ICEAA 2019 Workshop

Intellectual Property Valuation: An Overview

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What do we know about IP valuation?

- Intellectual property (IP) has value
  - Protected by patents, copyright and trademarks
  - Allows owners to earn money from their inventions
- Establishing IP value is relatively new
  - Jargon and approaches are still developing
  - Establishing value of hardware based on development, production, and overhead cost is well defined
  - As IP markets are evolving, so are value and valuation
- If asked to derive a cost estimate for IP valuation, what approaches could be taken?

IP Terminology

- IP refers to inventions, literary & artistic works, designs, names, images
  - Background Technology: IP developed separately from sponsored research
  - Foreground Technology: IP created during the agreement
- IP Valuation: estimated value calculated using industry accepted methods
- IP Price: price paid for IP rights (may be different from IP value)
- Data Rights: commercial rights, non-commercial rights, unlimited rights, Government Purpose Rights (GPR), limited restricted rights, and Specially Negotiated License Rights (SNLR)
- License Agreement: contract or clause under which one party will use IP created by another
- License Grant: contractual provision listing specific activities allowed under the license
- Licensee: the party using the license
- Licensor: the party giving the license

Where is IP?

- Copyright
- Patents
- Trademarks
- Industrial Designs
- Software
- Equipment
- Applications
- Services where proprietary information is utilized
- Documents
- Processes
- Geographical indications and appellations of origin

If asked to derive a cost estimate, how to start?

- First look at the big picture
  - Analogy between a house and intellectual property

House protects against outside environment	IP rights protect against competitive environment
Live in a house	Use IP directly
Rent out a house	License IP rights for a fee
Sell a house	Sell an IP right, normally called an assignment
Hold as investment	Owning but not exploiting IP avoids competition

Prerequisites for IP Valuation

- Tangible evidence of existence
- Documentation for IP creation
  - When
  - Where
- Capable of being legally enforced and transferred
- Income stream defined
  - Separately identifiable
  - Isolated from contribution of other assets
- Capable of being sold without selling other assets
- Termination defined
  - Identifiable time (or time period)
  - Result of identifiable event

Preparing for IP valuation

- Gather data
  - Finding data may be difficult
  - Most time consuming part of process
- Review license grant
  - Quantify each right granted
  - Most IP transactions are confidential
- Consult with an expert
- Document, document, document

Data Gathering: Parameters

- Who owns the existing IP assets?
- What IP assets are owned by the business?
- Does the business use IP assets owned by others?
- What steps are required to protect IP in all relevant jurisdictions?
- What factors would affect the value of IP?
  - Remaining legal life too short
  - Substitute product or an alternative patented technology available
- Is there a chance that a 3rd party will claim ownership of the IP?
- Is there any existing IP that could block effective use of the IP?
- Is use of IP asset supported by other IP assets that increase value?
  - Patent supported by trademark
  - Patent supported by industrial designs
  - Trade secret supported by a trademark, etc.

Data Gathering: Market information

- What is the market strength of the IP?
- What is the level of competitiveness in the marketplace?
- Does IP have wide (regional or international) use and coverage?
- Does the IP cover several products or a single product?
- Coverage consideration for patents
  - Basic patent (used by other patents)
  - Dependent patent (based on another patent; the invention covered by the dependent patent is incremental)
  - Independent patent (not dependent on any enforceable patent)
- What is likely ability to exclude competitors from market?

Review License Grant

- Quantify each right granted in terms and conditions
- Quantify what is being licensed including
  - Whether enhancements are included
  - In what territory
  - For how long
  - Whether the license is exclusive or not
  - Whether there are any field of use restrictions
  - Accounting provisions
  - Termination provisions
  - Compensation payable for the license
  - Other categories included in "Boilerplate Clauses"

License Payments

- License agreement includes one or more of the following
  - Up-front payment, a running royalty, and a minimum royalty
  - Goal for each party to receive fair proportion of benefit
- Royalty price options
  - Calculated as percentage of net selling price of goods or services
  - Fixed amount per sale
  - Surveys show royalties paid in connection with license agreements can range between 0.1% of net selling price and 50%
  - Wide range complicates comparisons which complicates estimating
- To start the process of determining a fair royalty
  - Calculate benefits and costs to try to determine licensee's profit
  - Rule of thumb: fair royalty gives licensor about 25% of the profit

Goals of IP Valuation

- Value = value of future economic benefits
  - Value to buyer must exceed price paid plus many other costs
    - Time costs
    - Transaction costs
  - Discriminators such as ability to exclude competitors
  - Lifecycle phase impacts value
    - Book value
    - Fair value
    - Open market value
    - Liquidation value
- Price influenced by many factors
  - Demand
  - Reasons for selling
  - Synergies for buyer
  - Negotiation skills of the parties involved, etc.

Methods for IP Valuation

- Specialized/Proprietary
  - Auction Method
  - Decision Tree Analysis Based Methods
  - Brand Value Equation Methodology (BVEQ™)
  - Competitive Advantage Technique
  - Monte Carlo Analysis of Value
  - Options Pricing Technique (The Black-Scholes)
  - Snapshots of Value Approach
  - Subtraction Method of Value or Benchmark Method of Value
  - ValCalc Methodology
  - Valmatrix Analysis Technique

- Generally Accepted
  - Relief from Royalty Approach
  - Brand Contribution Method
  - **Replacement Cost Method**
  - **Reproduction Cost Method**
  - Technology Factor Method
  - **Market method**
  - Venture Capital Method
  - Concept of Relative Incremental Value
  - Decremental Cost Savings Valuation
  - Enterprise Value Enhancement
  - Imputed Income Analysis
  - **Income Capitalization or Direct Capitalization Method**
  - Income Differential Analysis
  - Liquidation Value
  - Premium Pricing Analysis
  - Profit Split Methodology

Attempt to Standardize

- What is the context, purpose, or objective of analysis?
- Contract provisions can be classified as essential or non-essential to facilitate the process
- Focus on elements of essential clauses
- Identify elements that vary from agreement to agreement
- Establish repeatable process for analyzing selected elements
  - Reduces the level of confusion and variability
  - Use of defined terms, the content of which may vary, is essential
    - Enables the architecture of agreements to be finite and predictable
    - Specific elements remain adaptable to each transaction

Income Method

- Values IP on present value of expected income
  - Gross or net revenues or profit
  - Operating or net cash flow
  - Incremental income
  - Cost savings
- Steps to determine economic income
  - Project revenue (or cost savings) over remaining useful life
  - Offset those revenues / savings by costs related directly to the IP
    - Labor and materials
    - Required capital investment and rents or capital charges
  - Discount for risk using the discount rate or the capitalization rate to discount the income to present value

With the variety of measures used, it's essential to ensure the discount or capitalization rate used is consistent with the measure of economic income used

Income Methods
Direct Capitalization vs. Discounted Cash Flow

- Direct capitalization
  - Estimates the appropriate measure of economic income for one period (i.e., one period future to the valuation date)
  - Divides that measure by an appropriate investment rate of return (Capitalization rate)
- Capitalization rate may be derived for a perpetual or specified finite period of time, depending on expected duration of the income stream

- Discounted cash flow (DCF)
  - Projects the appropriate measure of economic income for several discrete time periods into the future
  - Converts projection of cash flows into present value using a present value discount rate
- Present value discount rate is the investor's required rate of return over the projected term of economic income

Income method
Advantages & Disadvantages, especially DCF

- Advantages
  - Easiest to use for IP where
    - cash flows are currently positive and can be estimated with some reliability for future periods
    - where there is proxy for risk that can be used to determine discount rates
  - Best captures value of IP generating relatively predictable cash flows
  - Forces consideration of characteristics of the business
  - Exposes assumptions being made when given price is paid for asset
- Disadvantages
  - Using market determined discount rate only accounts for systematic risk, not for total riskiness of cash flows
  - Assumes investment in IP asset is irreversible, irrespective of circumstances in the future
  - Does not capture unique independent risks associated with IP such as patent
  - Fails to consider dependencies on patents owned by others

How to value IP assets using DCF

- Project income stream (Cash Flow)
- Determine Remaining Economic or Useful Life of the IP
- Discount for risks (Discount Rate)

Projecting Income Stream

- Quantify key parameters
  - Income from the IP
  - Expected growth of income
- Sources of data
  - Income Statement (Revenue less expenses)
  - Cash Flow Statement

Determining Remaining Useful Life

- How long will revenue last?
  - Patents lose their useful life when legal protection comes to an end
  - Copyright may have a long useful life
  - Trade secret may have an indefinite useful life if it remains confidential and continues to be of competitive value to its owner
- Are typical product life cycles for the IP type public information?
- Will IP become obsolete technologically or commercially?
- How stable is the industry in which the IP operates?
- What expenditure is required to maintain expected economic benefits?
- What is the period of control over the IP asset?
- Is useful life of the IP dependent on the useful life of other IP?
- Is there residual value that should be included in the valuation?

Considering Risks

- What are the risks?
  - Overall market risk
  - Specific industry risk
  - Risks associated with specific IP and use being considered
- Determine appropriate return for accepting risk
- Several methods used to calculate the discount rate
  - Capital Asset Pricing Model (CAPM)
  - Weighted Average Cost of Capital (WACC)
  - Arbitrage Pricing Theory (APT)

How to Value IP Using DCF

- Quantify key parameters
  - Cash flow anticipated (CF)
  - Time of economic life of IP (t = time in years)
  - Expected lifetime (n = time when economic life ends)
  - Risk calculated as annual discount (r = annual discount rate or time value of money)
  - Present value (PV)
- Plug values into DCF equation

$$PV = \frac{\sum_{t=1}^{n} CF_t}{(1+r)^t}$$

Example Using DCF

- Quantify value of software licensed for 5 years
  - Cash flow anticipated (CF = $10,000)
  - Time of economic life of IP (t = 5 years)
  - Expected lifetime (n = 5 years)
  - Risk calculated as annual discount (r = 8%)

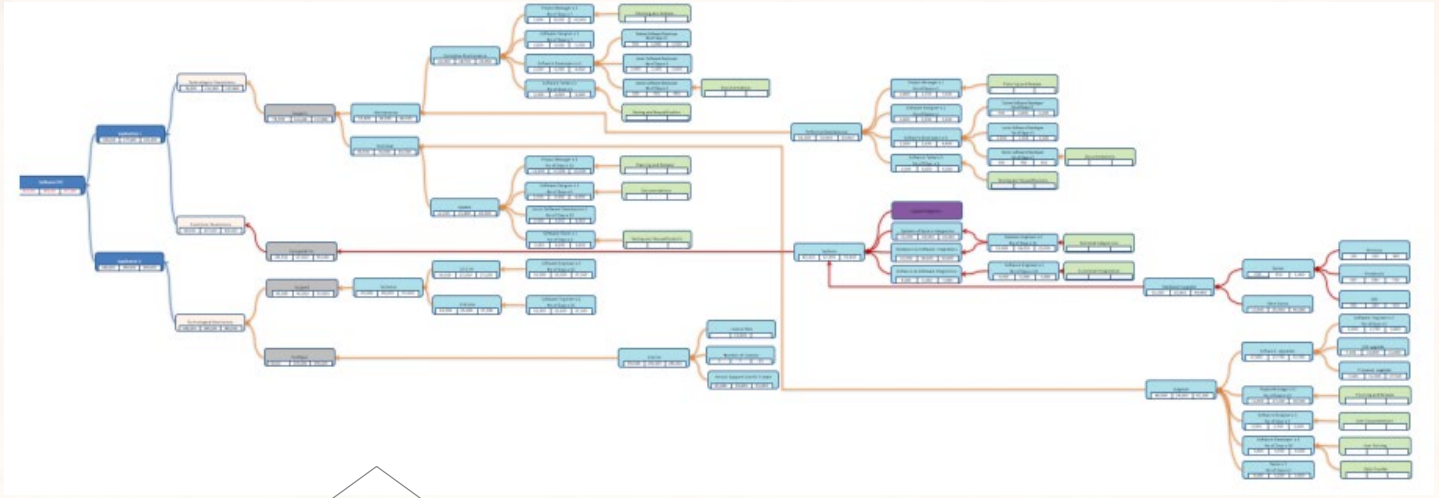
- Plug values into DCF equation

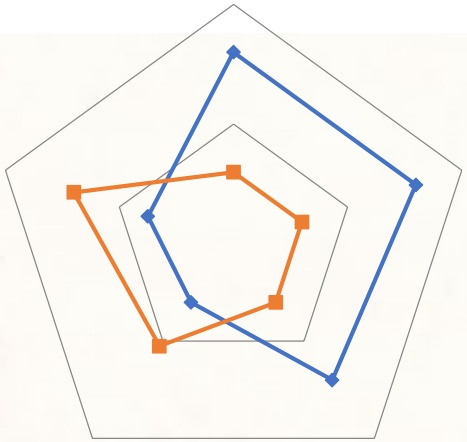
$$PV = \frac{\sum_{t=1}^{5} \$10k}{(1+.08)^t} \sim \$34{,}000$$

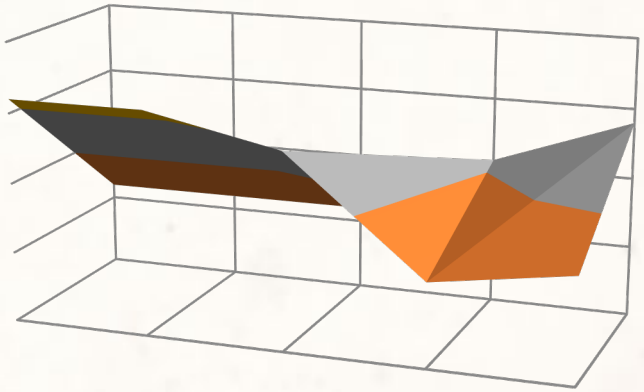
Best Practices

- Engage an expert
- Ensure alignment
  - Terminology
  - Parameters used in valuation
- Use multiple valuation techniques
  - Include all appropriate elements of value
  - Include all the IP components
- Make it a conversation

How can complexity be communicated?







Takeaways

- More information available = more accurate valuation
- Remember it's likely everyone is learning
- Many estimators using similar approaches
  - No uniform nomenclature
  - Organization of estimates differ
- Next steps
  - Develop a cost analysis framework
  - Develop uniform taxonomy

Additional Information

Resources & References

- World Intellectual Property Organization (WIPO)
  - "World's most comprehensive source of data on the …(IP) system, as well as of empirical studies, reports and factual information on IP"
  - "We make all our publications and data collections freely available online"
  - https://www.wipo.int/about-ip/en/
  - https://www.wipo.int/export/sites/www/sme/en/documents/pdf/ip_panorama_11_learning_points.pdf
- International Licensing Executives Society
  - https://www.lesi.org/
  - https://www.lesi.org/about/resources/licensing-faqs
  - 33 Regional Societies covering >90 countries
    - https://www.lesusacanada.org/default.aspx
- IPWatchdog.com
  - "trusted resource on intellectual property for tens of millions of unique visitors for nearly 2 decades"
  - https://www.ipwatchdog.com/2015/02/11/alternate-approaches-to-the-valuation-of-intellectual-property/id=54651/

Cost Method

- Based on establishing value of an IP asset
  - Calculating cost of developing a similar (or exact) IP asset
  - Either internally or externally
- Determine value of IP asset at a particular point of time
  - Aggregating direct expenditures and opportunity costs involved in development
  - Considering obsolescence of IP asset
- Generally the least used of three most common methods
  - Used as a supplement to the income method
  - Used when subject IP is currently not generating any income

Cost Method:
Reproduction Cost vs. Replacement Cost

- Reproduction cost method
  - Reproduction cost considers the construction of an exact replica of the subject IP
  - Total cost, at current prices, to develop an exact duplicate or replica of the subject IP
  - Duplicate asset would be created using same or similar materials, standards, design, layout, and quality used to create original IP asset
  - Does not account for changes in technology, higher utility from other materials, and other factors
- Replacement cost method
  - Cost to recreate functionality or utility of subject IP, in a form or appearance that may differ from the subject IP
  - Total cost, at current prices, to create an asset having equal functionality or utility
  - Replacement IP may have greater functionality and / or utility than the subject IP
  - Replacement IP asset would be created with modern methods, design, layout, new technology, and high quality

Costs are as of the valuation date, not the historical expenditures that actually took place

Reproduction Cost & Replacement Cost Calculations

- First, calculate replacement cost through the formula:
  - Reproduction Cost
    - – Curable functional and technological obsolescence
    - = Replacement Cost
  - IP's deficiencies are considered curable when prospective economic benefit of enhancing the IP > current cost of material, labor and time needed to change it
- Next, use the replacement cost to estimate the IP's value
  - Replacement Cost
    - – Economic obsolescence
    - – Incurable functional and technological obsolescence
    - = Value
  - An IP's deficiencies are considered incurable when prospective economic benefit of enhancing the IP < current cost of material, labor and time needed to change it

Reproduction & Replacement Cost Uses

- Uses for Reproduction Cost method
  - Litigation purposes
  - Measuring return on investment (ROI)
  - Tax reporting purposes (for embedded computer software)
- Uses for Replacement Cost method
  - Estimating target price prior to negotiations for purchasing IP
  - Calculating basis for suitable royalty rates
  - Determining transfer price
  - Establishing consumer brand from 20 years ago in today's market which contains many new direct-to-consumer options
- Factors impacting decision on variant to be used
  - Type of IP asset to be valued
  - Date on which the valuation is to take place
  - Context in which the valuation is made

Market Method

- Based on comparison to actual price paid for similar IP under comparable circumstances
- Requirements for valuation with this method
  - Active market (price information from arm's length transactions)
  - Exchange of identical IP or group of comparable or similar IP
  - Variables to control for differences if IP is not perfectly comparable
- More information available = more accurate valuation
  - Nature and extent of rights transferred
  - Detailed terms and conditions
  - Circumstances of the transaction
- Method more likely to reflect market perceptions and moods than a valuation based on the income method

Market Method

- Sources of Comparables and "Industry Standard" Data
  - Official filings (SEC filings)
  - Surveys
  - Licensing publications
  - Valuation books
  - Published court cases
  - Shopped term sheets
  - Published agreements
  - Proprietary databases
  - Consultants

- Type of variables to consider
  - Timing and duration
  - Type of IP (patent, trademark, etc.)
  - Scope and status of legal protection
  - Risk of validity of IP rights
  - IP contribution to market demand for final product
  - Availability of substitutes
  - Licensor's expected profitability from use of the IP
  - State of development of the IP
  - Circumstances of previous license agreements
  - Cross-licensing potential
  - Industry and company structure
  - Market size and characteristics
  - Growth outlook for products
  - Channels of distribution
  - Other barriers to entry and exit

Market Method: Advantages and Disadvantages

- Advantages
  - Simplicity
  - Use of market based information
  - Very useful if exact comparables are available (e.g., license agreements related to same technology)
  - Often used to establish "ballpark" values, especially for royalty rates
  - Favored by tax authorities for deals with affiliates
  - Useful for deriving inputs for the Income method
- Disadvantages
  - Often impossible to find exactly alike or comparable IP
  - Compares general information available in the market
  - Time factor affects usefulness of historical databases
  - Difficult to use for comparing deals with multiple forms of compensation (e.g., equity, milestone payments, royalties)
  - Many unknown deal factors
  - Outside influences cannot be considered (e.g., trademarkes)

Often the only good transactional data is from a transaction where there is access to the legal agreement.
Generally, such data is highly confidential.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