IP Scorecarding –Balancing IP Costs and Benefits to Determine a Return on IP Investment

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The Three Step Process

- Step 1 - Determine your patent prosecution costs
- Step 2 – Determining the benefits your company will realize from its patents
- Step 3 - Balancing your costs against your benefits to determine the return on your patent investment

Arriving at a Patent Budget

- Starting point baseline patent budget using:
  - Company's historic patent budget as a guideline
  - Industrial patent budget as a guideline
  - Industrial patent filings as a guideline
- Scaling baseline patent budget using:
  - Comparative industrial R&D data
  - Comparative industrial patent filing data
  - Other scaling factors

Identifying Patent Costs

Developing a Patent Cost Scorecard for your business

PATENT PROSECUTION BUDGETING GUIDELINES

Patent prosecution costs per invention

Field of Art	PATENT BUDGETING RULES	Cost to Prepare Case for Filing	Cost to Prosecute Case Per Country
Electrical Case	10:5 Rule	$10K	$5K
Chemical Case	10:5 Rule	$10K	$5K
Mechanical Case	7.5:5 Rule	$7.5K	$5K
Biotech/PharmCase	15:7.5 Rule	$15K	$7.5K

Identifying Patent Costs

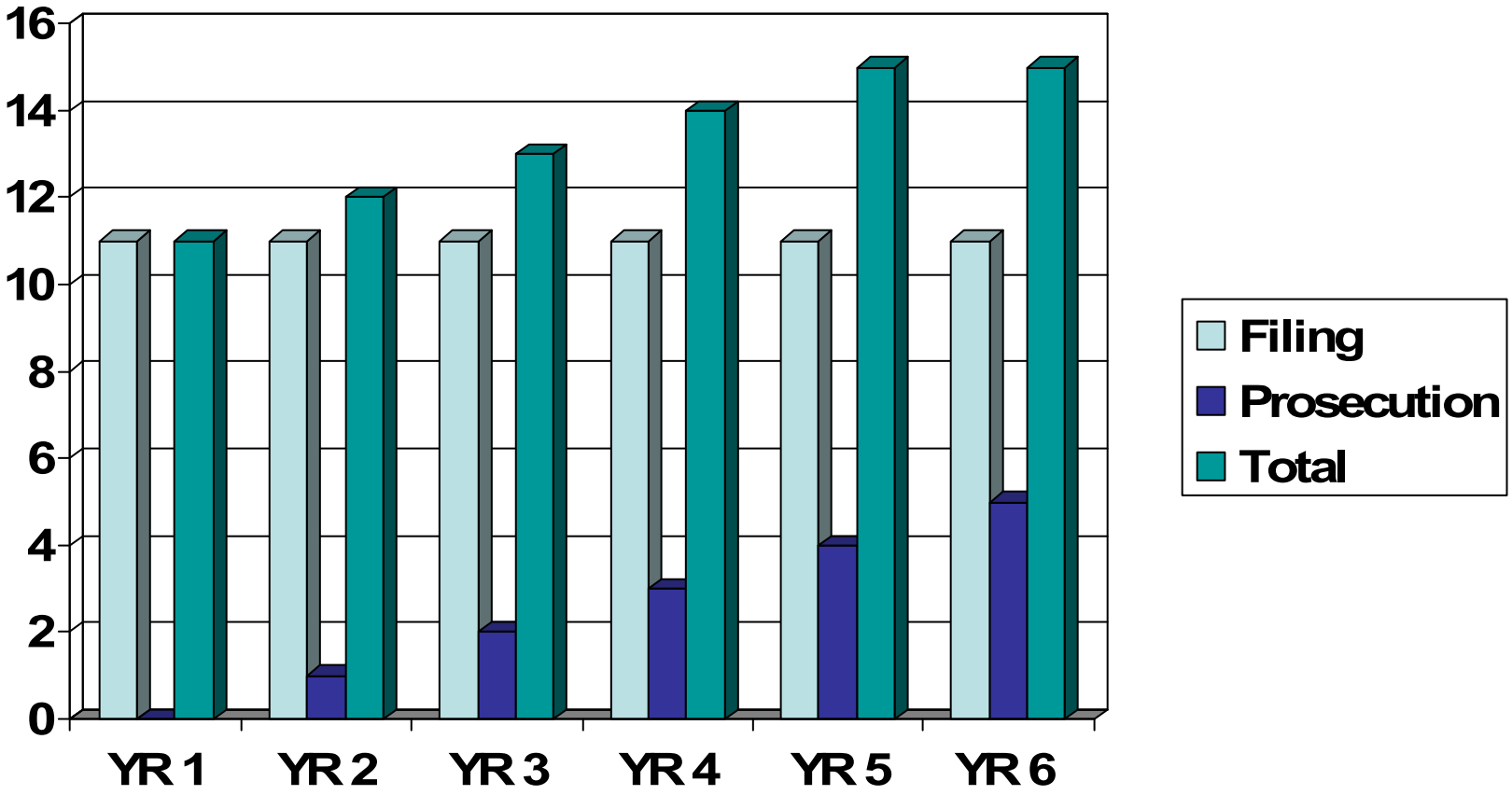
FOREIGN FILING PATENT PROSECUTION BUDGETING GUIDELINES

Patent prosecution costs for *electrical case for* four categories of countries

CATEGORY OF COUNTRIES	COUNTRIES	PATENT PROGRAM COST
Tier I (most important cases)	12 Countries: N.America: U.S. CA; MX; BZ Europe: UK, FR, DE Asia: JP, TW, CH, SK, AU	$70k (e.g., 10:5 Rule of $10K + $60K for 12 filings including U.S.)
Tier II	6 Countries N.America: U.S. Europe: UK, FR, DE Asia: JP, CH	$40K (e.g., 10:5 Rule of $10K + $30K for 6 filings including U.S.)
Tier III	1 Country U.S.	$15K (e.g., 10:5 Rule of $10K + $5 K for U.S.)
Tier IV	No Country	0
Average (e.g. based on your company's historic filings)	4 countries N America: U.S. Plus 3 foreign filings	$30K (e.g., 10:5 Rule of $10K + $20K for four filings, including U.S.

Program Ramp-Up v. Flat Line – 10:5 Rule of Thumb based on Flat Line Operation –

E.g., With 1 filed case of $15K budgeted for the year, $11K spent on New Filings and $4K on Prosecuting Prior Filings



Company's historic patent budget as a guideline

- Start with the historic patent budget data for your company
- Scale it up or down based on industrial budgeting, filing or other factors

Industrial patent budget as a guideline

- Start with a patent budget as reported by the industry and then scale as appropriate
- One industrial measure of a patent budget is $5M
  - Source: Pricewaterhouse Coopers 1999 Intellectual Property Metrics Report
  - Based on:
    - 85 companies in 11 industries reporting
    - With median worldwide revenue of $11.8B
    - Annual R&D of $127M
    - Annual Legal spending of $31M
  - This presentation assumes all patent litigation, trademark, copyright, litigation are rolled into Legal spending of $31M

Industrial patent filings as a guideline

- Start with a patent filing number as reported by the industry and then scale as appropriate
- One measure is 50+ applications per year
  - Source: Same Pricewaterhouse Cooper Report
- = $1.5M prosecution budget based on
  - Previously indicated foreign filing guidelines and
  - using the guideline average of four country filing (including U.S.) per family (i.e., $30K (e.g., 10:5 Rule of $10K + $20K for four filings, including U.S.)

Scaling Your Baseline Patent Budget

- Using comparative annual revenues of competitors
- Using comparative R&D spending of competitors
- Using comparative patent filings of competitors
- Using company specific factors like the vision, mission, goals, strategies, tactics and tasks of the company

Scaling Based Upon Comparative Industrial R&D Spending Data for the top 150 R&D Spenders by Industry –

Source:Technology Review Special Report 2004 Spenders by industry sector

Industry Sector	N. Companies in Top 150	Avg. R&D Spending	Avg. R&D as Percentage of Sales
Biotechnology	3	$917	21%
Computer SW	7	$1,341	18%
Pharmaceutical/ Medical Devices	28	$2,045	14%
Semiconductors	10	$1,318	22%
Transportation	26	$2,273	5%
Computer HW	9	$2,251	7%
Heavy Machinery	5	$663	5%
Electronics/ Electrical	19	$1,616	6%
Aerospace/ Defense	8	$1,369	6%
Telecom	13	$2,156	11%
Chemicals	10	$1,083	6%
Consumer Products	5	$1,043	2%
Industrial Conglomeratess	4	$2,490	4%
Energy	3	$586	2%

Source: Standard & Poor's Technology Review

Scaling Based Upon Comparative Patent Filing Data - - Source: USPTO Statistics for 2003

Preliminary Rank in 2003 *	Preliminary number of patents in 2003 *	Organization *	(Final Rank in 2002)	(Final number of patents in 2002)
1	3,415	International Business Machines Corporation	(1)	(3,288)
2	1,992	Canon Kabushiki Kaisha	(2)	(1,893)
3	1,893	Hitachi, Ltd	(5)	(1,601)
4	1,786	Matsushita Electric Industrial Co., Ltd. (a)	(6)	(1,544)
5	1,759	Hewlett-Packard Development Company, L.P. (b)	(9)	(1,385)
6	1,707	Micron Technology, Inc.	(3)	(1,833)
7	1,592	Intel Corporation	(15)	(1,077)
8	1,353	Koninklijke Philips Electronics N.V.	(16)	(842)
9	1,313	Samsung Electronics Co., Ltd.	(11)	(1,328)
10	1,311	Sony Corporation	(7)	(1,434)
11	1,302	Fujitsu Limited	(12)	(1,211)
12	1,243	Mitsubishi Denki Kabushiki Kaisha	(10)	(1,373)
13	1,184	Toshiba Corporation	(14)	(1,130)
14	1,181	NEC Corporation	(4)	(1,821)
15	1,139	General Electric Company	(8)	(1,416)

Using Industrial Comparative Data to Scale Your Patent Budget – Example 1

Telecom Company with $20B Annual Revenues

- Start with industrial average patent budget of $5M
  - based on 1.1% Annual R&D spending of $127M to $11.8B revenues
- Scale to $50M
  - Using Comparative % R&D Spending to Annual Revenues data for the telecom sector of 11%
- Make any further modifications as needed
  - E.g., adjustments due to internal budget constraints

Using Industrial Comparative Data to Scale Your Patent Budget – Example 2

Telecom Company with $20B Annual Revenues

- Start with industrial average patent filing of 50
- Scale to 1,000 filings (rounded off)
  - Using Comparative competitor NEC's annual patent filing of 1181
- Budgetize to $30M
  - By multiplying 1,000 filings times $30,000 per filing for a 4 country per filing average
- Make any further modifications as needed
  - E.g., adjustments due to internal budget constraints

Arriving at Your Patent Budget – Step 1 Summary

- There's a lot of play in the numbers
- But using some benchmark data such as
  - Company historic patent budgeting/filing
  - Industrial patent budgeting/filing
- And appropriate scaling
- And factoring in other factors such as budgetary constraints
- You can arrive at a cost for your patent prosecution program

Step 2 - Determine benefits your company will realize from its patents

- Not unlike the process of quantifying patent costs, the process of quantifying the patent benefits is also an imprecise science
- The best we can do is to create meaningful assumptions, models and metrics for use in monetizing the benefits of a patent

Step 2 - Determine benefits your company will realize from its patents

- Assumption 1
- *A patent budget is a tracking budget that tracks R&D spending, revenues or some other measure of the performance of the company.*
  - *So a patent is pre-programmed to achieve a level of return based upon the success that management has charted for R&D, revenues or whatever other measure that patent budget tracks.*
  - *E.g., like a stock tracks the performance of a company*

Step 2 - Determine benefits your company will realize from its patents

- Assumption 2
- *Under conditions of normal market and product forces, the level of return from the sum of the patents procured using the patent budget will be in an amount that is no less than the cost of the patent budget.*
  - *So under normal conditions, the returns from the sum of patents procured by the patent budget will at least cover the costs of procuring those patents.*
  - *E.g., like the return on a stock should at least cover its purchase price of the stock*

Step 2 - Determine benefits your company will realize from its patents

- Assumption 3
- *The market and product forces that bear upon a patented product define the innate value of each attribute associated with the patent covering that product.*
  - *These attributes include injunctive value of a patent, barrier to entry by a competitor, etc. and the value of these attributes are defined by market and product forces.*
  - *Like the economic forces that bear upon a business defines the innate value of a stock*

Step 2 - Determine benefits your company will realize from its patents

- Assumption 4
- *The level of return from the sum of the patents procured using the patent budget will fluctuate upwardly or downwardly with the upward and downward fluctuations of the market and product forces that bear upon products covered by those patents.*
  - *So depending upon the innate value placed upon the sum of the attributes associated with each procured patent, the return generated by the patent may be in an amount that is greater than or less than the costs of procuring those patents.*
  - *E.g., like the innate value of a business will cause the stock to be worth more or less than the cost of the stock*

Step 2 - Determine benefits your company will realize from its patents

- Assumption 5
- *The patent practitioner will choose to spend the patent budget on those patents that will create the greatest return to the company on its patent budget investment.*
  - *So a practitioner will not file on patents that create a negative return.*
  - *E.g., like an investor will not buy a losing stock*

Methodology I for Determining IP benefits
E.g., Electrical Co./$20B Annual Revenues/Clam Shell Invention/$25M Patent Budget

ATTRIBUTES OF PATENT	BUSINESS RETURNS SOUGHT TO BE SUPPORTED BY ATTRIBUTES (in $ millions)	BUSINESS RETURNS ATTRIBUTABLE TO CLUSTER OF PATENTS (in $ millions)
Supported Business	10B (all in U.S.)	12.5M patent budget baseline or expected minimum return from cluster of patents (e.g., .125% of revenues)
Supported Product	2.5B (or ¼ of terminals or 1/8th of sales) (Factor = x .25 for this product)	3.125M patent budget baseline or expected minimum return from cluster of patents for this product (or 12.5 x .25)
5 Year Market Growth	Double	3.75M expected increase in expected return (or 3.125M x 1.2 based on straight line .2 per year growth for sales for 5 years to achieve doubled growth)
Value Add to Product	Essential Feature (e.g., What % of Sales/Product is value added by feature?)	.375M amount of the expected return connected to this feature (or 10% of product sales is attributable to this feature – i.e., up to 10%)

Step 2 - Determine benefits your company will realize from its patents

ATTRIBUTES OF PATENT	BUSINESS RETURNS SOUGHT TO BE SUPPORTED BY ATTRIBUTES (in millions)	BUSINESS RETURNS ATTRIBUTABLE TO CLUSTER OF PATENTS
Value Add to Product	Product Differentiator (e.g. X=1 if some meaningful differentiation x >1 differentiation factor x<1 if no meaningful differentiation (e.g., What differentiation does this feature add)	.4125M budget after increased due to favorable differentiation (or .625 x 1.1 for 10% favorable differentiation)
Value Add to Business	Convoy Sales (e.g. X=1 if no convoy sales x >1 convoy sale factor x<1 if reverse convoy sales (i.e., sales reduces other sales) (e.g., What convoy sale does this feature add)	.4125M unchanged budget since no enhanced patent value from convoy sales (for no convoy sales)
Value Add to Business	Injunctive Value (e.g. X=1 if no injunction value x >1 injunction value x<1 if no injunction and injunction is important (e.g., What injunctive value does this feature add)	.495M budget after market share increase taken from competitors due to injunction (or .6875M x 1.2 for 20% market share increase due to injunctive value of feature)

Step 2 - Determine benefits your company will realize from its patents

ATTRIBUTES OF PATENT	BUSINESS RETURNS SOUGHT TO BE SUPPORTED BY ATTRIBUTES (in millions)	BUSINESS RETURNS ATTRIBUTABLE TO CLUSTER OF PATENTS
Value Add to Business	Barrier to Entry (e.g. X=1 if no barrier to entry x >1 if barrier entry x<1 if no barrier and barrier is important (e.g., What barrier entry does this feature add)	.495M unchanged budget since patent feature creates no barrier to entry (for no barrier to entry by this product)
Design Aroundability	Design Aroundability (e.g. X=1 if design aroundability not a factor x >1 hard to design around x<1 easy to design around (e.g., How easy is this feature to design around)	.421M decrease in value of patent due to design aroundability of patent (.89375M x .85 for the design aroundability of this feature)

Step 2 - Determine benefits your company will realize from its patents

ATTRIBUTES OF PATENT	BUSINESS RETURNS SOUGHT TO BE SUPPORTED BY ATTRIBUTES (in millions)	BUSINESS RETURNS ATTRIBUTABLE TO CLUSTER OF PATENTS
Licensing Potential	Licensing potential (e.g. X=1 if no license value x >1 license value x<1 no license value and license value is important (e.g., How licensable is this feature)	.421M (won't be licensed since banking on injunctive value)
Other E.g., Defensive Purpose (i.e., provides freedom of movement)	Defensive potential (e.g. X=1 if none or hedged elsewhere x >1 defensive value x<1 no defensive value and defensive value is important (e.g., How much defense does this feature provide?)	421M (defensive value hedged in injunction. I.e., if needed for trade, then portion of the "injunctive value" goes on this line of the ledger) (e.g., some of the ..6875M injunctive value is lost and gets subtracted from there and added to this line of the ledger) (e.g., some of the 20% market share increase due to injunctive value of feature is given up in the trade and so is reported here after subtraction from there)

Step 2 - Determine benefits your company will realize from its patents

TOTAL		.421M return to the company from this cluster of patents
Number of patents in the cluster		E.g., 1 or 10
TOTAL PER PATENT		E.g., 1 or 10

Step 3 - Balancing your costs against your benefits to determine the return on your patent investment

- Cost of global prosecution for this invention
  - The example uses an invention that impacts only the U.S. business but the company decides to classify the invention as an Average 4 country filing for $30K or $.03M (based on 10:5 rule and Average foreign filing program in 4 countries)
- Benefits realizable on this cluster of patents
  - $.421M per year
- ROI (Cost v. Benefit Balance)
  - For 1 patent in cluster, ROI is $.421M return per year on $.03M patent cost for 1 patent family (investment cost)
    - Good Investment
  - For 10 patents in cluster, ROI is $.421M per year on $.3M patent cost for 10 patent family
    - Still positive ROI but even greater ROI possible with a smaller foreign filing budget

Step 3 - Balancing your costs against your benefits to determine the return on your patent investment

- Foregoing Scorecard Methodology Summary
  - Upside
    - Starts to provide some meaningful tools and metrics for quantifying your IP costs and benefits
  - Downside
    - Complicated
    - Depending on how accurate you want the scorecard to be you could hire an army of accountants and analysts and still have an inexact monetization of your assets

Methodology II for Determining IP benefits – Simplified Rating Approach - E.g., Electrical Co./$20B Annual Revenues/Clam Shell Invention/$25M Patent Budget

ATTRIBUTES OF PATENT	BUSINESS RETURNS SOUGHT TO BE SUPPORTED BY ATTRIBUTES (in millions)	BUSINESS RETURNS ATTRIBUTABLE TO CLUSTER OF PATENTS
Supported Business	10B (all in U.S.)	12.5M patent budget baseline or expected minimum return from cluster of patents (e.g., .125% of revenues)
Supported Product	2.5B (or ¼ of terminals or 1/8th of sales) (Factor = x .25 for this product)	3.125M patent budget baseline or expected minimum return from cluster of patents for this product (or 12.5 x .25)
Value Add to Product	Feature contribution to product (e.g., What % of Sales/Product is value added by feature?)	.375M amount of the expected return connected to this feature(or 10% of product sales is attributable to this feature – i.e., up to 10%) (i.e., amount of patent budget allocatable to protecting these features)

Methodology II for Determining IP benefits
Rating the Attributes of Your Patent

PATENT ATTRIBUTE	Rating = +1 for + present 0 absent -1 for – presence (absent and presence is important)
Essential Feature	+1
Product Differentiator	+1
Convoy Sales	0
Injunctive Value	+1
Barrier to Entry	0
Design Aroundability	-1
Licensing Potential	0
Defensive Purpose	0 (since hedged in value of injunction)
TOTAL	+2

Methodology II for Determining IP benefits

Determining the ROI from Your Attribute Rating

- Legend
  - If Attribute Rating > 1, then ROI = Attribute Rating times the Patent Budget allocated to protecting this feature
  - If Attribute Rating = 0, the ROI = 1 times the Patent Budget allocated to protecting this feature
  - If Attribute Rating < 1, then negative ROI so consider foregoing patenting this feature
  - Note: Attribute Ratings can be given different ratings from those ratings shown based upon retrospective and prospective importance of those ratings to your company

Methodology II for Determining IP benefits

Calculating the ROI in the Given Example (E.g., Electrical Co./$20B Annual Revenues/Clam Shell Invention/$25M Patent Budget)

- Attribute Rating of invention = +2
- Patent Budget allocated to this feature = $.375M
- Patent Benefits to Company
  - $.625 (Attribute Rating of +2 times $3.125 Patent Budget)
- ROI
  - For 1 patent in cluster, ROI is $.625M return per year on $.03M patent cost (based on 10:5 rule and Average foreign filing program) in 4 countries)
  - for 1 patent family (investment cost)
    - Good Investment
  - For 10 patents in cluster, ROI is $.625M per year on $.03M patent cost for 10 patent family
    - Still positive ROI but even greater ROI possible with a smaller foreign filing budget

Methodology II for Determining IP benefits – Core:Strategic Rating Approach - E.g., Electrical Co./$20B Annual Revenues/Clam Shell Invention/$25M Patent Budget

	CORE	NON-CORE
STRATEGIC	Rating +4	Rating + 1
NON-STRATEGIC	Rating +1	Rating 0
Essential - Rating +4		

Methodology III for Determining IP benefits

Determining the ROI Based on Strategic:Core Rating of Invention

- Legend
  - If Strategic:Core Rating > or = 1, then ROI = Strategic:Core Rating times the Patent Budget allocated to protecting this feature
  - If Strategic:Core Rating < 1, then negative ROI so consider foregoing patenting this feature
  - Note: Strategic:Core Ratings can be given different ratings from those ratings shown based upon retrospective and prospective importance of those ratings to your company

Methodology III for Determining IP benefits

Determining the ROI Based on Strategic:Core Rating of Invention

- Example Telecom Handset Company
- Features/ Rating:
  - Core strategic/4 – digital handsets (assume same clam shell invention)
  - Essential/4 – industrial standard technology
  - Non-Core Strategic/1 – Handset accessories (e.g., covers, cary case, batteries)
  - Core Non-strategic/1 – Analog handsets
  - Non-Core Non-Strategic/0 – Entertainment Home Center
- Patent Budget allocated to this feature = $.3125M xc $0 for Non-Core Non-Strategic
- Patent Benefits to Company *per year*
  - $1.25M (Core Strategic Rating of +4 times $.3125 Patent Budget)
  - $1.25M (Essential – Same calculation as for Core Strategic)
  - $.3125M (Non-Core Strategic Rating of +1 times $.3125 Budget)
  - $.3125M (Core Non-Strategic Rating of +1 times $.3125 Budget)
  - $0 for Non-Core Non-Strategic

Comparison of Methodologies for Calculating Patent Benefits and ROI on Patent Investment

Example: Core Strategic Claim Shell for Telcom Handset

Methodology Used to Determine Benefits From Patent	Calculated Company *Benefits Per Year* (*On* 1Invention/10 Inventions *And* foreign filing each in 4 countries	ROI (Benefit/Cost) (*On* **1 Invention/10 Inventions** *And* foreign filing each in 4 countries
Attributes Assessment	**$.421M Return on $.03M Cost/ $.421M Return on $.3M Cost**	**14 times cost/ 1.4 times cost**
Attributes Rating	**$.625M Return on $.03M Cost/ $.625M Return on $.3M Cost**	**20 times cost/ 2.0 times cost**
Core Strategic Rating	**$1.25M Return on $.03M Cost/ $1.25M Return on $.3M Cost**	**40 times cost/ 4.0 times cost**

Conclusion

- We talked about the 3-Step process for generating an ROI scorecard
  - Determine your patent prosecution costs
  - Determining the benefits your company will realize from its patents
  - Balancing your costs against your benefits to determine the return on your patent investment

Conclusion

- We talked about the imprecise science of quantifying costs and benefits
  - You can arrive at a cost for your patent prosecution program by using some benchmark data such as
    - Company historic patent budgeting/filing
    - Industrial patent budgeting/filing
    - And appropriate scaling
    - And factoring in other factors such as budgetary constraints
    - You can arrive at a cost for your patent prosecution program
  - You can arrive at benefits for each invention by applying
    - 5 Assumptions
    - 3 Methodologies of “Attribute Assessment”, “Attribute Rating” and “Strategic Core Rating”

Conclusion

- The Field of IP Scorecard remains an imprecise science
- The best we can do is to create meaningful assumptions, models and metrics for use in monetizing the costs and benefits of a patent
- And balance those monetized costs against benefits to arrive at a meaningful “return on your IP investment” (ROI)