

Intellectual Property Valuation Approaches And Methods

By Robert F. Reilly

Introduction

There are numerous reasons to value an owner/operator's intellectual property. All of these reasons may be generally grouped into the following categories: transactions, financings, taxation, regulatory, bankruptcy, accounting, litigation, and strategic planning. Valuation analysts are often asked to value intellectual property for these various reasons. Valuation analysts may also assist the intellectual property owner/operator in structuring transactions, performing due diligence, complying with taxation and accounting requirements, negotiating and arranging for financings, providing litigation support, and defending and commercializing the intellectual property.

The owner/operator is often involved in the process of: identifying the intellectual property, performing some due diligence procedures, interviewing and selecting the valuation analyst, defining the valuation analyst's assignment, assembling valuation-related data and documents, reviewing and questioning the valuation work product, and relying on the intellectual property valuation report.

First, this discussion summarizes many of the reasons to conduct an intellectual property valuation. Many of these reasons relate to intellectual property transactions other than licenses between arm's-length parties. In addition, this discussion describes and illustrates the three generally accepted intellectual property valuation approaches, specifically: cost approach valuation methods, market approach valuation methods, and income approach valuation methods. Most license participants are familiar with the market approach valuation methods, of course. However, many licensees and licensors are not particularly familiar with the income approach or cost approach valuation methods. Finally, this discussion will summarize the intellectual property valuation synthesis and conclusion process.

Reasons to Conduct an Intellectual Property Valuation

The following list summarizes some of the reasons why a valuation analyst may be asked to value the owner/operator intellectual property.

1. Transaction pricing and structuring

- Pricing the arm's-length sale of an individual

intellectual property or a portfolio of two or more intellectual property assets.

- Pricing the arm's-length license of an individual intellectual property or a portfolio of two or more intellectual property assets.

- Calculating an exchange ratio between two owners for two respective intellectual property portfolios.

- Valuing the equity allocations in a new business enterprise or joint venture when one or more parties contribute intellectual property assets.

- Valuing the asset distributions in a liquidating business enterprise or joint venture when one or more parties receive intellectual property assets.

- Valuing the transfer of intellectual property between two wholly-owned subsidiaries (or between two unequally-owned subsidiaries) of a consolidated business enterprise.

2. Financing collateralization and securitization

- Use of intellectual property as the collateral in either cash flow-based or asset-based debt financings.
- Sale/licenseback financing of the commercial intellectual property.

3. Taxation planning and compliance

- Formation of an intellectual property holding company and intercompany intellectual property license to taxpayer operating companies.
- Tax basis purchase price allocations (among acquired tangible assets and intangible assets) in a taxable business acquisition.
- Amortization deductions for purchased intellectual property.
- Charitable contribution deductions for donated intellectual property.
- Arm's-length price (ALP) for the cross border transfer and use of multinational taxpayer corporation intellectual property (compliance with Section 482).
- State and local ad valorem property taxation of either taxable or tax exempt intellectual property.

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4. Regulatory compliance and corporate governance

- Fair market value estimation of the intellectual property sale, license, or other transfer between a for-profit entity and a not-for-profit entity.
- Custodial inventory of owned and licensed intellectual property.
- Assessment of adequate insurance coverage for owned and licensed intellectual property.
- Defense against infringement, torts, breach of contract, and other wrongful acts.
- Defense against allegations of dissipation of corporate assets.

5. Bankruptcy and reorganization

- Use of intellectual property as collateral for secured creditor financing.
- Use of intellectual property as collateral for debtor in possession (DIP) secured financing.
- Fairness of the sale or license of intellectual property as a DIP cash generation spin-off opportunity.
- Use of intellectual property in the assessment of the debtor corporation solvency or insolvency with respect to fraudulent transfers and preference actions.
- Impact of intellectual property on the bankrupt owner/operator plan or reorganization.

6. Financial accounting and fair value reporting

- Acquisition purchase accounting (*i.e.*, purchase price) allocation among acquired tangible assets and intangible assets.
- Goodwill and intellectual property asset impairment testing.
- Post-bankruptcy fresh start accounting for emerging entity tangible assets and intangible assets.

7. Forensic analysis and dispute resolution

- Intellectual property lost profits, royalty rate, or other economic damages analysis in infringement claims.
- Intellectual property lost profits or other economic damages in breach of contract, license, or noncompete/nondisclosure agreement damages claims.
- Intellectual property valuation in condemnation, expropriation, eminent domain, or dissipation claims.

8. Strategic planning and management information

- Formation of intellectual property joint venture, joint development, or joint commercialization agreements.
- Negotiation of inbound or outbound intellectual

property use, development, commercialization, or exploitation agreements.

- Identification and negotiation of intellectual property license, spin-off, joint venture, and other commercialization opportunities.

As indicated above, there are many reasons to estimate the intellectual property value (or damages, transfer price, etc.), in addition to an inbound or outbound license negotiation.

In addition to understanding the reason for the intellectual property valuation, it is important for the valuation analyst to understand the objective of the analysis. The valuation analyst should understand which one (or ones) of the following opinions he or she is being asked to conclude:

1. To estimate a value (as specifically defined) for the subject intellectual property,
2. To measure lost profits or some other measure of economic damages to the intellectual property,
3. To conclude an arm's-length price (ALP) for the intercompany transfer of intellectual property between controlled foreign corporations (*i.e.*, in compliance with Internal Revenue Code Section 482),
4. To estimate a fair license agreement royalty rate between independent arm's-length parties (but not related to Section 482),
5. To opine on the fairness of an intellectual property, sale, license, transfer, or financing transaction from a financial perspective, or
6. To estimate the intellectual property remaining useful life (RUL).

The valuation analyst's objective should be specified as one of the elements of the intellectual property valuation assignment. The analyst should understand the purpose and objective of the valuation (including what type of opinion is being asked for) before conducting the analysis.

Generally Accepted Valuation Approaches

Valuation analysts typically attempt to use all three valuation approaches to value the owner/operator intellectual property. When that is possible, the analyst can develop mutually supportive evidence and a multi-faceted perspective regarding the intellectual property value. However, due to data constraints, it is common for a valuation analyst to rely on only one or two valuation approaches in the intellectual property valuation process.

The following discussion summarizes the cost approach, market approach, and income approach valuation methods. The final discussion summarizes the analyst's process of reconciling multiple value

indications into a final intellectual property value conclusion.

Cost Approach Valuation Methods

There are several intellectual property valuation methods within the cost approach. Each valuation method uses a specific definition of cost. Two common cost definitions are:

1. Reproduction cost new, and
2. Replacement cost new.

Reproduction cost new is the total cost, at current prices, to develop an exact duplicate of the intellectual property. Replacement cost new is the total cost, at current prices, to develop an asset having the same functionality or utility as the intellectual property. Functionality is an engineering concept that means the ability of the intellectual property to perform the task for which it was originally designed. Utility is an economics concept that means the ability of the intellectual property to provide an equivalent amount of satisfaction.

There are also other cost definitions that may be applicable to a cost approach valuation. Some valuation analysts consider cost avoidance as a cost approach measure. This cost measure quantifies either historical or prospective costs that are avoided because the owner/operator owns the intellectual property.

Some valuation analysts consider trended historical costs as a cost approach measure. In this cost measure, historical intellectual property development costs are identified and trended to the valuation date by an inflation-based index factor. Regardless of the specific cost measure used, all cost approach methods include a comprehensive definition of cost.

The cost measurement (whether replacement cost new, reproduction cost new, or some other cost measure) typically includes four cost components: (1) direct costs (*e.g.*, materials), (2) indirect costs (*e.g.*, engineering and design labor), (3) the intellectual property developer's profit (on the direct cost and indirect cost investment), and (4) an opportunity cost/entrepreneurial incentive (to motivate the development process).

Typically, the intellectual property development material, labor, and overhead costs are easy to identify and quantify. The developer's profit can be estimated using several procedures. It is often estimated as a percentage rate of return on the total investment in the material, labor, and overhead costs. The entrepreneurial incentive is often measured as the lost profits during the replacement intellectual property development period. For example, let's assume it will

take two years to develop a replacement patent. If the buyer buys the seller's actual patent, then the buyer can start earning income (either operating income or license income) immediately. If the buyer "builds" its own hypothetical replacement patent, then the buyer will not earn any income (operating income or license income) during the two-year development period. The two years of lost profits during the hypothetical patent development period represents the opportunity cost of developing a new replacement patent—compared to buying the actual seasoned patent.

All four cost components—*i.e.*, direct costs, indirect costs, developer's profit, and opportunity cost—should be considered in the intellectual property cost approach valuation. So, while the cost approach is different from the income approach, there are economic analyses included in the cost approach. These economic analyses provide indications of both: (1) the appropriate levels of opportunity cost (if any) and (2) the appropriate amount of economic obsolescence (if any).

The intellectual property cost new (however measured) should be adjusted for losses in value due to:

1. Physical deterioration,
2. Functional obsolescence, and
3. Economic obsolescence.

Physical deterioration is the reduction in value due to physical wear and tear. It is unlikely that an intellectual property will experience physical deterioration.

Functional obsolescence is the reduction in value due to the intellectual property's inability to perform the function (or yield the periodic utility) for which it was originally designed. The technological component of functional obsolescence is a decrease in value due to improvements in technology that make the intellectual property less than the ideal replacement for itself.

Economic obsolescence is a reduction in value due to the effects, events, or conditions that are external to—and not controlled by—the intellectual property current use or condition. The impact of economic obsolescence is typically beyond the control of the intellectual property owner/operator.

In any cost approach analysis, the valuation analyst will estimate the amounts (if any) of intellectual property physical deterioration, functional obsolescence, and economic obsolescence. In this estimation, the valuation analyst will consider the intellectual property actual age—and its expected RUL.

A common cost approach formula for quantifying intellectual property replacement cost new

is: reproduction cost new—curable functional obsolescence=replacement cost new. To estimate the intellectual property value, the following cost approach formula is commonly used: replacement cost new—physical deterioration—economic obsolescence—incurable functional obsolescence=intellectual property value.

Cost Approach Illustrative Example

Exhibits 1 and 2 present a simplified illustrative example of a cost approach intellectual property valuation. In this example, the valuation analyst is asked to estimate the fair market value of the copyrights and trade secrets related to the hypothetical Kappa Company computer software. All of the Kappa Company computer software is subject to copyright protection. And, the software source code and the systems documentation and user manuals are treated as company trade secrets. The analyst is instructed that the appropriate valuation date is January 1, 2011.

The valuation analyst decided to use the cost approach and the replacement cost new less depreciation method. Exhibit 1 includes the analysis of all four cost components of the cost approach. Exhibit 1 also illustrates the analyst’s functional obsolescence considerations. Exhibit 2 presents the detailed calculation of one cost component of the cost approach: the developer’s profit analysis.

Based on the cost approach analysis summarized in Exhibit 1, the analyst concludes that the fair market value of the hypothetical Kappa Company computer software copyrights and trade secrets, as of January 1, 2011, is \$200 million.

Market Approach Valuation Methods

Valuation analysts typically attempt to apply market approach methods first in the intellectual property valuation. This is because the market—that is, the economic environment where arm’s-length transactions between unrelated arm’s-length parties occur—

Exhibit 1. Kappa Company Computer Software Copyrights And Trade Secrets Cost Approach— Replacement Cost New Less Depreciation (RCNLD) Method Valuation Summary As of January 1, 2011			
Software System	Estimated Software Replacement Development Effort in Person Months [a]	Time to Develop Replacement Software (in calendar Months) [b]	RCNLD Component [c]
AS/400	4,531	29	
Point of Sale	575	25	
Tandem	3,304	16	
Unisys	1,229	5	

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Exhibit 2. Kappa Company Computer Software Copyrights And Trade Secrets Cost Approach—Replacement Cost New Less Depreciation Method Estimate Of Computer Software Developer’s Profit				
Profit Margin Comparison		Operating Profit Margins		
		4/1/09 3/31/10	4/1/08 3/31/09	4/1/07 3/31/08
SIC Code 7371 - Custom Computer Programming Services - All Companies	[a]	4.2%	4.2%	4.2%
SIC Code 7371 - Custom Computer Programming Services - Sales of \$25 Million and Over	[a]	7.4%	3.8%	3.8%
SIC Code 7373 - Computer Systems Design Services - All Companies	[b]	4.3%	3.1%	3.1%

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is often considered to provide the best indicator of value. However, the market approach will only provide meaningful valuation evidence when the owner/operator intellectual property is sufficiently similar to the intellectual property that are transacting (by sale or license) in the marketplace. In that case, the guideline intellectual property transaction (sale or license) prices may indicate the expected price for the owner/operator intellectual property.

There are two principal intellectual property market approach valuation methods: (1) the comparable uncontrolled transaction (CUT) method and (2) the comparable profit margin (CPM) method. In the CUT method, the valuation analyst searches for arm's-length sales or licenses of benchmark intellectual property. In the CPM method, the valuation analyst searches for companies that provide benchmarks to the owner/operator company.

In the CUT method, the analyst will more likely rely on CUT license transactions than sale transactions. This is because third party licenses of intellectual property are more common than third party sales of intellectual property. Nonetheless, for both sale and license transactions, the valuation analyst will follow a systematic process in the CUT method valuation.

First, the analyst will research the appropriate exchange markets to obtain information about sale or license transactions, involving guideline (*i.e.*, similar from an investment risk and expected return perspective) or comparable (*i.e.*, almost identical) intellectual property that may be compared to the owner/operator intellectual property. Some of the comparison attributes include the intellectual property type, intellectual property use, industry in which the intellectual property operates, date of sale or license, etc.

Second, the analyst will verify the transactional information by confirming (1) that the transactional data are factually accurate and (2) that the sale or license exchange transactions reflect arm's-length market considerations. If the guideline sale or license transaction was not conducted 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 intellectual property.

Third, the analyst will select relevant units of comparison (*e.g.*, income pricing multiples or dollars per unit—such as “per drawing” or “per line of code”). And, the analyst will develop a comparative analysis for each selected unit of comparison.

Fourth, the analyst will compare the selected guideline or comparable intellectual property sale or license

transactions with the subject intellectual property, using the selected elements of comparison. Then, the analyst will adjust the sale or license price of each guideline transaction for any differences between the guideline intellectual property and the owner/operator intellectual property. If such comparative adjustments cannot be measured, then the analyst may eliminate the sale or license transaction as a guideline for future valuation consideration.

Fifth, the analyst will select pricing metrics for the subject intellectual property from the range of pricing metrics indicated from the guideline or comparable transactions. The analyst may select pricing multiples in the low end, midpoint, or high end of the range of pricing metrics indicated by the transactional sale or license data. The valuation analyst will select the subject-specific pricing metrics based on the analyst's comparison of the owner/operator intellectual property to the guideline intellectual property.

Sixth, the analyst will apply the selected subject-specific pricing metrics to the subject intellectual property financial or operational fundamentals (*e.g.*, revenue, income, number of drawings, number of lines of code, etc.). This procedure will typically result in several market-derived value indications for the owner/operator intellectual property.

Seventh, the analyst will reconcile the various value indications provided by the analysis of the guideline sale and/or license transactions into a single market approach value indication. In this final reconciliation procedure, the valuation analyst will summarize and review (1) the transactional data and (2) the quantitative analyses (*i.e.*, the various pricing metrics) that resulted in each value indication. Finally, the valuation analyst will resolve these value indications into a single value indication.

Table 1 describes several of the databases that the valuation analyst will typically search in order to select intellectual property license CUTs. Table 2 describes several of the print sources that the valuation analyst will typically search in order to select intellectual property CUTs. Of course, the valuation analyst will also confer with the owner/operator management to explore whether the owner/operator has entered into any intellectual property license agreements (either inbound or outbound). These owner/operator license agreements could relate to either the subject intellectual property or to comparable intellectual property.

The CPM method is also based on a comparative analysis. However, in this valuation method, the analyst is not relying on the sales and licenses of comparable or guideline intellectual property. Rather, the analyst is searching for comparable or guideline

**Table 1. Market Approach
Comparable Uncontrolled Transaction (CUT) Method
Common Intellectual Property License Transaction Databases**

RoyaltySource

www.royaltysource.com—AUS Consultants produces a database that provides intellectual property license transaction royalty rates. The database can be searched by industry, technology, and/or keyword. The information provided includes the license royalty rates, name of the licensee and the licensor, a description of the intellectual property licensed (or sold, if applicable), the transaction terms, and the original sources of the information provided. Preliminary CUT results are available online and a final report is sent to the subscriber via e-mail.

RoyaltyStat, LLC

www.royaltystat.com—RoyaltyStat is a subscription-based database of intellectual property license royalty rates and license agreements, compiled from Securities and Exchange Commission documents. It is searchable by SIC code or by full text. The CUT results can be viewed online or archived. The intellectual property transaction database is updated daily. The full text of each intellectual property license agreement in the database is available.

Royalty Connection

www.royaltyconnection.com—Royalty Connection™ provides online access to intellectual property license royalty rates and other license information on all types of technology, patents, trade secrets, and know-how. The data are aggregated from information on all types of technology, patents, trade secrets, and know-how. The data are aggregated from arm's-length sale/license transactions, litigation settlements, and court-awarded royalty order from 1990 to the present. The intellectual property license database is frequently updated. Users can search by industry, product category, or keyword. The information provided includes the consideration paid for the intellectual property license and any restrictions (such as geographic or exclusivity).

ktMINE

www.bvmarketdata.com—ktMINE is an interactive intellectual property database that provides direct access to license royalty rates, actual license agreements, and detailed agreement summaries. The database contains over 7,800 intellectual property license agreements. The intellectual property license database is updated frequently. License agreements are searchable by industry, keyword, and various other parameters. The full text of each intellectual property license agreement is available.

**Table 2. Market Approach
Comparable Uncontrolled Transaction (CUT) Method
Common Intellectual Property License Transaction Print Sources**

AUS Consultants publishes a monthly newsletter, *Licensing Economics Review*, which contains license royalty rates on selected recent intellectual property transactions. The December issue each year also contains an annual summary of intellectual property license royalty rates by industry.

Gregory J. Battersby and Charles W. Grimes author a book annually called *License Royalty Rates*, which is published by Aspen Publishers. This reference tool provides intellectual property license royalty rates for 1,500 products and services in 10 different licensed product categories: art, celebrity, character/entertainment, collegiate, corporate, designer event, music, nonprofit, and sports.

Intellectual Property Research Associates produces three books that contain information on license royalty rates for patents, trademarks, and copyrights. The books are *Royalty Rates for Trademarks & Copyrights*, *Royalty Rates for Technology*, and *Royalty Rates for Pharmaceuticals & Biotechnology*.

companies. The objective of the CPM method is to identify guideline companies that are comparative to the owner/operator company in all ways except one. The owner/operator company, of course, owns the subject intellectual property. Ideally, the selected guideline companies should provide a meaningful

benchmark to the owner/operator—except that they do not own comparable intellectual property.

Ideally, the CPM method guideline companies operate in the same industry as the owner/operator company. Ideally, the guideline companies have the same types of raw materials and the same types of

sources of supply. Ideally, the guideline companies have the same type of customers. Ideally, the guideline companies produce the same type of products or services. And, ideally, the only difference should be that the owner/operator has an established trademark and the guideline companies have generic trademarks. Or, the owner/operator owns the subject patent and the guideline companies produce unpatented (and presumably inferior) products.

Because of the economic benefit that the intellectual property provides, the owner/operator should earn a higher profit margin than the selected guideline companies. This profit margin comparison is usually made at the earnings before interest and taxes (or EBIT) level of income. This EBIT margin typically reflects the pretax operating income of the comparative companies—a measure of income that the intellectual property can influence. The incremental (or superior) profit margin earned by the owner/operator can then be converted into an intellectual property implied royalty rate. Typically, all of the excess profit margin is assigned to the intellectual property (if the intellectual property is the only reason for the owner/operator’s superior profit margin).

This implied royalty rate (derived from the excess profit margin) is then multiplied by the owner/operator revenue in order to estimate the amount of implied royalty income generated from the intellectual property. This hypothetical royalty income is capitalized over the intellectual property expected RUL. The result of this capitalization procedure is an estimate of the intellectual property value, according to the CPM method.

Table 3 presents a nonexhaustive list of publicly traded company data sources that the valuation analyst may use to (1) select guideline companies for the CPM method analysis and (2) obtain guideline company profit margin information to use in the CPM method analysis.

Table 3. Market Approach Comparable Profit Margin (CPM) Method Common Data Sources for Guideline Company Profit Margins

FactSet Research Systems, Inc.—FactSet
Hoover’s, Inc.—Hoover’s Company Records
Mergent, Inc.—MergentOnline
Morningstar, Inc.—Morningstar Equity Research
Standard & Poor’s—CapitallQ
Thomson Reuters—Thomson ONE Analytics

Accordingly, there are several intellectual property market approach valuation methods. However, each method is based on comparative analyses of either comparable intellectual property sales, comparable intellectual property license royalty rates, or comparable companies (that own generic intellectual property).

Market Approach Illustrative Example

Finally, Exhibit 3 presents an illustrative example of a market approach intellectual property valuation. In this example, the valuation analyst is asked to estimate the fair market value of the hypothetical Tau Company (a telecommunications company) trademarks and trade names. The analyst is instructed that the appropriate valuation date is as of January 1, 2011.

The valuation analyst decided to use the market approach and the relief from royalty (RFR) method in this trademark valuation. Exhibit 4 summarizes the analyst’s search for, selection of, and analysis of comparable uncontrolled transaction (CUT) trademark license agreements. Like Tau Company, the CUT trademark license data are all related to the telecommunications industry.

Exhibit 5 summarizes the valuation analyst’s calculation of the Tau Company present value discount rate. This discount rate is used to present value the royalty income projection over the trademark expected RUL.

Based on discussions with Tau Company management and on research regarding comparable telecommunications industry trademark life cycles, the analyst determined that the average RUL of the subject trademarks was 20 years. Therefore, the trademark valuation is based on a 20-year trademark royalty income projection period.

Based on the market approach valuation analysis summarized in Exhibit 3, the valuation analyst concluded a fair market value of \$840 million for the Tau Company trademarks and trade names, as of January 1, 2011.

Income Approach Valuation Methods

In this valuation approach, the intellectual property value is estimated as the present value of the future income from the ownership/operation of the intellectual property. The present value calculation has three principal components:

1. An estimate of the duration of the intellectual property income projection period, typically measured as the analyst’s estimate of the intellectual property RUL,

Exhibit 3: Tau Company

Trademarks And Trade Names Market Approach— Relief From Royalty Method Valuation Summary As of January 1, 2011

Present Value of Discrete Trademark Income:	Projected Calendar Years				
	2011 \$000	2012 \$000	2013 \$000	2014 \$000	2015 \$000
Management-Provided Revenue Projection [a]	8,634,139	8,358,945	8,042,393	7,7	
Arm's-Length Trademark License Royalty Rate [b]	2%	2%	2%		
Projected Pretax Trademark Income	172,683	167,179	160,84		

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Exhibit 4. Tau Company

Trademarks And Trade Names Market Approach—Relief From Royalty Method Cut Trademark License Transactions

Trademark Licensor	Trademark Licensee	Comparable Uncontrolled Transaction (CUT) Trademark License Description	License Year	Royalty Rate Range Low	Upfront/ Flat Fee
Southwestern Bell Telephone	Affiliate Group	The affiliate group imputed an affiliate compensation fee or "royalty" for the affiliates' right to the name, reputation and public image of the parent telephone company. The affiliates recognize the franchise-like benefits realized as a result of their relationship with the licensor.	2008		

To see the remainder of this chart, please visit:

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Exhibit 5. Tau Company

Weighted Average Cost Of Capital As Of January 1, 2011

Cost of Equity Capital:			
Method #1: Modified Capital Asset Pricing Model (Ex Post Equity Risk Premium)			Source
Risk-Free Rate of Return		4.5%	20-year treasury bond, The Federal Reserve Statistical Release, as of December 31, 2010
General Equity Risk Premium	7.10%		Stocks Bonds Bills & Inflation
Multiplied by: Industry Beta	1.05		
Industry-Adjusted General Equity Risk Premium		7.4%	

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2. An estimate of the intellectual property-related income for each period in the projection, typically measured as either owner income (*e.g.*, license royalty income), operator income (*e.g.*, some portion of the operator's business enterprise income), or both, and

3. An estimate of the appropriate capitalization rate, typically measured as the required rate of return on an investment in the intellectual property.

For purposes of the income approach, the RUL relates to the time period over which the owner/operator expects to receive any income related to the intellectual property (1) license, (2) use, or (3) forbearance of use. In addition to the term of the RUL, the analyst is also interested in the shape of the RUL curve. That is, the analyst is interested in the annual rate of decay of the future intellectual property income.

For purposes of the income approach, different intellectual property income measures may be relevant. If properly applied, these different income measures can be used in the income approach to derive a value indication. Some of the different income measures include:

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,
8. Incremental income,
9. Differential income,
10. Royalty income,
11. Excess earnings income, and
12. Several others (such as incremental income).

Because there are different income measures that may be used in the income approach, it is important for the capitalization rate (either the discount rate or the direct capitalization rate) to be derived on a basis consistent with the income measure used.

Regardless of the measure of income considered in the income approach, there are several categories of valuation methods that are typically used to value intellectual property:

1. Valuation methods that quantify an incremental level of intellectual property income—That is, the owner/operator will expect a greater level of revenue (however measured) by owning/operating the

intellectual property as compared to not owning/operating the intellectual property. Alternatively, the owner/operator may expect a lower level of costs—such as capital costs, investment costs, or operating costs—by owning/operating the intellectual property as compared to not owning/operating the intellectual property.

2. Valuation methods that estimate a relief from a hypothetical license royalty payment—That is, these relief from royalty (RFR) methods estimate the amount of hypothetical royalty payment that the owner/operator (as licensee) does not have to pay to a third party licensor for the use of the intellectual property. The owner/operator is “relieved” from having to pay this hypothetical license royalty payment for the use of the intellectual property. This is because the owner/operator, in fact, owns the intellectual property.

3. Valuation methods that estimate a residual measure of intellectual property income—That is, these methods typically start with the owner/operator overall business enterprise income. Next, the valuation analyst identifies all of the tangible assets and routine intangible assets (other than the intellectual property) that are used in the owner/operator overall business. These assets are typically called contributory assets. The analyst then multiplies a fair rate of return times the value of each of the contributory assets. The product of this multiplication is the fair return on all of the contributory assets. The analyst then subtracts the fair return on the contributory assets from the owner/operator business enterprise total income. This residual (or excess) income is the income that is associated with the intellectual property.

4. Valuation methods that rely on a profit split—That is, these methods typically also start with the owner/operator overall business enterprise income. The valuation analyst then allocates or “splits” this total income between (1) the owner/operator tangible assets and routine intangible assets and (2) the intellectual property. The profit split percent (*e.g.*, 20 percent, 25 percent, etc.) to the intellectual property is typically based on the valuation analyst's functional analysis of the owner/operator business operations. This functional analysis identifies the relative importance of (1) the intellectual property and (2) the contributory assets to the production of the owner/operator total business income.

5. Valuation methods that quantify comparative income. That is, these methods compare the owner/operator income to a benchmark measure of income

(that, presumably, does not benefit from the use of the intellectual property). Common benchmark income measures include: (1) the owner/operator income before the intellectual property development, (2) industry average income levels, or (3) selected guideline publicly traded company income levels. A common measure of income for these comparative analyses is the earnings before interest and taxes (or EBIT) margin. This EBIT income is considered to be a pretax measure of operating income. When publicly traded companies are used as the comparative income benchmark, the method is often called the comparable profit margin (or CPM) method.

All of these income approach valuation methods can be applied using either the direct capitalization procedure or the yield capitalization procedure.

In the direct capitalization procedure, the valuation analyst (1) estimates a normalized income measure for one future period (typically, one year) and (2) divides that measure by an appropriate investment rate of return. The appropriate investment rate of return is called the direct capitalization rate. The direct capitalization rate may be derived for (1) a perpetuity time period or (2) a specified finite time period. This decision will depend on the valuation analyst's estimate of the intellectual property RUL.

Typically, the analyst will conclude that the intellectual property has a finite RUL. In that case, the analyst may use the yield capitalization procedure. Or, the analyst may use the direct capitalization procedure with a limited life direct capitalization rate. Mathematically, the limited life capitalization rate is typically based on a present value of annuity factor (PVAF) for the intellectual property RUL.

In the yield capitalization procedure, the valuation

analyst projects the appropriate income measure for several future time periods. The discrete time period is typically based on the intellectual property RUL. This income projection 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 capitalization rate—over the expected term of the income projection.

The result of either the direct capitalization procedure or the yield capitalization procedure is the income approach value indication for the intellectual property.

Income Approach Illustrative Example

Finally, Exhibit 6 presents a simplified illustrative example of an income approach intellectual property valuation. In this example, the valuation analyst is asked to estimate the fair market value of the hypothetical Pi Company pharmaceutical product patent. The analyst is instructed that the appropriate valuation date is January 1, 2011.

The valuation analyst decided to use the income approach and the excess earnings method. Because the patent product revenue is expected to change at a non-constant rate over time, the analyst decided to use the yield capitalization procedure. Using this procedure, this valuation method is often called the multiperiod excess earnings method (or MEEM).

The Pi Company patent is used to manufacture the Delta pharmaceutical product line. Based on the remaining legal life of the Pi patent and the Delta product line revenue decay rate (considering the effect of a competitive drug product), the valuation analyst estimates a 10-year RUL for the Delta patent.

Pi Company management provided the analyst with a financial projection for the overall Pi Company product line in which the Pi product fits. The analyst

Exhibit 6. Pi Company								
Valuation Of Pharmaceutical Product Patent Income Approach—								
Yield Capitalization Procedure As Of January 1, 2011								
			Pro Forma Years					
			12/31/11	12/30/12	12/30/13	12/30/14	12/31/15	12/30/16
Valuation of the Delta Product Patent	Notes	\$000	\$000	\$000	\$000	\$000	\$000	\$000
Pi Company Product Line Revenue		4,643,232	4,450,217	4,184,750	3,880,000	3,596,750	3,313,500	3,030,250
Annual Growth Rate Percent		-1.2%	-4.2%	-6.0%	-7.8%	-9.6%	-11.4%	-13.2%
Estimated Delta Product RUL		10	10	10	10	10	10	10

To see the remainder of this chart, please visit:

See www.lesi.org/lesnouvelles/attachments/lesNouvellesArticleReillyTables.xlsx

Exhibit 7. Pi Company

Valuation Of Pharmaceutical Patent Income Approach—Yield Capitalization Procedure
Contributory Asset Capital Charge Analysis

	FYE 12/31/11 \$000				
Tangible Assets Capital Charge:					
Beginning Tangible Assets [a]	12,034,000				
Capital Expenditures [a]	1,162,971				
Depreciation Expense [a]	(2,249,209)				
Net Tangible Assets	10,947,762				
Consolidated Pi Company Revenue [b]	9,691,426				

To see
the remainder of
this chart, please visit:

See www.lesi.org/lesnouvelles/attachments/lesNouvellesArticleReillyTables.xlsx

performed a revenue decay rate analysis related to the Delta product in order to conclude a Delta patent revenue growth rate (or, in this case, decay rate).

Exhibit 6 presents the projection of the Delta product revenue and profit over its expected 10-year RUL. The analyst estimated an appropriate capital charge on all of the Pi Company contributory assets, including working capital assets, tangible assets, and routine (non-patent) intangible assets. This contributory asset analysis is summarized on Exhibit 7.

In order to control the number of exhibits, let's assume that Pi Company has the same 11 percent cost of capital as presented in the previous Tau Company (market approach) example (see Exhibit 5). Therefore, the valuation analyst used 11 percent as the Pi Company weighted average cost of capital—or present value discount rate.

Based on the income approach valuation analysis summarized in Exhibit 6, the analyst estimated that the fair market value of the hypothetical Pi patent was \$790 million, as of January 1, 2011.

Valuation Synthesis and Conclusion Procedures

In the valuation synthesis and conclusion process, the valuation analyst should consider the following question: Does the selected valuation approach(es) and method(s) accomplish the analyst's assignment? That is, does the selected approach and method actually quantify the desired objective of the analysis, such as:

- A defined value
- A transaction price
- A third-party license rate
- An intercompany transfer price
- An economic damages estimate

- An intellectual property bundle exchange ratio
- An opinion on the intellectual property transaction fairness

The valuation analyst should also consider if the selected valuation approach and method analyzes the appropriate intellectual property bundle of legal rights. The valuation analyst should consider if there were sufficient empirical data available to perform the selected valuation approach and method. That is, the valuation synthesis should consider if there were sufficient data available to make the analyst comfortable with the analysis conclusion. And, the valuation analyst should consider if the selected approach and method will be understandable to the intended audience for the intellectual property valuation.

Intellectual Property RUL Considerations

The valuation analyst should also consider which approaches and methods deserve the greatest consideration with respect to the intellectual property RUL. The intellectual property RUL is an important consideration of each valuation approach.

In the income approach, the RUL will affect the projection period for the intellectual property income subject to either yield capitalization or direct capitalization. In the cost approach, the RUL will affect the total amount of obsolescence, if any, from the estimated "cost" measure—that is, the intellectual property reproduction cost or replacement cost. In the market approach, the RUL will effect the selection, rejection, and/or adjustment of the comparable or guideline intellectual property sale and license transactional data.

The following factors typically influence the intellectual property expected RUL:

- Legal factors
- Contractual factors
- Functional factors
- Technological factors
- Economic factors
- Analytical factors

Each of these factors is normally considered in the valuation analyst's RUL estimation. Typically, the life factor that indicates the shortest RUL deserves the primary consideration in the valuation synthesis and conclusion.

Ultimately, the experienced valuation analyst will use professional judgment to weight the various valuation approach and method value indications to conclude a final value, based on:

- The analyst's confidence in the quantity and quality of available data
- The analyst's level of due diligence performed on that data
- The relevance of the valuation method to the subject intellectual property life cycle stage and degree of marketability
- The degree of variation in the range of value indications

Based on the valuation synthesis, the intellectual property final value conclusion can be either (1) point estimate (which is common for fair market valuations) or (2) a value range (which is common for transaction negotiations or license/sale fairness opinions).

Summary and Conclusion

Valuation analysts are often asked to value intellectual property for a number of reasons. In addition to license negotiation, analysts are often asked to estimate an intellectual property value (or damages, transfer price, etc.) for various transaction, taxation, financing, litigation, bankruptcy, accounting, and planning purposes.

In all cases, the valuation analyst will consider the generally accepted intellectual property valuation approaches, methods, and procedures. License participants are often most familiar with the market approach valuation methods. However, there are numerous instances when cost approach and income approach valuation methods are also applicable to the subject valuation analysis.

This discussion also summarized on the analyst's valuation synthesis and conclusion procedures. In this process, the analyst reconciles two or more value indications in order to reach a final intellectual property value conclusion.

Regardless of the subject intellectual property or the reason for the valuation, the analyst should be familiar with the generally accepted intellectual property approaches and methods. And, the analyst should have a clear, convincing, and cogent rationale for (1) accepting each method applied and (2) rejecting each method not applied. That way, the valuation analysis will serve the purpose and objective of the owner/operator. In addition, the valuation analysis will be able to withstand a contrarian scrutiny and critique. ■