

Day 2: Pre-negotiation Valuation – Developing Terms for a License

- National Workshop 3 on IP Commercialization
- Prince of Songkla University Thailand July 22 to 25, 2019
 - Organized by WIPO
 - Presented by
 - Michael J. Martin
 - President TechTransfer Associates
- Based on materials provided by Dick Cahoon and Nick Torno



Agenda

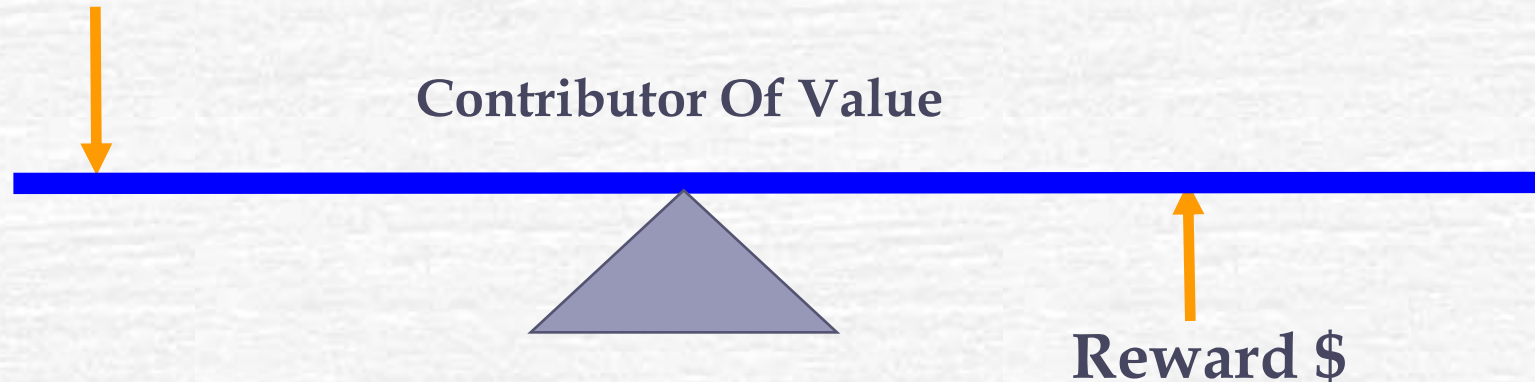
- ❑ Why Pre-negotiation Valuation
- ❑ How Determine Pre-Negotiation Value of University Invention
- ❑ When Prepare a Valuation Report.
- ❑ Building the Value Capture Envelope



Why Pre-negotiation Valuation

- ☞ A common misperception: Required to determine the absolute value of invention to negotiate a license agreement
- ☞ Fact: **IMPOSSIBLE** to accurately determine an absolute value of invention and related IP
- ☞ Goal: Develop a **FLEXIBLE** value-position for the starting point of a negotiation that arrives at a win-win agreement

Risk Borne



Why Pre-negotiation Valuation

Valuation vs. Price

- ❑ Valuation is starting point of negotiation
- ❑ Price is result of win-win negotiation

**Licensor – High Value +
Low Risk**

Price

**Licensee – Low Value +
High Risk**



Valuable Inventions? The “baby mop”



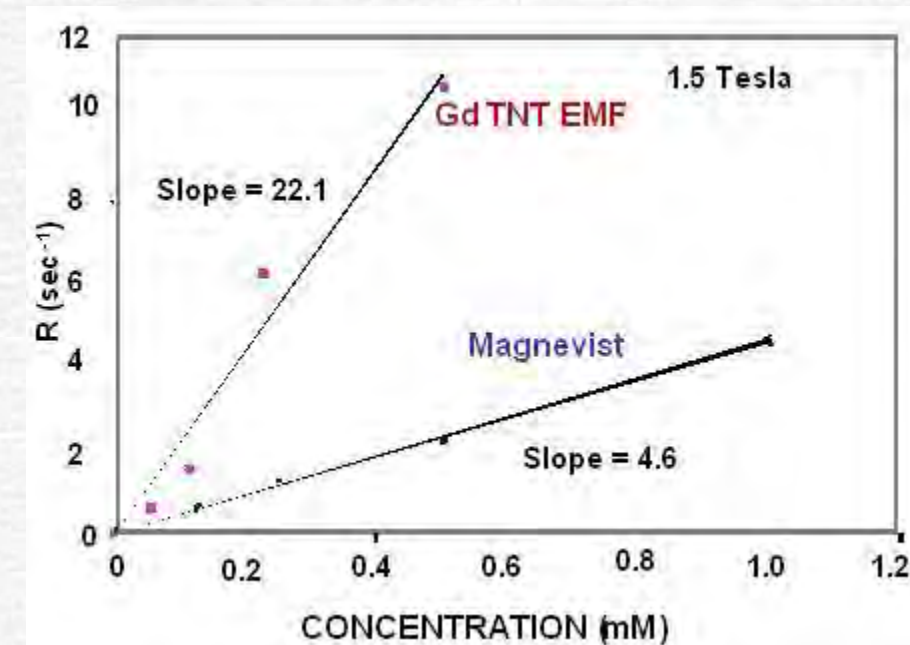
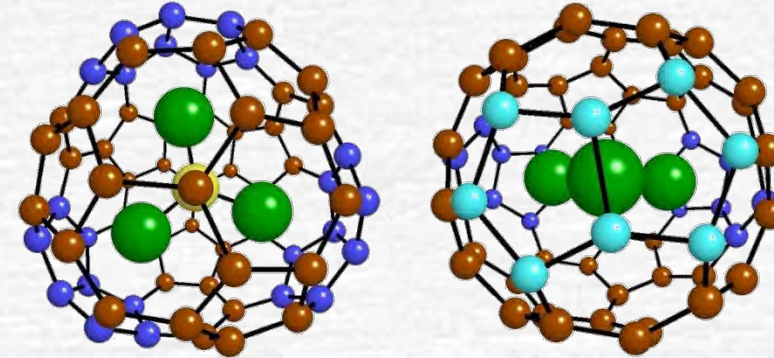
Valuable Inventions? "Steering wheel food tray"



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Your Certified Licensing Professional™ - Defining and Developing the Value of Your IP

Valuable Invention: New Method to Make Metallofullerenes

- ❑ High VC Buzz Factor
- ❑ Impact all markets
- ❑ Basic Science is of High Interest
- ❑ Virginia Tech
 - Improved Yield
 - Inventor Published
 - Attract Grants



Why Pre-negotiation Valuation

Be care full of perception of Value



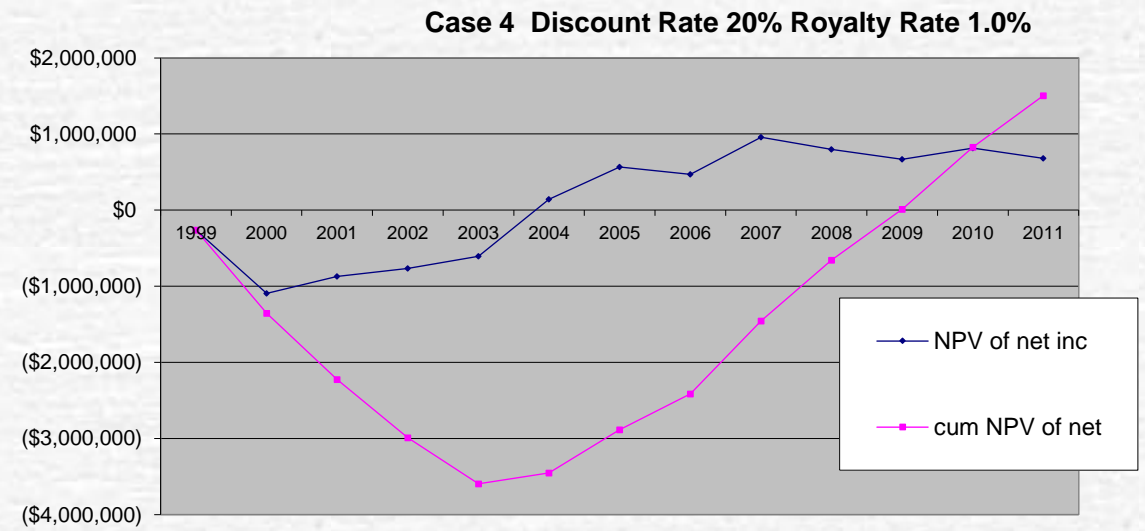
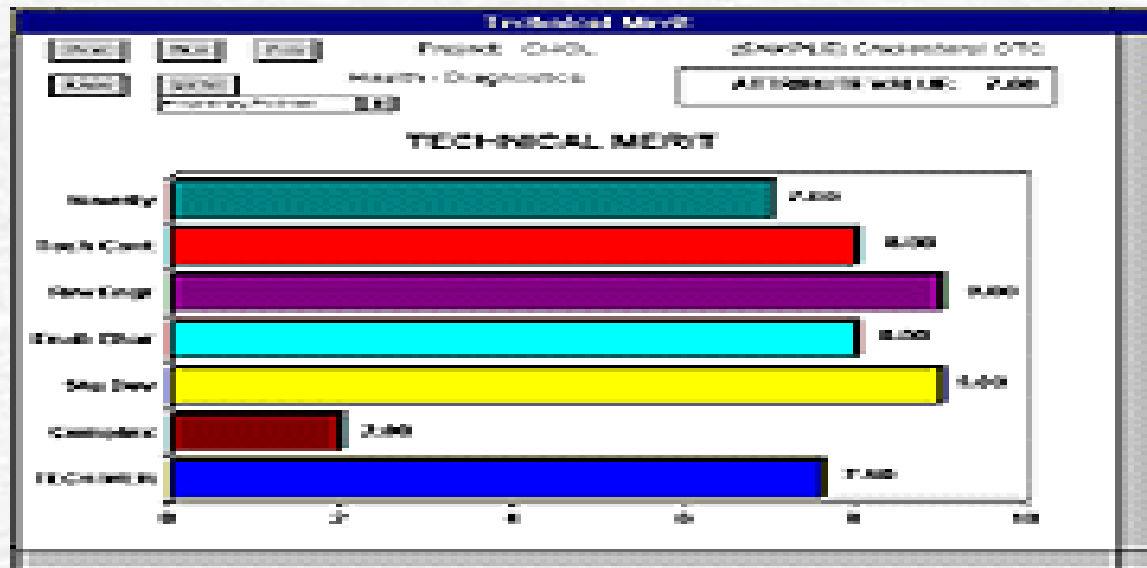
How Determine Pre-Negotiation Value

- ❑ Impossible to Define Absolute Value of Invention
- ❑ Context of University Licensing
 - Impact on Faculty – Access to scale-up equipment, new colleagues, new source of research funding
 - Impact on Community – Start-ups, New Jobs for graduates, “Better World”
 - Licensing Strategy - SME vs. Local start-up vs. Large Corporation; Scope of License – Assignment to Exclusive to Non-exclusive



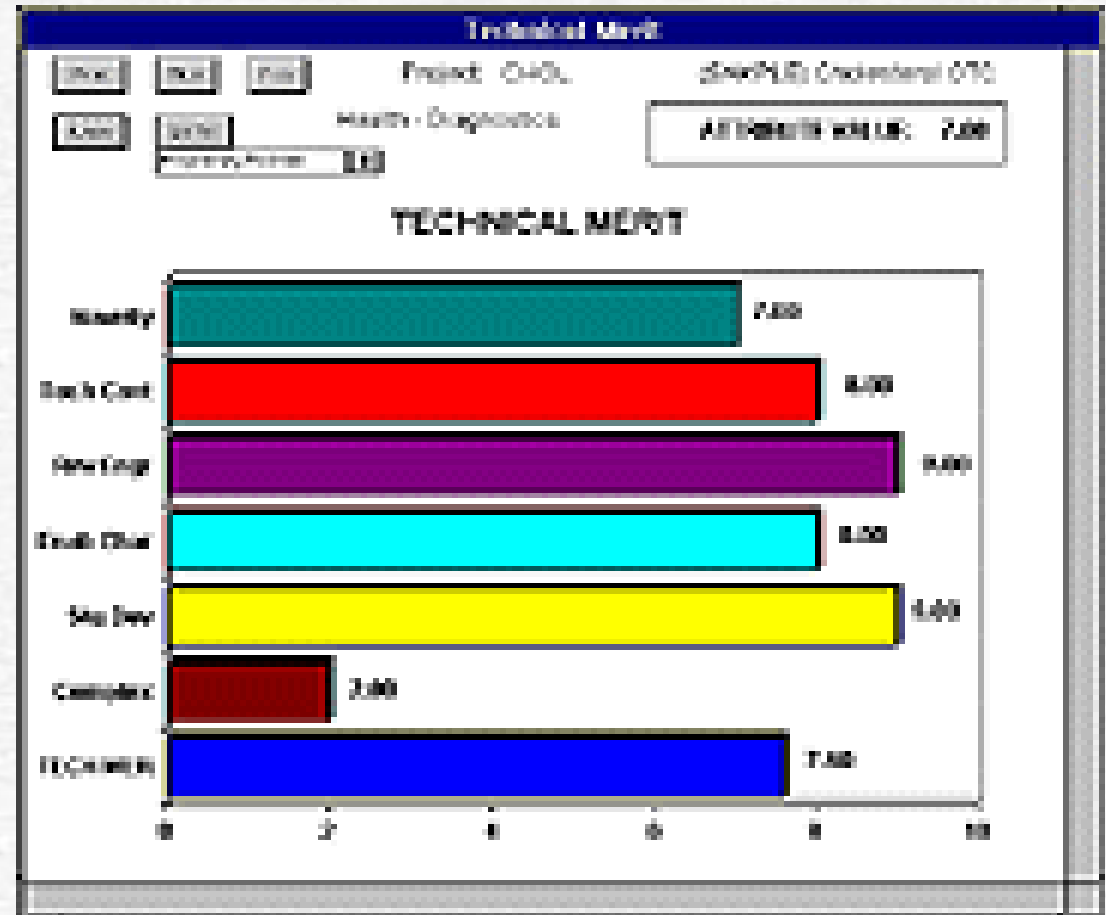
How Determine Pre-Negotiation Value: Quantify with approximations based on assumptions

- ❑ Understand the Non-financial Value: Technical Merit; Commercial Potential; Protectability; and Risk of the invention
- ❑ Estimate the “Financial” Value : Cost, Market, and Income Approaches



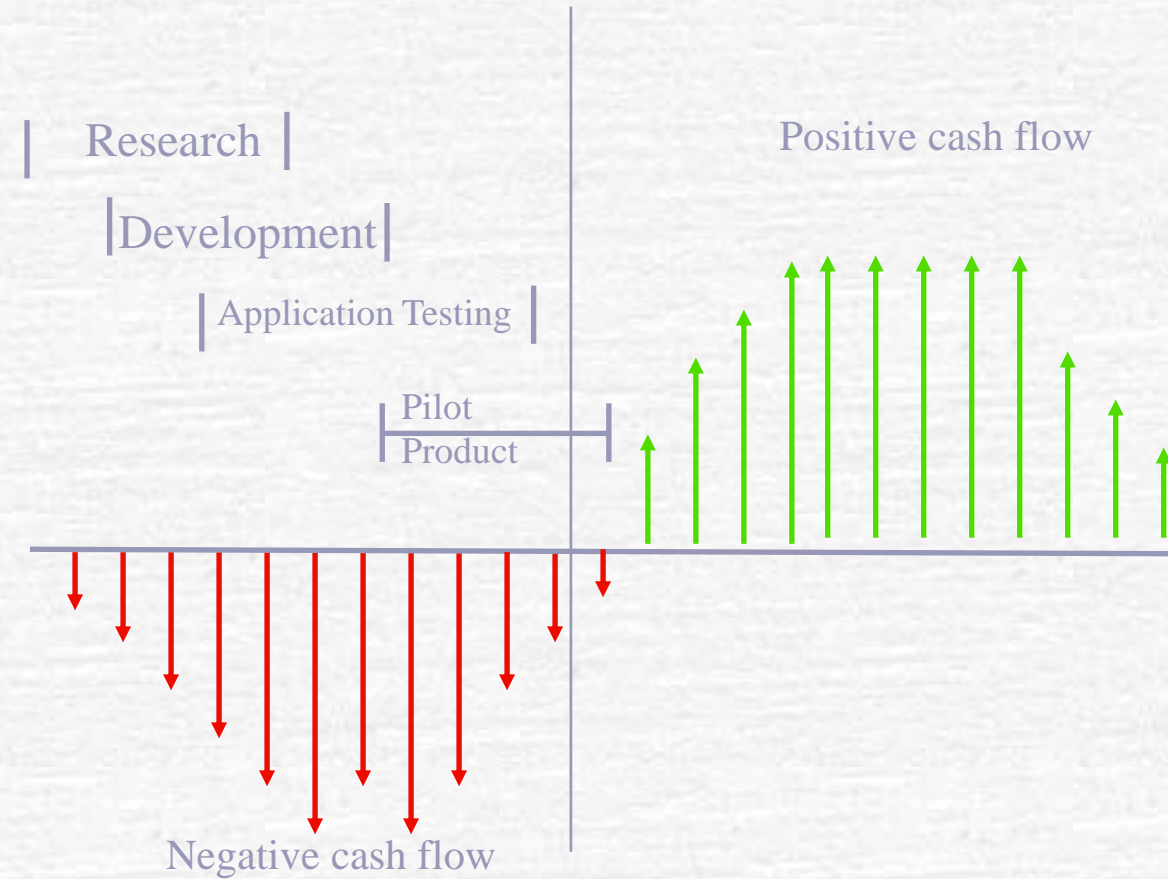
How Determine Non Financial Pre-Negotiation Value - Technical Merit

- Stage of Development
- Translate Function into Benefit
- "Robust Solution" to "Important Problem"
- Implementation Barriers



How Determine Non-financial Pre-Negotiation Value - Commercial Opportunity

- ❑ Economic Relevance –
 - ❑ What Problem is solved
 - ❑ How is Problem solved now
 - ❑ Translate Feature into Benefit
- ❑ Market Size: Elephant or Mouse
- ❑ How will Licensee make money
- ❑ Competitive advantage

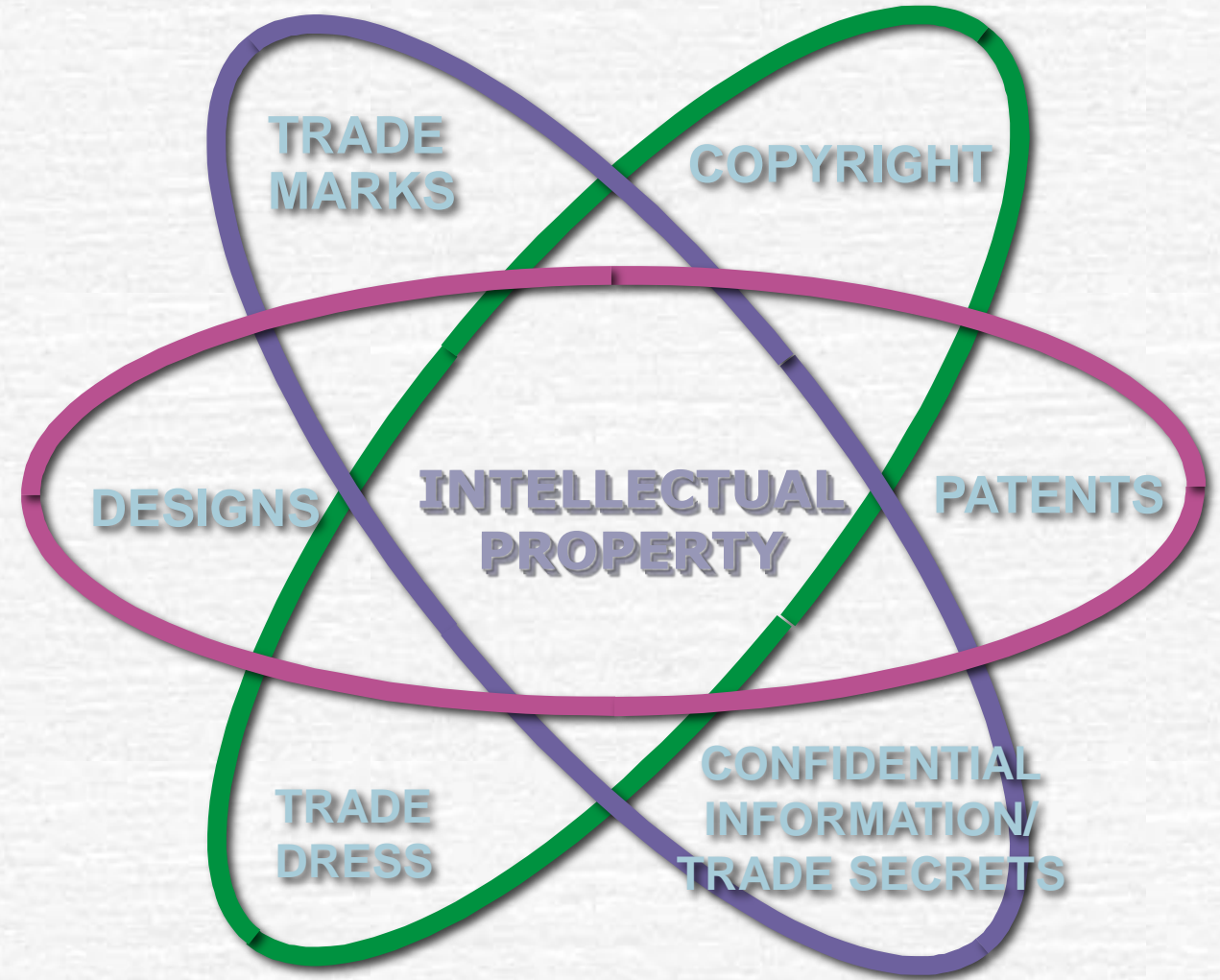


Commercialization of Product



How Determine Non-financial Pre-Negotiation Value - Protectability

- ❑ Appropriate Level of Protection
- ❑ Broad v. Narrow
- ❑ Freedom to Operate
- ❑ Prior Art; esp. of inventor
- ❑ Status of Protection
- ❑ Registration Requirements



How Determine Non-financial Pre-Negotiation Value – Risk Assessment

Risk	Potential Impact on Value – Assign Probability
R&D	Technology can't be successfully developed into a functional product
Regulatory	Product won't be found safe and effective; a recent study showed that only 9% of drugs that enter Phase 1 receive FDA approval
Manufacturability	Product can't be manufactured at an acceptable cost
Marketing	Marketing launch of the product is unsuccessful
Competitive	Competitor using a different technical approach solves the same problem
Technical	Scale up does not work and significant barriers to implementation
Legal	Competitor receives a blocking patent

Source: Intellectual Property Valuation Manual for Academic Institutions, Ashley J. Stevens, WIPO



How Determine “Financial” Pre-Negotiation Value – Valuation Techniques

- ❑ Cost Approach - Cost to create and develop or to replace the assets
- ❑ Market Approach - Based on comparable transactions between unrelated parties
- ❑ Income Approach - Based on the present value of the future income streams expected from the asset



How Determine "Financial" Pre-Negotiation Value – Cost Approach

- ✓ Cost to create and develop
- ✓ No party would pay more to use than to create and develop in an arm's-length transaction
- ✓ Historical costs or the projected cost to develop an asset of similar value at similar level
- ✓ Appropriate
 - ✓ Embryonic, basic technology for which market applications cannot yet be defined.
 - ✓ Technology is narrow in scope and easy to replicate or "design around"



How Determine “Financial” Pre-Negotiation Value

Reasons for Cost Approach

- ❑ Licensee avoids development mistakes made by others

- ❑ Works best when:
 - ✓ University - R&D costs can be identified: Time, Personnel; Facilities, Equipment, Overhead
 - ✓ Licensor: Delayed market entry, Intellectual property protection; Potential litigation costs



How Determine “ Financial” Pre-Negotiation Value

Example of Cost Valuation

University Development Cost	
1 Faculty + 5 Graduate Students on Grant	\$700,000
Facility and Equipment	\$100,000
US Patent Issued	\$15,000
Overhead – 60%	\$489,000
Total University Development Cost	\$1,304,000
Estimated Licensee Development Cost	
Cost of Development (1 Ph.D.+ 3 Technicians + Amortization of Facility	\$750,000
Delayed Market Entry Cost	\$750,000
Total Licensee Development Cost	\$1,500,000



➤ **Based on comparable transactions between unrelated parties**

➤ **Factors to consider**

- Nature of the assets transferred,
- Industry and products involved,
- Agreement terms, and other factors



How Determine “Financial” Pre-Negotiation Value – Market Approach

- ❑ Requires access to market pricing of deals
 - ✓ Identical actively traded technologies are ideal
 - ✓ Comparable is more common
 - ✓ Establish “ball park” value
 - ✓ Subjective and incomplete
 - ✓ A license value may be “established” by prior licenses

- ❑ Sources of Licensing Deals: LES Licensing Surveys, US SEC, Private Data Bases, Licensee

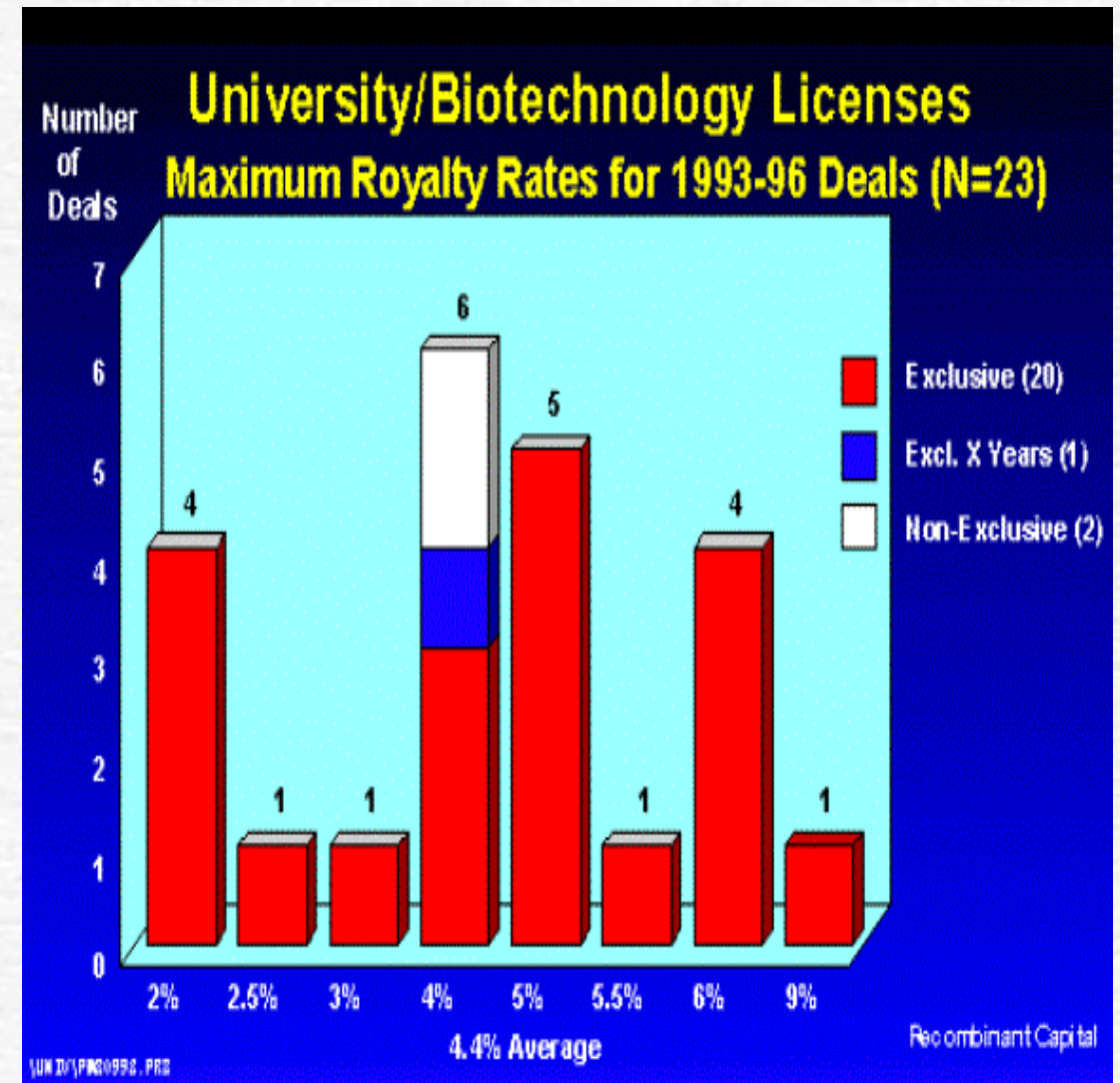
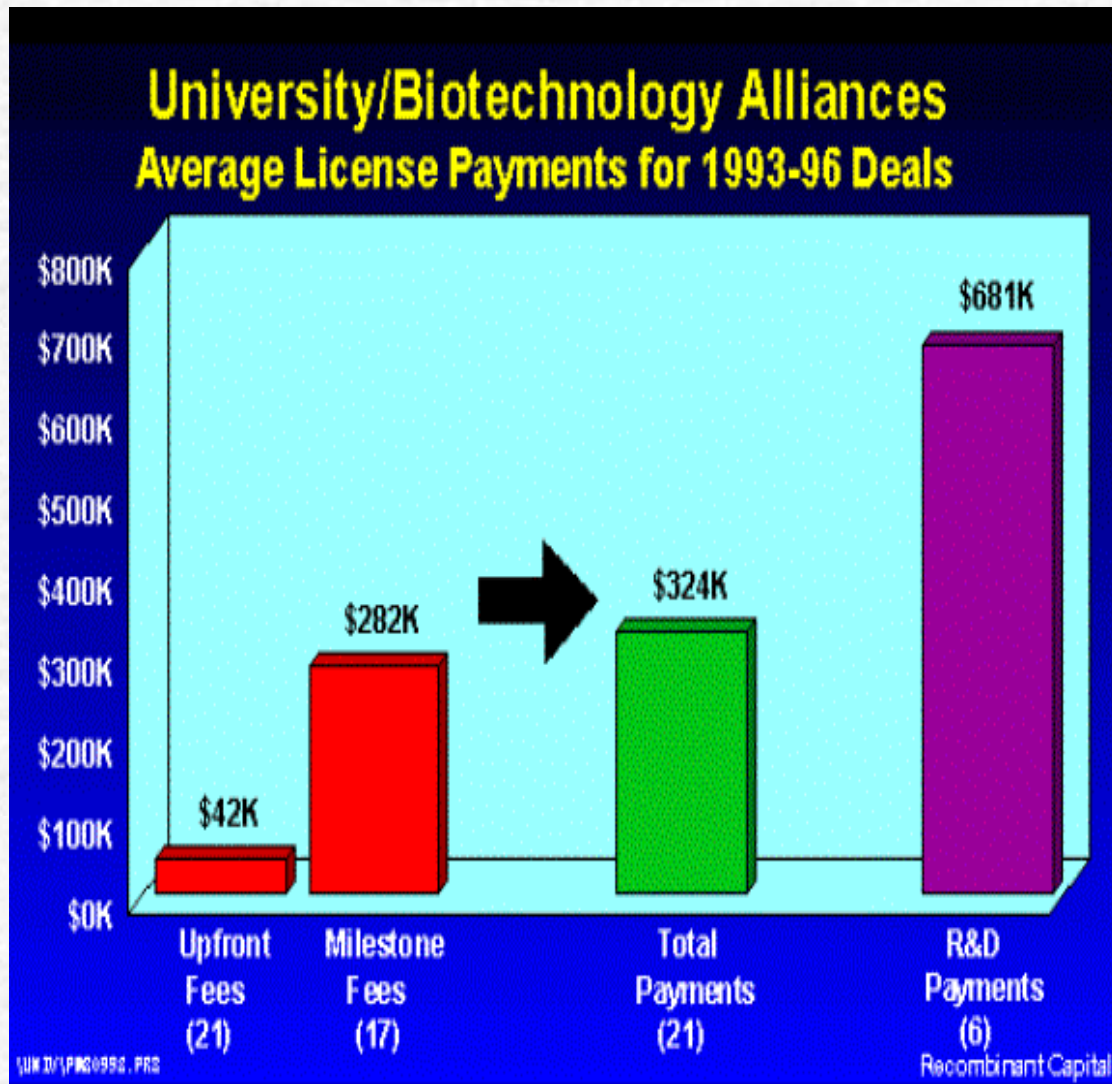


How Determine Pre-Negotiation Value - Market Approach

1. Determine similarity of transaction
 - List key elements of deal
2. Evaluate several transactions – at least! Make adjustments as required.
3. Estimate basic value



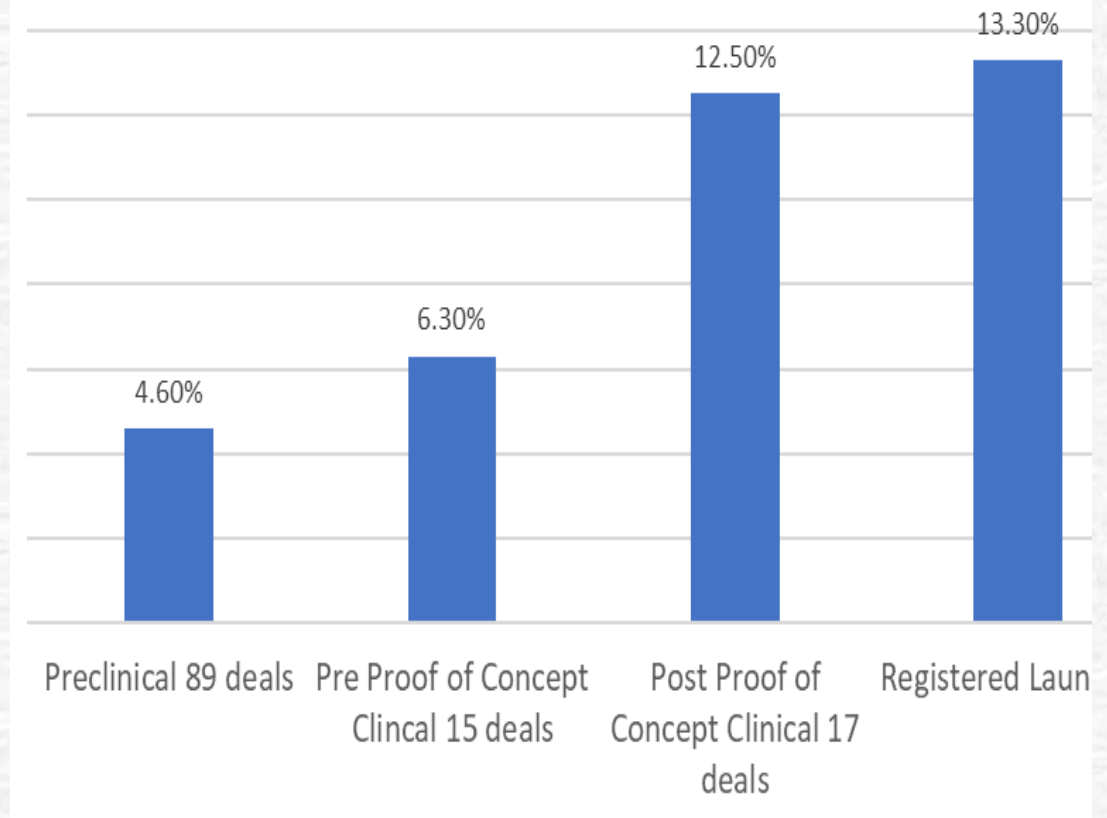
Recombinant Capital Survey of Biotech Deals



LES Life Science Sector 2018 Royalty Rate Survey

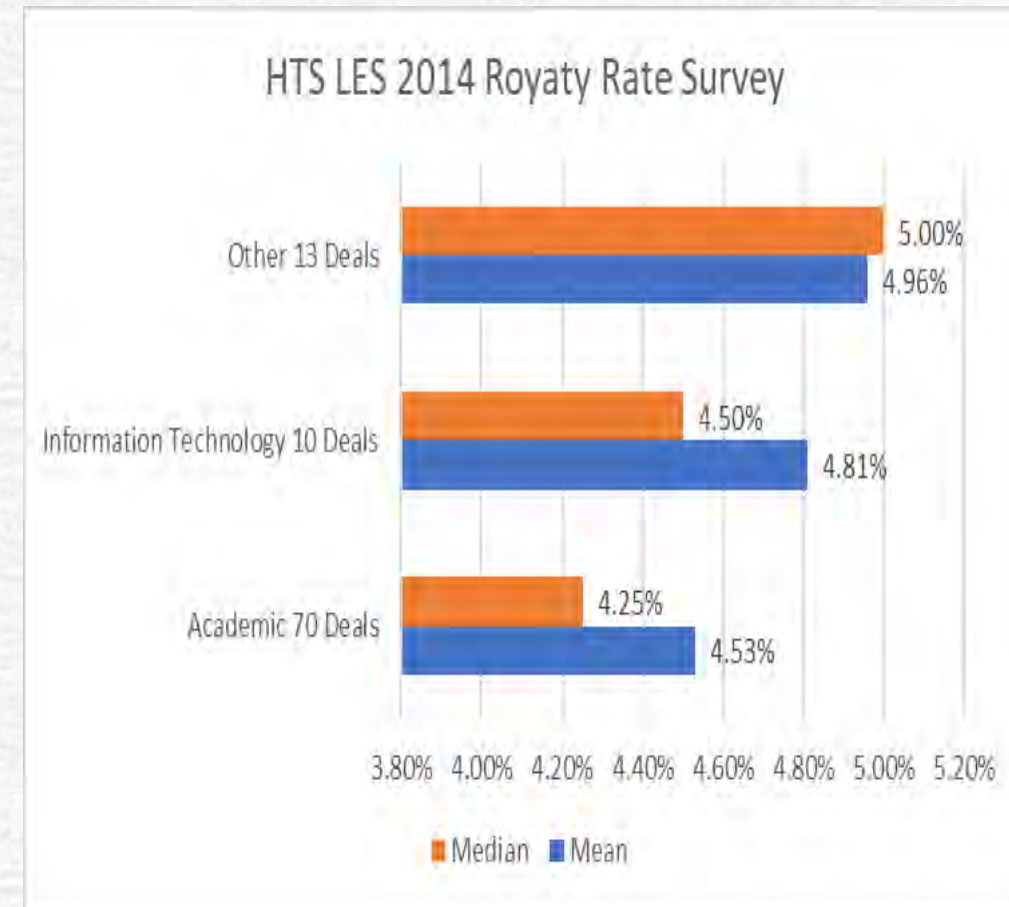
- ❑ 64% of all deals submitted were still in the Preclinical stage of development (Discovery, IND Track/ Pre-IND, IND Filed, and Pre-IDE).
- ❑ 74% of deals were categorized as exclusive.
- ❑ Peak Annual Sales: 33% deals with companies sales less than \$US 100million
- ❑ Of the 101 deals in 2019, 57 deals with Royalties paid on Net Sales (83%) followed by Gross Sales (14%) and Units (2%) .
- ❑ Average fixed royalty rate for the earliest stage products was approximately 5%, increasing to 13.3% post Proof of Concept (POC).

LSS Sector LES Licensing Survey Average Royalty Rate



2014 LES Licensing Terms Survey for High Tech Sector (HTS)

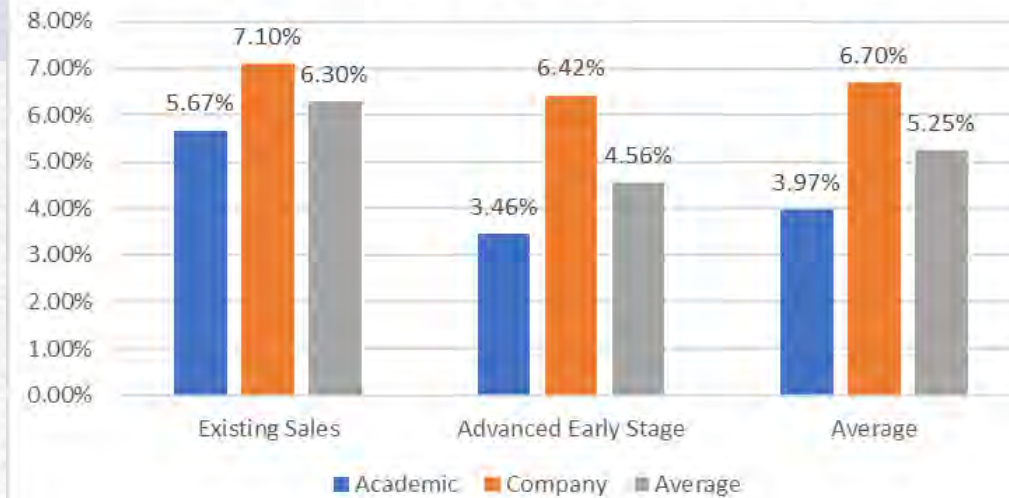
- HTS survey sample size of 94 and includes aerospace, software, clean technology, communications, medical devices, semiconductors, consumer products and electronics, and computers.
- The average and median royalty rates were 4.88 % and 5 %.
- The average price is \$358,000/patent for Patent sales



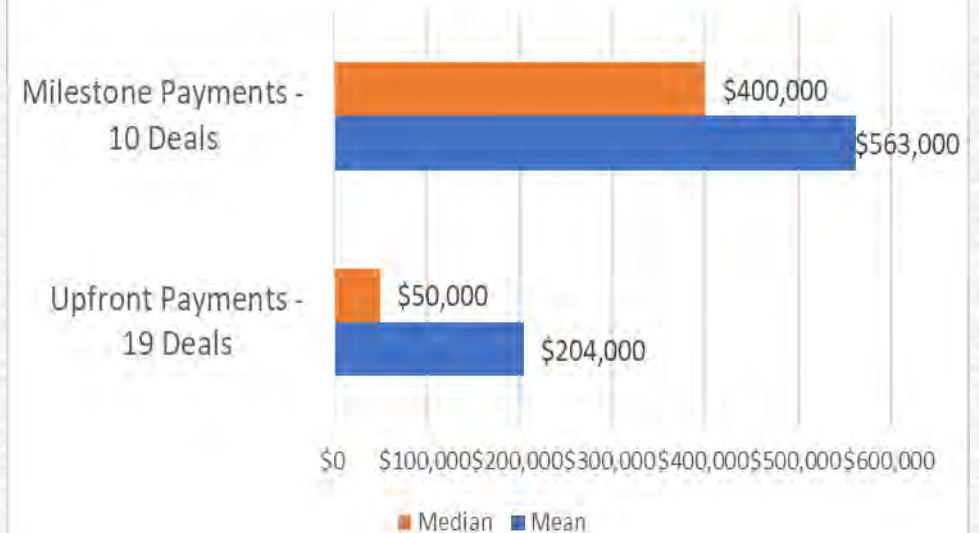
LES Chemical Energy Environment and Materials (CEEM) Sector 2010 Licensing Terms Survey

- Average royalty rate for chemical deals was 5.73% and for all deals was 5.25%.
- 37% of the deals provided for:
Cooperation in research; Annual maintenance fees; Minimum annual royalties; Sublicense fees/royalties; and Patent costs.

CEEM Royalty Rates by Stage of Development



CEEM Other Licensing Terms



Market Approach Example

Agreement	Upfront Fee	Royalty Rate	Territory
A	\$ 25,000	5%	United States
B	\$ 50,000	4%	North America
C	\$ 0	6%	Global
X	\$?	? %	N. Am. & Europe



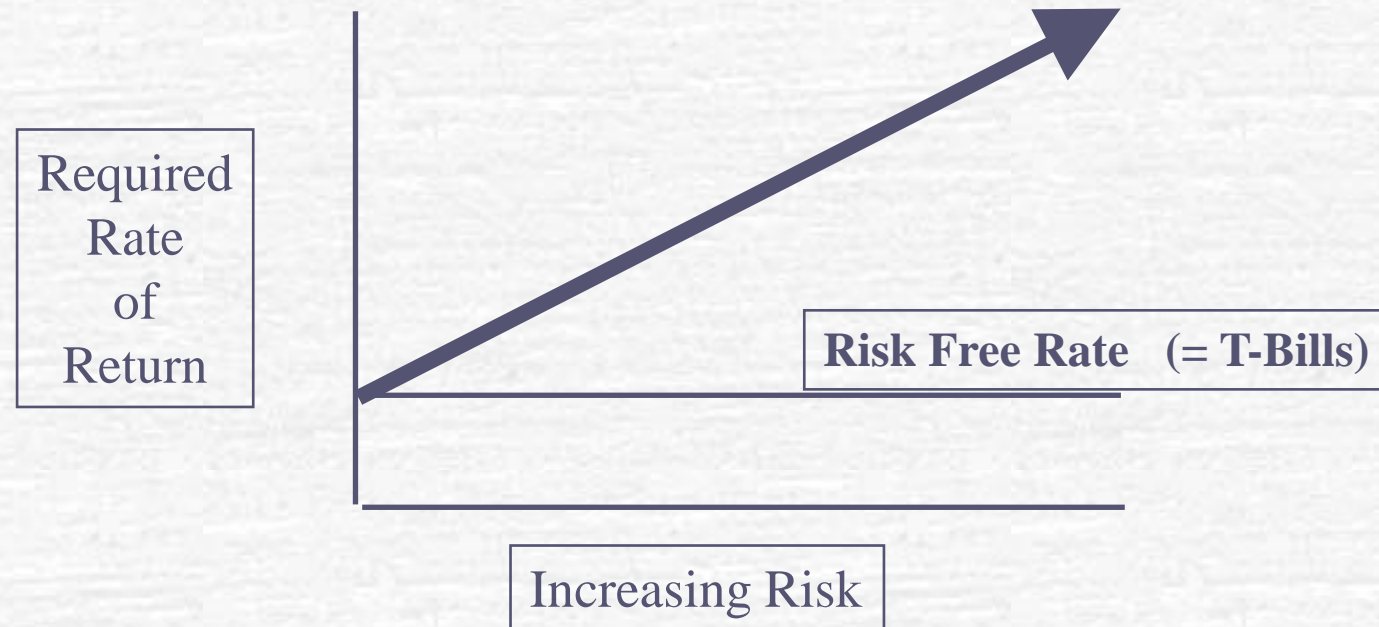
How Determine “Financial” Pre-Negotiation Value – Income Approach

- ❑ Based on the present value of the future net income streams forecasted for the asset
- ❑ Forecast the
 - Useful life of the invention
 - Investment requirements over time
 - Future incremental profits over time – net cash flow, normally based on market share projection
- ❑ Discount future cash flows to present or a point in time – Discount rate based on Risk assessment



How Determine “Financial” Pre-Negotiation Value – Income Discount Rate

The rate that incorporates the risk that future expected events will not occur.



Risk Assessment for the Discount Rate

- Technical Risk: Stage of Development, \$, Time, Obsolescence
- Market Barriers: Concentration, Distribution, Diffuse
- Management Team: Fit, Expertise, Core Competencies
- Protection: Type, Breadth, Strength, Blocking



Income Discount Rates: Venture Capital

Stage of Development	Plummer	Scherlis & Sahlman
Start-up	50% - 70%	50% - 70%
First Stage or “Early Development”	40% - 60%	40% - 60%
Second Stage or “Expansion”	35% - 50%	30% - 50%
Bridge / IPO	25% - 35%	20% - 35%

Source: AICPA Practice Aid Series, *Assets Acquired in a Business Combination to Be Used in Research and Development Activities: A Focus on Software, Electronic Devices, and Pharmaceuticals*, p.92.

Valuation of Early Stage Technologies (2nd Ed) R. Razgaitis, John Wiley and Sons, Editors



Present Value Calculation

- ✓ A dollar in hand today is worth more than the promise of a dollar in the future due to the time value of money and the risks of receiving the future payment.
- ✓ PV formula: $X * [1/(1+k)^t]$
 - X = amount you will receive in the future
 - k = the discount rate expressed in decimal form
 - t = the number of periods until you receive payment, oftentimes the number of years, expressed as an exponent
- ✓ Exercise: Calculate and compare \$300 to the present value of \$100 to be received at the end of the next 3 years using a 15% discount rate.



Cash Flow Analysis

	Year 1	Year 2	Year 3	Year 4	TOTAL
Revenue	\$ -	\$ 1,000	\$ 3,000	\$ 1,000	\$ 5,000
Profit Rate	-	10%	20%	40%	22%
Pre-Tax Profits	\$ -	\$ 100	\$ 600	\$ 400	\$ 1,100
Investment	\$ (300)	\$ (50)	\$ -	\$ (50)	\$ (400)
Net Cash Flow	\$ (300)	\$ 50	\$ 600	\$ 350	\$ 700
PV Factor for 15% $1/(1+K)^1$	0.87	0.76	0.66	0.57	
NPV	\$ (261)	\$ 38	\$ 396	\$ 200	\$ 373
NPV of Sales		\$ 760	\$1,980	\$ 570	\$3,310

Assumes Cash Flow at End of Period



Example of Discounted Cash Flow with Royalty

Tot to University		55,944,671	12% of Large Co
Tot pre tax to Large Co.		408,119,251	
NPV to University		4,664,820	13% of Large Co
NPV pre tax to Large Co.		32,095,582	
ROI to Large Co		418%	
Break even yr.		2020	
positive cash year		2020	

Valuate 5 Spreadsheet calculates NPV and allows sensitivity analysis



When Prepare Valuation Report

❑ Non-financial Valuation

- ❖ Starts with initial disclosure – using 10 point evaluation
- ❖ Continues to change as information grows

❑ “Financial” Valuation

- ❖ Starts with request for negotiation and prior to term sheet
- ❖ Prepare Valuation Report
- ❖ Listen to objections and offer to change assumptions



Valuation Report

- ☐ Describe the appropriate approach and why used
 - Market Approach
 - Cost Approach
 - Income Approach
- ☐ Describe risk assessment
- ☐ Evaluate technology contribution and licensee options
- ☐ Evaluate relationship components and goals
- ☐ Structure consideration accordingly



Creating a Value-Capture Envelope:

Invention valued at \$250k NPV

\$250k up-front, no minimums, 2% royalty

.....or

\$100k up-front, (3) \$50K annual payments, 2% royalty.....or

\$50k up-front, (4) \$50k annual payments, 3% royalty.....or

\$25k up-front, (5) \$45k annual payments, 5% royalty.....or

Be flexible and creative in creating the value-capture envelope



Creating a Value-Capture Envelope

- ❑ Create multiple value-capture mechanisms
 - ✓ Upfront fees, milestone payments, exclusivity payments
 - ✓ Royalty on sales
 - ✓ Success payments
 - ✓ Access to equipment
 - ✓ In kind contributions

- ❑ Consider alternative benefits (e.g. research support)
Philanthropic/humanitarian issues?

- ❑ “front-loaded” vs. “back loaded” value capture



Creating a Value-Capture Envelope

License Terms	Value to Licensors	Value to Licensee
Lump Sum	<ul style="list-style-type: none"> Technology failure borne by licensee Blockbuster success reaped by licensee 	<ul style="list-style-type: none"> No exchange of financial information Risk of success/failure borne by licensee No/low cost until cash
Running Royalties	Allows participation in blockbuster success	<ul style="list-style-type: none"> No/low cost until cash flow turns positive Economic changes
R & D Funding	<ul style="list-style-type: none"> Meets organizational goals (interests) Supports licensed and other technology Develops relationships 	<ul style="list-style-type: none"> Develops relationships Provides access to future technologies
Equity	<ul style="list-style-type: none"> Opportunity to participate in future success Develops relationships 	<ul style="list-style-type: none"> Non-cash outlays Develops relationships



Summary

- Value is not only about the money
- Valuation is a component of negotiation
- Three basic Valuation methods – use as many as possible
- What will the market take?
- Win-Win

Questions?

