VALUATION OF INTELLECTUAL PROPERTY AND INTANGIBLE ASSETS
TECHNIQUES USED & ASSESSMENT OF RESULTS

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REVOLUTIONARY CHANGES IN THINKING ABOUT INTELLECTUAL PROPERTY AND VALUE

♦ Economic Paradigm Shift
♦ Communication/IT Revolution
♦ Mergers & Acquisitions
DEFINITION OF INTANGIBLE ASSETS FROM A VALUATION PERSPECTIVE

♦ Smith, Parr definition
♦ Brookings Task Force definition
♦ U.S. FASB definition
♦ International Valuation Standards Committee definition
DEFINITION OF INTELLECTUAL PROPERTY (IP) FROM A VALUATION PERSPECTIVE

♦ Special class of Intangible Assets
♦ Protected by law from exploitation by others
♦ Patents, trademarks, copyrights, trade secrets (know-how)
TANGIBLE AND INTANGIBLE ASSETS HAVE VASTLY DIFFERENT CHARACTERISTICS...

♦ Value from Tangible Nature v. Value from Property Rights and Intangible Factors

♦ One Place at One Time v. Multiple Uses for Multiple Returns

♦ Depreciation v. Cumulative Property of Knowledge
  "Knowledge is cumulative, with each idea building on the last, whereas machines deteriorate and must be replaced."
  - Baruch Lev
LIKE THE ECONOMICS OF THINGS VERSUS THE ECONOMICS OF INFORMATION

- Costly Replication v. Zero Cost Replication
- Diminishing Returns v. Perfectly Increasing Returns
- Efficient Markets v. Requirement of Imperfect Markets/Tendancy towards Concentration
RELATIONSHIPS AMONG THE DIFFERENT TYPES OF ASSETS

♦ Highest and Best Use Analysis
  - Generally achieved within the context of a business enterprise

♦ Business Enterprise as a Portfolio of Assets

♦ Complementary Assets
ROLES OF IP IN VALUE CREATION

♦ Producing an Economic Advantage
♦ Raising Barriers to Competition
♦ Protecting or Creating a Strong Market Position
IP VALUE DETERMINANTS

♦ Benefit Stream
♦ Risk
♦ Time Period
BENEFIT STREAM

♦ Economic Conditions
♦ Profitability
♦ Complementary Assets
RISK

- Use of Discount Rates
- Relative Risk among Asset Classes
- Required Return by Asset Class and Cost of Capital
- Country/Political Risk
- Legal Risk (e.g., Degree of Legal Protection afforded)
Required Return by Asset Class and Cost of Capital

- Monetary Assets: 4%
- Tangible Assets: 10%
- Trade Name: 18%
- Assembled Workforce: 18%
- Customer Base: 18%
- Software: 22%
- In-process R&D: 25%
- Goodwill: 30%
TIME PERIOD

- Economic Life - Product Life Cycle
  - Discontinuous Innovation
  - Congruent Innovation
- Economic Life - Technological Obsolescence
- Economic Life - Functional Obsolescence
- Legislated/Statutory Life
- Contractual Life
CONGRUENT VERSUS DISCONTINUOUS INNOVATION

CONGRUENT INNOVATION

Discontinuous Innovation

Innovator’s Reward

Innovator’s Penalty

TIME PERIOD

MARKET PENETRATION

Congruent Innovation

Discontinuous Innovation
VALUATION OF INTANGIBLE ASSETS / IP

♦ Purpose and Use of Valuation
♦ Standards of Value - Value to whom?
♦ Premises of Value - How?
♦ Valuation Approaches
PURPOSES AND USES OF IP/INTANGIBLE ASSET VALUATIONS

- Financial Reporting
- Sale Transaction Support
- Licensing
- Strategic Alliances
- Infringement Damages
- Transfer Pricing
- Equity Raising
- Collateral-based Financing
STANDARDS OF VALUE

- Fair Market Value
- Fair Value
- Market Value
- Investment Value
- Collateral Value
- Arm's-Length Standard
- Other Standards of Value
PREMISES OF VALUE

♦ Highest and Best Use Criteria

♦ Alternative Premises of Value
  – Value in continued use, as part of a going-concern business enterprise
  – Value in place, but not in current use in the production of income
  – Value in exchange, as part of an orderly disposition
  – Value in exchange, as part of a forced liquidation (fire sale)
VALUATION OF IP - THREE APPROACHES

♦ Market Approach
♦ Cost Approach
♦ Income Approach
MARKET APPROACH

♦ Provides indications of value by studying transactions of property similar to the property for which a value conclusion is sought.

♦ Requirements
  – Active market involving comparable property
  – Past transactions of comparable property
  – Access to transaction price information
  – Arm's-length transactions between unconnected parties
COST APPROACH

♦ Replacement Cost Method
  – Cost of obtaining a property of equivalent utility
    - "Cost of Replacement"

♦ Reproduction Cost Method
  – Cost to obtain an unused replica of the subject property
    - "Cost of Reproduction New"

♦ Valuation (as opposed to accounting) Depreciation
  – Physical depreciation - wear and tear
  – Functional obsolescence
INCOME APPROACH

- Defining the Economic Benefit
- Capitalization or Discount Rate
- Economic Life
INCOME APPROACH METHODS FOR DEFINING ECONOMIC BENEFITS

♦ Direct Methods
  – Increased revenues
    – Product sales
    – Licensing
  – Cost savings

♦ Indirect Methods
  – Relief from royalty
  – Comparative business valuation
  – Analytical methods - IP as part of a portfolio of assets of the business enterprise
The various valuation approaches and methods provide the valuer with a “toolkit.”

An assortment of tools will probably be used on a “job.”

Proper use of the tools is guided by standards, for example
- International Valuation Standards
- Uniform Standards for Professional Appraisal Practice
- Business Valuation Standards of the Institute of Business Appraisers.

Proper use of the tools requires professional judgment and experience.

Independence and lack of bias are key.
VALUATION FOR FINANCIAL REPORTING - BUSINESS COMBINATIONS

♦ Magnitude of Issue
  – Explosion in M&A activity
  – Relative importance of Intangible Assets/ IP
    – In the U.S., since 1980, the average ratio of market capitalization to book value has risen from slightly over one to a multiple higher than five.
    – In 1970, intangible assets represented less than 20% of the market value of the majority of U.S. public corporations. Now they represent 85%.
Monumental Change in Accounting for Business Combinations - SFAS 141 & 142
  - SFAS 141: “Business Combinations”
  - SFAS 142: “Goodwill and Other Intangible Assets”
    see: www.fasb.org/st/summary/stsum142.shtml
    www.fasb.org/st/summary/stsum142.shtml

Status of International Accounting Standards re: Business Combinations
  see: www.iasplus.com/index.htm
VALUATION ISSUES IN TRANSFER PRICING

- Increasing Role of Intangible Assets and IP in Cross-border Transactions
- Arm's-length Standard
- Comparable Methods
- Profit Split Method
- Other Methods
VALUATION ISSUES IN LICENSING & ROYALTY RATE DETERMINATION

♦ Exploiting IP
♦ Bundle of Rights Theory
♦ Allocating Returns to IP
♦ Effect of Key Licensing Clauses on Valuation
♦ Discounted Cash Flow Analysis
COMING ATTRACTIONS

✶ Accounting Standards continue to move toward Fair Value - Internally Generated Intangibles

✶ Valuing Intangible Assets and IP as Real Options
REAL OPTIONS: A BUSINESS, PROJECT OR INTELLECTUAL PROPERTY IS LIKE A STOCK OPTION

♦ Stock options provide the holder the right, but not the obligation, to purchase (“call”) or sell (“put”) the underlying asset.

♦ Holder is able to wait and learn before spending.

♦ A drug development project provides management with a series of options to wait and learn.

♦ Before investing in Phase II trials, management learns outcome of Phase I (technology risk).

♦ Before investing in Phase II trials, management can reassess market developments (market risk).

♦ Before exploiting a patent, holder can assess market acceptance.
# REAL OPTIONS: SOME COMMON TYPES & FINANCIAL OPTION ANALOGS

<table>
<thead>
<tr>
<th>REAL OPTION</th>
<th>FINANCIAL ANALOG</th>
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<tbody>
<tr>
<td>Defer investment</td>
<td>Call</td>
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<tr>
<td>Expand</td>
<td>Call</td>
</tr>
<tr>
<td>Shrink or contract</td>
<td>Put</td>
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<tr>
<td>Abandon / liquidate</td>
<td>Put</td>
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<tr>
<td>Shut down &amp; restart</td>
<td>Put / Call</td>
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<tr>
<td>Option to switch resources</td>
<td>Call</td>
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<tr>
<td>Option for phased and sequential investments</td>
<td>Call</td>
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REAL OPTIONS: WHEN DO THEY REALLY HAVE VALUE?

♦ A contingent investment exists.
♦ High volatility exists.
♦ A future opportunity exists apart from value created by currently controlled assets.
♦ For an expansion or deferred investment option, when the first investment is necessary to make subsequent investments (you have to purchase the option)
♦ When the investment can be divided and / or delayed.
♦ When the option entails a partially or totally exclusive right.
VALUATION OF REAL OPTIONS

- Black-Scholes Method
- Binomial Method
- Monte Carlo simulation
CONCLUSIONS

♦ The proper valuation of Intellectual Property and Intangible Assets in today’s economy is critical to the value creation process.

♦ Though valuers have a number of tools in their toolkits, the field is fast developing. More work remains to move from the theoretical to the practical.

♦ As valuation of IP is extremely complex, judgmental and developing, priority must be placed on valuer independence and competence.

♦ Standards are critical.