estimate is typically based on a synthesis of the value indications derived from various alternative approaches and methods.

Sales Comparison Valuation Methods

Typically, analysts first attempt to apply market approach methods in the valuation process. This is because "the market"—that is, the economic environment where arm's-length transactions between unrelated parties occur—is typically the best indicator of the value of an intellectual property. Valuation analysts review "the market" in order to extract both sale and license transactions that may be useful in the analysis of the subject intellectual property.

There are fewer individual valuation methods to select from within the market approach—as compared to either the cost or income approaches. Nonetheless, the practical application of a market approach method is a very complex and rigorous analytical process.

In the valuation of a trained and assembled workforce, the market approach often has limitations. Therefore, the market approach is less commonly used than other valuation approaches. It is nonetheless important for the analyst to consider the application of the market approach in any valuation of an assembled workforce.

Analytical Procedures

There is a general systematic process—or framework—to the application of market approach methods in the valuation of intellectual property. The basic analytical procedures of the sales comparison approach are summarized as follows:

1. Research the appropriate exchange market to obtain information on sale transactions, listings, and offers to purchase or license "guideline" (i.e., similar from an investment risk and return perspective) or "comparable" (i.e., virtually identical from a functional perspective) intellectual property that are similar to the subject intellectual property—in terms of characteristics such as type, use, industry in which the intellectual property functions, date of sale, and so forth
2. Verify the information by confirming that the data obtained are factually accurate and that the sale or license exchange transactions reflect arm's-length market considerations (if the guideline transaction was not at arm's-length market conditions, then adjustments to the transactional data may be necessary). This verification procedure may also elicit additional information about the current market conditions for the sale or license of the subject intellectual property.
3. Select relevant units of comparison (e.g., income multipliers or dollars per unit—for an assembled workforce, units such as "per employee") and develop a comparative analysis for each unit of comparison.
4. Compare "guideline" intellectual property sale or license transactions with the subject using the elements of comparison and adjust the sale or license price of each guideline transaction appropriately to the subject intellectual property—or eliminate the sale or license transaction as a guideline for future consideration.
5. Reconcile the various value indications produced from the analysis of the guideline transactions into a single value indication or a range of values. In an imprecise market—subject to varying economics—a range of values may sometimes be a better conclusion for the subject intellectual property than a single value estimate.

Comparability Criteria

There are ten elements of comparison that are commonly considered when selecting and analyzing "guideline" sales or license transactions.

These ten elements of comparison are summarized below:

1. The legal rights of intellectual property ownership that were conveyed in the guideline transaction.
2. The existence of any special financing terms or arrangements (e.g., between the buyer and the seller).
3. Whether the elements of arm's-length sale/license conditions existed.
4. The economic conditions that existed in the appropriate secondary market at the time of the sale/license transaction.
5. The industry in which the intellectual property was—or will be—used.
6. The physical characteristics of the guideline intellectual property—compared to the subject intellectual property.
7. The functional characteristics of the guideline intellectual property—compared to the subject intellectual property.
8. The technological characteristics of the guideline intellectual property—compared to the subject intellectual property.
9. The economic characteristics of the guideline intellectual property—compared to the subject intellectual property.
10. The inclusion of other (nonintangible) assets in the guideline sale or license transaction; this may include the sale of a bundle—or a portfolio—of assets which could include tangible personal property and real estate, as well as other intangible assets.

Sales Comparison Approach Value Indication

The reconciliation procedure is the last phase of a market approach analysis, in which two or more value indications have been extracted from market-derived empirical data.

In the reconciliation step, the analyst summarizes and reviews the data and analyses that resulted in each of the value indications.

These value indications are then resolved into a range of value—or into a single value indication or a point estimate. It is important that the analyst consider the strengths and weaknesses of each guideline value indication derived, examining the reliability and appropriateness of the market data compiled and the analytical procedures applied.

Since a transaction specifically involving the sale, lease, or other transfer of a company's assembled workforce is not common, the market approach, as previously mentioned, is less commonly used in the valuation of an assembled workforce.

Income Approach Valuation Methods

The income approach is based on the premise that the company will generate discrete economic income returns from human capital in future periods. The applicability of the income approach to estimate the value of an assembled workforce depends on:

1. the nature of the workforce and
2. the business model of the company employing the workforce.

Income Measures

There are numerous measures of economic income that are relevant to an income approach analysis of human capital intellectual capital. These measures of economic income include the following:

1. gross or net revenues,
2. gross income (or gross profit),
3. net operating income,
4. net income before tax,
5. net income after tax,
6. operating cash flow,
7. net cash flow, and
8. several others (such as incremental income).

Given the different measures of economic income that may be used in the valuation, an essential element in the application of this approach is to ensure that the subject discount rate or capitalization rate used in the analysis is derived on a basis consistent with the subject measure of economic income.

There are at least as many income approach valuation methods as there are measures of economic income. However, most of these methods may be grouped into several categories. These categories have similar conceptual underpinnings and similar practical applications.

Income Approach Methods

Several categories of income approach methods are listed below:

1. Methods that quantify incremental levels of economic income (i.e., the intellectual property owner will enjoy a greater level of economic income by owning the intellectual property as compared to not owning the intellectual property).
2. Methods that quantify decremental levels of economic costs (i.e., the intellectual property owner will suffer a lower level of economic costs—such as otherwise required investments or operating expenses—by owning the intellectual property as compared to not owning the intellectual property).
3. Methods that estimate a relief from a hypothetical royalty or rental payment (i.e., the amount of a royalty or rental payment that the intellectual property owner would be willing to pay to a third party in order to obtain the use of—and the rights to—the subject intellectual property).
4. Methods that quantify the difference in the value of overall business enterprise—or similar economic unit—as the result of owning the subject intellectual property (and using it in the business enterprise) as compared to not owning the subject intellectual property (and not using it in the business enterprise).
5. Methods that estimate the value of the subject intellectual property as a residual from the value of an overall business enterprise (or of a similar economic unit), or as a residual from the value of an overall estimation of the total intangible value of a business enterprise (or of a similar economic unit).

All of the income approach methods may be grouped into the following two categories:

1. those that rely upon direct capitalization and
2. those that rely upon yield capitalization.

Direct Capitalization Versus Yield Capitalization

In a direct capitalization analysis, the analyst estimates the appropriate measure of economic income for one period (i.e., one period future to the valuation date) and divides that measure by an appropriate investment rate of return. The appropriate investment rate of return is called the capitalization rate. The capitalization rate may be derived for a perpetuity period of time—or the capitalization rate may

be derived for a specified finite period of time—depending upon the analyst's expectation of the duration of the economic income stream.

In a yield capitalization analysis, the analyst projects the appropriate measure of economic income for several discrete time periods into the future. This projection of prospective economic income is converted into a present value by the use of a present value discount rate. The present value discount rate is the investor's required rate of return—or yield rate—over the expected term of the economic income projection. The duration of the discrete projection period—and whether or not a residual or terminal value should be considered at the conclusion of the discrete projection period—depends on the analyst's expectation of the duration of the economic income stream.

The result of either a direct capitalization analysis or a yield capitalization analysis indicates the value of the subject intellectual property.

Income Approach Value Indication

As previously mentioned, the use of the income approach to estimate the value of an assembled workforce is dependent on (1) the nature of the workforce and (2) the business model of the company employing the workforce.

For a manufacturing-based company, the income approach may be used less often to estimate the value of an assembled workforce. This is because it may be difficult to estimate the economic income that will be generated by each specific employee of a company. For example, it may be very difficult to estimate the economic income generated by an employee who works on the assembly line or by an employee who is the operations manager of a factory.

Conversely, for a service-based company, the economic income generated by each specific employee may be less difficult to estimate. In fact, for many service-based companies, the economic income generated by an employee is often not only quantifiable, but it is closely tracked and monitored.

In service-based companies, such as accounting firms, consulting firms, law firms, and financial advisory services firms, the economic income generated by employees (1) is closely monitored and (2) is often used as the basis for compensation and promotion decisions.

Therefore, for purposes of using the income approach in the valuation of an assembled workforce, it is important for the analyst to consider the subject assembled workforce and business model of the company employing the assembled workforce.

Cost Approach Methods

The cost approach is commonly used in the valuation of an assembled workforce. The theoretical underpinnings of the various cost approach methods relate to the following economic principles:

1. Substitution—affirms that no prudent buyer would pay more for an intellectual property than the total cost to "construct" intellectual property of equal desirability and utility.
2. Supply and demand—shifts in supply and demand cause costs to increase and decrease and cause changes in the need for supply of different types of intellectual property.
3. Externalities—gains or losses from external factors may accrue to intellectual property. External conditions may cause a newly "constructed" intellectual property to be worth more or less than its cost.

Within the cost approach, there are several related methods that each use a similar definition of the "type" of cost that is relevant to the analysis. The most common "types" of—or definitions of—cost include the following:

1. reproduction cost and
2. replacement cost.

There are subtle, but important, differences in the definitions of these "types" of cost.

Reproduction Cost

Reproduction cost contemplates the construction of an exact replica of the subject intellectual property. Reproduction cost is the total cost, at current prices, to construct an exact duplicate or replica of the subject intellectual property. This duplicate would be created using the same materials, standards, design, layout, and quality of workmanship used to create the original intellectual property.

In the case of an assembled workforce, reproduction cost would estimate the current cost to create an exact duplicate of the subject employees. Reproduction cost would consider (1) the same number of employees and (2) employees with exactly the same levels of experience, expertise, and education as the subject employees.

One method sometimes used to estimate the reproduction cost of intellectual property is to restate the historical actual development costs in current dollars. This provides an estimate of the costs that would need to be incurred to reproduce the intellectual property. This method is particularly applicable if the subject company maintains detailed accounting information with regard to the historical costs incurred to recruit, hire, and train the current workforce since each employee was hired.

Replacement Cost

Replacement cost contemplates the cost to recreate the functionality or utility of the subject intellectual property. However, in form or appearance, the replacement intellectual property may be quite different from the actual subject intellectual property. Like reproduction cost, replacement cost is based on current (valuation date) costs. However, a replacement cost analysis attempts to replace the efficiency and effectiveness of the subject workforce—not the quantity and quality of the subject workforce.

In a replacement cost analysis, the hypothetical workforce may have fewer—but more highly qualified—employees. The expected production of the replacement workforce would be the same as the current workforce. But, the composition (number, age, experience, education, etc) of the replacement workforce may be quite different from the current workforce.

Functionality is an engineering concept that means the ability of the subject intellectual property to perform the task for which it was designed. Utility is an economic concept that means the ability of the subject intellectual property to provide an equivalent amount of satisfaction. For an assembled workforce, the functionality or utility of a workforce may be recreated by a group of replacement employees that looks quite different from the current group of employees.

However, while the replacement intellectual property performs the same task as the subject intellectual property, the replacement intellectual property is often "better" (in some way) than the subject. In that case, the replacement intellectual property may yield more satisfaction than the subject. If this is the case, the analyst should adjust for this factor in the obsolescence estimation of the replacement cost analysis.

For example, if the replacement workforce has fewer employees than the current workforce, then the current workforce may suffer from excess operating (labor) costs. These excess operating costs would relate to the current excess number of employees. And, the capitalization of the excess operating (labor) costs may be one way to quantify functional obsolescence.

Other Cost Measures

There are several other "definitions" of cost that may be encompassed in a cost approach analysis. Some analysts consider a measure of "cost avoidance" as a cost approach method. This method quantifies either historical or prospective costs that are avoided (i.e., not incurred) by the asset owner due to the ownership of the subject intellectual property.

Some analysts consider "trended historical costs" as an indication of value. In this method, actual historical asset development costs are identified and quantified—and then "trended" to the valuation date by an appropriate inflation-based index factor. All cost approach methods typically include a comprehensive and all-inclusive definition of "cost."

Cost Components

The cost (whether replacement or reproduction) of an intellectual property should include both direct costs (e.g., materials) and indirect costs (e.g., engineering and design labor). In addition, the intellectual property replacement cost or the reproduction cost should also include:

1. the intellectual property developer's profit (i.e., an expected profit margin on the direct and indirect cost investment) and
2. an entrepreneurial incentive (i.e., a fair rate of return on the time and money investment in the intellectual property development project to economically motivate the development process).

And, all relevant forms of obsolescence—including economic obsolescence—should reduce the current cost measure of the intellectual property.

While the cost approach includes a different set of valuation analyses than the income approach, there are necessary economic analyses involved in the cost approach. These economic analyses (which may involve some analysis of income) provide indications both of the appropriate levels of entrepreneurial incentive (if any) and of economic obsolescence (if any).

Replacement Cost New Less Depreciation Method

The replacement cost of an intellectual property is the total cost to create, at current prices, an asset having equal utility to the subject intellectual property. However, the replacement intellectual property would be created with modern methods and constructed according to current standards, state-of-the-art design and layout, and the highest available quality of workmanship. Accordingly, the replacement intellectual property may have greater utility than the subject.

The replacement cost new less depreciation (RCNLD) method is frequently used to estimate the value of a trained and assembled workforce for property taxation purposes. The costs to replace an assembled workforce include the costs to recruit, hire, and train a replacement workforce.

In applying the RCNLD method to estimate the value of an assembled workforce, some examples of recruiting and hiring costs to consider include the following:

- Salaries and benefits of company employees who are involved in recruiting replacement employees.

- Salaries and benefits of company employees who are involved in interviewing replacement employees.
- Overhead costs (e.g., office space, utilities, and clerical support) related to employees who are involved in recruiting and hiring the replacement employees.
- Headhunter recruitment fees.
- Direct recruitment and hiring expenditures (materials, pre-employment screening exams, background checks, drug tests, medical tests, advertisements, travel and lodging expenses for job candidates, relocation costs, signing bonuses, license or certification exams, and so on).

In applying the RCNLD method to estimate the value of an assembled workforce, some examples of the training costs to consider include the following:

- Salaries and benefits of company employees who are involved in training replacement employees.
- Overhead costs (e.g., office space, utilities, and clerical support) related to employees who are involved in training the replacement workforce.
- Salary and benefits paid to employees as they are being trained, until they become productive.
- Direct training expenditures (classroom training materials, in-the-field training materials, or fees paid for replacement employees to attend formal external training courses).

Typically, in the RCNLD method, the estimated costs to recruit, hire, and train are expressed as a percentage of total compensation for employees. In some instances, if employees of a company are separated by grades (where the grades represent different levels of responsibility within the company), it may be appropriate to separate the estimated costs to recruit, hire, and train by employee grade. Other possible classifications to differentiate various groups of employees for this method include the number of years of service or job function.

The estimated costs to recruit, hire, and train are then multiplied by the historical total compensation for the different employee levels to result in a value of an assembled workforce.

Replacement Cost New

"Replacement cost new" typically establishes the maximum amount that a prudent investor would pay for an intellectual property using the replacement cost new less depreciation method adjusted for losses in economic value. To the extent that an intellectual property is less useful than an ideal replacement asset, the subject property cost should be adjusted accordingly.

The subject intellectual property replacement cost new is adjusted for losses in value due to:

- Physical depreciation.
- Functional obsolescence.
- Technological obsolescence (often considered a specific component of functional obsolescence).
- Economic obsolescence (often considered a specific component of external obsolescence).

Physical Depreciation

Physical depreciation (or deterioration) represents the reduction in value of an intellectual property due to physical wear and tear resulting from continued use. While it is unlikely for an intellectual property to experience physical depreciation, it is possible for an assembled workforce to experience physical depreciation. The analyst, therefore, should consider this concept in a replacement cost new less depreciation method analysis.

It is often possible to recreate the functionality or utility of one workforce using a workforce of a different composition of employees. For example, consider a subject workforce comprised of a large number of highly compensated employees (due to years of service, tenure, seniority, etc.) that perform a particular skill set for an employer.

The functionality or utility of the subject workforce may be recreated by a replacement workforce comprised of employees with lesser years of experience who are compensated less (due to lesser years of service, lack of tenure, lack of seniority, etc.) but possess the same skill set required to perform the job function performed by the subject workforce. When this is true, the analyst should reduce the value of the assembled workforce for the additional costs not incurred by recreating the utility of the subject workforce using the replacement workforce.

Functional Obsolescence

Functional obsolescence is the reduction in the value of an intellectual property due to its inability to perform the function (or yield the periodic utility) for which it was originally designed. As previously mentioned, technological obsolescence is often considered a specific component of functional obsolescence.

Technological obsolescence is a decrease in the value of an intellectual property due to improvements in technology that make an asset less than the ideal replacement for itself. Technological obsolescence occurs when, due to improvements in design or engineering technology, a new replacement intellectual property produces a greater standardized measure of utility production than the subject intellectual property.

Accordingly, many analysts capture all of the value influences due to both design flaws and changing technology in one category—and call that functional obsolescence.

For purposes of a trained and assembled workforce, functional obsolescence is relevant when a company is deemed to have a superadequate number of employees on the payroll than would be necessary to operate the ideal replacement workforce. The existence of a superadequate number of employees is often due to such factors as:

1. inefficient labor work rules,
2. inefficient managerial procedures,
3. inefficient operation of the company,
4. disabled employees still on the payroll, and
5. unfavorable collective bargaining agreements with unions.

In some situations, a company may have to operate with an excess labor force in order to be in compliance with union contracts. In the example of a railroad company that could operate just as successfully with 15 percent fewer employees, it is important that the analyst consider and, if appropriate, adjust for the excess labor force in the estimate of the value of the subject trained and assembled workforce.

In this example, the excess labor force is clearly not an intellectual property of the company. This is because the subject assembled workforce decreases the company's profitability and does not improve operations.

Economic Obsolescence

Economic obsolescence (one component of external obsolescence) is a reduction in the value of the subject intellectual property due to the effects, events, or conditions that are external to—and not controlled by—the current use or condition of the intellectual property. The impact of economic obsolescence is typically beyond the control of the intellectual property owner. For that reason, economic obsolescence is typically considered incurable.

Deficiencies of an intellectual property are considered curable when the prospective economic benefit of enhancing or modifying it exceeds the current cost (in terms of material, labor, and time) to change it. Deficiencies of an intellectual property are considered incurable when the current cost of enhancing or modifying it (in terms of material, labor, and time) exceeds the expected future economic benefits of improving it.

For purposes of an assembled workforce, economic obsolescence is a decrement in cost associated with the situation where the going-concern operations of a workforce do not generate income adequate to provide for a fair rate of return on the replacement cost of the workforce.

Replacement Cost New Less Depreciation Method Formula

The formula for estimating intellectual property value using the RCNLD method is:

$$RCN - PD - EO - FTO = value$$

where:

RCN = Replacement cost new
PD = Physical depreciation
EO = Economic obsolescence
FTO = Incurable functional and technological obsolescence

This formula assumes that any curable functional or technological obsolescence has been eliminated from the replacement workforce. For example, any current excess employees, overskilled workers, and undertrained workers would be included in a reproduction cost new workforce.

However, all of the components of workforce obsolescence would be eliminated from the replacement cost new workforce. The replacement cost new workforce represents the ideal assemblage of replacement employees. In fact, a major difference between reproduction cost new and replacement cost new is the amount of curable functional and technological obsolescence (if any).

Special Considerations in the Assembled Workforce Valuation

There are several issues that the analyst should consider in the valuation of an assembled workforce. When using the RCNLD method, the analyst should consider whether some of the current workforce would not be rehired if the company's employee base was being replaced. Companies in various industries have announced workforce reductions over the past several years.

If the company has an excess workforce, it is appropriate that these excess employees are not included in the assembled workforce valuation. A company could have an excess workforce due to labor agreements, union work rules, or regulatory requirements. An excess workforce exists when the subject company has more employees that it needs to operate effectively.

In addition, if management is considering the termination of a product line, it may be appropriate to exclude any employees who work exclusively on the subject product. These employees may be classified as excess employees if they will be terminated upon the elimination of the subject product line.

Data Sources

The following discussion addresses the various data sources that can be used in the valuation of an assembled workforce.

Internal Data Sources

Internal financial reports such as historical financial statements are useful in the application of the cost approach and the income approach. Additionally, payroll records are especially relevant to the RCNLD method. In determining compensation in the RCNLD method, it is important to calculate the total compensation for each employee, including base compensation, retirement plan contributions, health care benefits, additional perks such as company automobiles, and so on.

Company management interviews are also useful to performing an assembled workforce cost approach valuation. In an assembled workforce valuation, these interviews, especially with key management in relevant departments and with human resource personnel, can inform the analyst on a variety of topics including:

- the existence of different employee classifications within the company, such as different employee grades;
- prior studies completed by management related to the cost of recruiting, hiring, and training employees of various grades and/or tenure;
- management estimates of the cost to recruit, hire, and train employees of various grades and/or tenure; and
- the existence of any excess employees.

External Data Sources

Salary surveys available from trade associations may be used (1) to estimate compensation in the cost approach method or (2) to check the reasonableness of the actual compensation of personnel at the subject company. In addition, studies regarding the average cost to recruit, hire, and train employees with various levels of experience may be available from trade associations.

Assembled Workforce Illustrative Valuation Example

The objective of the analysis is to estimate the fair market value of the Omega Company trained and assembled workforce, as of December 31, 2005. The purpose of the analysis is to provide an independent opinion to assist Omega Company management with its ad valorem property tax assessment appeal.

Exhibits 1 through 4 present a simplified illustration of the valuation of the Omega Company assembled workforce. Based on the quantity and quality of available data, the analyst concluded that:

1. the most applicable valuation approach is the cost approach and
2. the most applicable valuation method is the RCNLD method.

In this example, the value of the Omega Company assembled workforce is based on the cost to recruit, hire, and train new employees of comparable experience and expertise to that of the subject workforce. This cost is estimated as a percent of total compensation for employees of various years of service. In this example, as the years of service increase, the compensation and/or level of responsibility within Omega Company increases.

Exhibit 1 presents employee compensation data for the Omega Company employees. These data are categorized by employee years of service.

Exhibit 2 presents the expected costs to recruit, hire and train employees by years of service. These expected costs are presented as a percentage of the total compensation paid to each category of employee. These replacement cost percentages were extracted from in-depth discussions with appropriate Omega Company management.

In addition, the analyst confirmed the reasonableness of these expected future costs by performing a due diligence analysis of the historical costs incurred by Omega Company related to the recruiting, hiring, and training of its current workforce.

The replacement cost data were compiled in exhibits that document the Omega Company:

1. recruiting process and the costs associated with each of the aspects involved in the recruiting process,
2. hiring process and the costs associated with each of the aspects involved in the hiring process, and
3. training process and the costs associated with each of the aspects involved in the training process.

The analyst quantified the total costs associated with each phase of the recruiting, hiring, and training processes. The analyst then compared:

1. the expected recruiting, hiring, and training cost to
2. the total amount of employee compensation paid.

The purpose of this comparison is to express the total costs to recruit, hire and train a replacement workforce

as a percentage of the expected total compensation of that replacement workforce.

Exhibit 3 summarizes the historical compensation data and the expected costs to recruit, hire and train as presented in Exhibits 1 and 2, respectively.

Exhibit 3 then calculates the replacement cost new of the Omega Company assembled workforce before making allowances for depreciation and obsolescence.

The replacement cost new of the assembled workforce is estimated by multiplying:

1. the total expected cost to recruit, hire, and train replacement employees by
2. the total compensation paid to employees of varying years of service.

Based on these estimated costs, the indicated direct and indirect costs related to the Omega Company assembled workforce, as of December 31, 2005, is $77.9 million (rounded).

After consideration of (1) developer's profit and (2) entrepreneurial incentive, the total replacement cost new of the Omega Company assembled workforce, as of December 31, 2005, is $93.1 million (rounded).

Exhibit 3 presents the estimate of the Omega Company assembled workforce replacement cost new. Exhibit 4 includes the consideration of physical depreciation and functional/technological obsolescence with regard to the Omega Company assembled workforce.

In Exhibit 4, the amount of physical depreciation is based on an analysis indicating that the ideal replacement workforce would have a different composition than the current 1,750 employees. Based on a due diligence investigation in the replacement workforce, the 1,600 employees with over 11 years of service would be replaced with employees that have 6 to 10 years of experience.

In this analysis, the additional costs associated with recruiting, hiring, and training the 1,600 employees with over 11 years of service would represent a form of physical depreciation. In other words, the replacement workforce would not cost as much to create as the subject workforce—due to lower costs to recruit, hire, and train.

In our example, the amount of physical depreciation is calculated by estimating what the total replacement cost new would be if the 1,600 employees with over 11 years of service had the cost composition (i.e., total compensation and costs to recruit, hire, and train) as employees with 6 to 10 years of service. This amount is then subtracted from the replacement cost new.

Exhibit 4 also presents an estimate of functional obsolescence related to the Omega Company assembled workforce. As previously discussed, functional obsolescence is relevant when a company has an excess number of employees compared to the ideal replacement workforce.

There are two important procedures in the estimation of the amount of functional obsolescence present in a workforce:

1. an estimation of the percentage of the total workforce that is superadequate and
2. the application of the percentage to the appropriate RCNLD.

The percentage of the total excess workforce may be provided by company management. In most instances, the company management will best know the company's specific workforce requirements and needs. Company management typically will have:

1. the best understanding of the adequate number of employees needed to run the company efficiently,
2. an in-depth knowledge of constraints in the production process and the employees needed to alleviate those constraints, and
3. an understanding of any staffing issues resulting from unfavorable collective bargaining agreements with unions.

In this simplified example, we assumed that there were 3 percent excess employees in the assembled workforce. The next step is the application of the excess employee percentage to the replacement cost new less depreciation estimate.

Valuation Summary and Conclusion

As summarized on Exhibit 4, the indicated fair market value of the Omega Company assembled workforce, based on the RCNLD method, as of December 31, 2005, is $47.6 million.

If intangible assets are exempt from property taxation in the subject jurisdiction, then taxpayer Omega Company will claim the $47.6 million value of its assembled workforce as an exempt intangible asset.

Notes:

1. *Ithaca Industries, Inc.* v. *C.I.R.*, 17 F.3d 684 (4th Cir. 1994).
2. *Burlington Northern R.R. Co.* v. *Bair*, 815 F.Supp. 1223 (S.D. Iowa, 1993), *aff'd* 60 F.3d 410 (8th Cir. 1995).

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Exhibit 1
Omega Company
Trained and Assembled Workforce
Current Employee Total Compensation Data
as of December 31, 2005

Employee Years of Service*	Total Number of Employees in Each Category	Actual Base Compensation	Actual Cost of Employee Benefits	Actual Bonuses and Additional Compensation	Total Direct and Indirect Compensation	Average Total Compensation Per Employee
0-5	50	$ 1,500,000	$ 375,000	$ –	$ 1,875,000	$ 37,500
6-10	100	4,000,000	1,000,000	100,000	5,100,000	51,000
11-15	200	10,000,000	2,500,000	200,000	12,700,000	63,500
15-20	400	28,000,000	7,000,000	400,000	35,400,000	88,500
20+	1,000	90,000,000	22,500,000	1,000,000	113,500,000	113,500
Totals	1,750	$133,500,000	$33,375,000	$1,700,000	$168,575,000	$ 96,329

* This categorization of employees by tenure (as compared to by department, job category, or job description) is presented for illustrative purposes only.

Exhibit 2
Omega Company
Estimated Current Trained and Assembled Workforce Cost
To Recruit, Hire, and Train Replacement Employees
as of December 31, 2005

	Estimated Employee Replacement Cost—Expressed as a Percent of Total Direct and Indirect Compensation Paid			
Employee Years of Service	Estimated Cost to Recruit	Estimated Cost to Hire	Estimated Cost to Train	Total Estimated Cost to Recruit, Hire, and Train Replacement Employees*
0-5	2.5%	5%	25%	32.5%
6-10	2.5%	5%	25%	32.5%
11-15	2.5%	5%	30%	37.5%
15-20	5%	5%	30%	40%
20+	5%	10%	35%	50%

* Of comparable experience and expertise to the subject assembled workforce employees.

Exhibit 3
Omega Company
Summary of Current Compensation Data and Current Cost to Recruit, Hire, and Train Replacement Employees as of December 31, 2005

Employee Years of Service	Total Direct and Indirect Compensation Paid	Expressed as a Percent of Total Compensation Paid: Total Cost to Recruit, Hire, and Train Replacement Employees	Replacement Cost New of the Assembled Workforce
0-5	$ 1,875,000	32.5%	$ 609,375
6-10	5,100,000	32.5%	1,657,500
11-15	12,700,000	37.5%	4,762,500
15-20	35,40,000	40.0%	14,160,000
20+	113,500,000	50.0%	56,750,000
Totals	$168,575,000		

Direct and indirect cost component of the assembled workforce replacement cost new	$77,939,375
Plus: Developer's profit—estimated at 12 percent, based on the industry average profit margin (i.e., $77,939,375 RCN x 12% developer's profit margin)	9,352,725
Plus: Entrepreneurial incentive—based on (1) the Omega Company 15 percent cost of capital, (2) an estimated one year workforce assemblage replacement period, and (3) an average direct and indirect replacement cost investment of $38,969,688 (i.e., $77,939,375 divided by 2) throughout the one year assemblage period (i.e., $39,969,688 x 15% = $5,845,453)	5,845,453
Equals: Replacement cost new	93,137,553
Replacement cost new (rounded)	$93,100,000

Exhibit 4
Omega Company
Fair Market Value of the Assembled Workforce Replacement Cost New Less Depreciation Method
As of December 31, 2005

Replacement cost new from Exhibit 3 (RCN)	$93,100,000
Less: Physical depreciation (i.e., equals the RCN of all 1,600 employees with over 11 years of service when compared to the RCN of the same 1,600 employees if they were in the 6-10 years of service category)	43,981,100
Equals: Replacement cost new less physical depreciation (RCNLD)	49,118,900
Less: Functional/technological obsolescence—based on the illustrative assumption of a 3 percent "excess" number of current employees (i.e., RCNLD of $49,118,900 x 3% excess workforce = $1,473,567)	1,473,567
Equals: Replacement cost new less depreciation (RCNLD)	47,645,333
Indicated fair market value of the assembled workforce (rounded)	$47,600,000