Pricing Intellectual Property Licenses

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AGENDA

1. Typical license payment structures
2. Pricing a license
   a. Identifying the benefit
   b. Allocating the benefit
3. Industry royalty rates
4. More detailed guidance on royalties
How are royalty rates typically determined?

One of the biggest valuation concerns that I hear when talking to IP managers is simple:

*What is the correct royalty rate to charge when licensing technology?*
License payment structures

Before attempting to price a particular license, it is usually necessary to determine the payment structure for the license.

Payments can be:

1. Lump sum fees; or
2. Royalties:
   - Running royalties
   - Independent royalties
Lump Sum Fees
Lump sum fees

Lump sum fees are the standard pricing practice for most products or services. A lump sum fee simply means the buyer pays a specific, fixed price when buying something.

Lump sum fees can be:

1. Complete; or
2. Partial
Lump sum fees

In the patent context, lump sum fees go by a number of different names:

1. Fixed fees
2. Upfront fees
3. Down payments
4. License issue fees
Partial lump sum fees

- For patent licenses:
  - Partial lump sum payments are common.
  - Complete lump sum payments are not.

- Studies have shown that more than 50% of patent licenses include partial lump sum fees.
Economic benefits of lump sum fees

1. Reduces licensor’s risk in the transaction

2. Discourages licensee from shelving the transaction

**Shelving** = Licensee does not intend to use the intellectual property rights. Instead, the licensee acquires the rights to block or eliminate competitors by preventing others from using the technology.

The licensee’s goal is to **put the license on the shelf** and never use it.
Upfront fees in the U.S. university context

Economic theory does not appear to play a major role in establishing the upfront fee for university licensing deals.*

* Based on conversations with U.S. technology transfer office managers.
Negotiating upfront fees in U.S. university context

Some informal guidance:

• Upfront fees very common for university patent licenses.

• If *only one potential licensee* and the patented technology is not ground breaking, the upfront fee tends to be in the $10,000 to $15,000 range.

• If *multiple potential licensees* bidding, the upfront fee can be substantially larger.
Some informal guidance (cont.):

- Most U.S. universities require licensee to furnish disclosures about licensee’s development work on the technology. Licensees sometimes wish to avoid this additional disclosure and will pay a higher upfront fee to reduce the disclosure.
Some informal guidance (cont.):

• Upfront fee can be **cash** and/or **equity**.

If the licensee pays with stock, the stock needs to be valued. We will discuss stock valuation later today.
Justifying cash upfront fees

If you are negotiating a cash upfront fee and need to justify the amount you want, here are a few suggestions:

• Reimburses university for patent costs
  – Previously incurred patent costs
  – Future patent costs (including maintenance fees)

• Reflects any know-how transfer (based on a consulting-fee rate for researcher)

• Reflects development costs:
  – Previously incurred by university; or
  – To be incurred by university
Justifying cash upfront fees

If the payments reflect future services by university (e.g., future development costs), it could be structured in the form of milestone payments.
Royalties
Royalties

Royalties are future payments to compensate the licensor for transferring the patent rights.

Types of royalties:
1. Running royalties
2. Independent royalties
Running royalties

Running royalties = Royalties are calculated as a percentage of the net sales or profits that are actually generated from using the patented technology.
Running sales and profit royalties

Running sale royalties = Calculated as a percentage of the net sales …

Running profit royalties = Calculated as a percentage of the profits (e.g., operating profits) …
Running sales and profit royalties

Generally speaking, licensing professionals prefer using running *sales* royalties.

**Reason** = Profits involve more subjective calculations than net sales.
Independent royalties

Independent royalties = Royalty payments are independent of sales or profit results.

Examples:
1. Minimum royalties
2. Milestone payments
3. R&D-funding royalties
## Rationale for different royalties

<table>
<thead>
<tr>
<th>Type</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Running sales royalties</strong></td>
<td>Provides parties with an intuitively sensible way to deal with patent rights with highly uncertain values. Allows the value of the patent rights to become known through actual performance. Sales royalties tend to be more popular than profit royalties because of the greater complexity involved with calculating profits.</td>
</tr>
<tr>
<td><strong>Running profit royalties</strong></td>
<td>Provides parties with an intuitively sensible way to deal with patent rights with highly uncertain values. Allows the value of the patent rights to become known through actual performance. Profit royalties are less popular than sales royalties.</td>
</tr>
<tr>
<td><strong>Minimum royalties</strong></td>
<td>Reduces the risk for the rights holder that transferee’s sales or profit projections are too optimistic. Also helps to prevent transferees from “shelving” the patent rights (i.e., transferee does not intend to use the patent rights, but instead acquires them to block rivals).</td>
</tr>
<tr>
<td><strong>Milestone payments</strong></td>
<td>For higher-risk, early-stage patents, milestone payments can be used to reduce the amount of a partial upfront fee. As information that reduces the risk becomes available, the transferee makes payments that would otherwise have been part of the up-front fee.</td>
</tr>
<tr>
<td><strong>R&amp;D-funding royalties</strong></td>
<td>Provides the transferee with confidence that the rights holder will do continuing R&amp;D work.</td>
</tr>
</tbody>
</table>

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Pricing a license

Once the parties understand the pricing options, how should they price a given patent license?

**Flippant answer:**

- Licensor should try to get the highest price possible
- Licensee should try to get the lowest price possible
Pricing a license

More useful answer should focus on:

- What is the value of the license to the licensor?
- What is the value of the license to the licensee?

The value (and therefore the price) of the license stems from the net future economic benefits that flow from the license to each party.
Pricing zone

The price of any good (or service) should be based on its value to both the buyer and seller.
Pricing zone

Example:
• Buyer wants to buy a computer from Seller.
• Buyer values computer at $750.
• Seller values computer at $650.

Question: What is the appropriate price for selling the computer?
Pricing zone

**Example:**
- Buyer wants to buy a computer from Seller.
- Buyer values computer at $750.
- Seller values computer at $650.

**Question:** Any price between $650 and $750 is appropriate. *Any* price in the **pricing zone** is proper.

**Pricing zone** = Any price (a) at or below Buyer’s value for the good/service and (b) at or above Seller’s value.
Pricing zone

A. Lowest price Seller willing to accept

B. Highest price Buyer willing to pay

Value to the Seller

Value to the Buyer

Pricing Zone
Pricing zone

Applied to patent licenses

The total price for the license (including lump sum fees and royalties) should be:

1. Greater than the value of the patent rights to the licensor, and

2. Less than the value of the patent rights to the licensee.
Pricing zone

Pricing a patent license SHOULD involve:

1. Identifying the value of the patent rights to the licensor and the licensee (i.e., marking the boundaries of the pricing zone), and

2. Apportioning the net benefits between the licensor and licensee.
Pricing zone

Example:

- Licensor has a patent for a Device and is considering forming an exclusive license with Licensee.

- **Licensor** could conduct a discounted future economic benefits (DFEB) analysis to determine net present value of keeping the patent rights (or licensing the rights to a different third party). Let’s say this analysis generates a value of $100,000.

- **Licensee** could conduct a DFEB analysis to determine the net present value of obtaining the patent rights. Let’s say this analysis generates a value of $1 million.

**Price zone** = Any price between $100,000 and $1 million
Such a cumbersome valuation process is unrealistic. It is too slow and complicated for the world of patent licenses.

We need a *satisficing* solution.
What benefit comes from licensing?
From the perspective of the University licensor

Since a university (or government research institute) is unlikely to commercially practice the invention, the benefit from the patent will be:

- Licensing revenues
- Other intangible factors, such as:
  - Transferring the knowledge to the public
  - Supporting local economic development

In most cases, there is only 1 or 2 potential licensees. Once the intangible factors are addressed (unacceptable licensees are eliminated), the benefit analysis for the university is:

- Don’t license, and receive $0 (or worse, lose money because of the maintenance fees); or
- License to the licensee willing to pay the highest royalty
From the perspective of the University licensor

*Simplified*, the value of the license to the university is anything greater than *zero*. 
From the perspective of the licensee

The licensee benefits from the higher margins it can generate by using the license.

What does that mean?
<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
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<tbody>
<tr>
<td><strong>Revenues</strong></td>
<td>$2,000,000</td>
<td>$3,000,000</td>
<td>$3,800,000</td>
<td>$4,300,000</td>
<td>$4,800,000</td>
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<tr>
<td><strong>Cost of sales</strong></td>
<td>$800,000</td>
<td>$1,200,000</td>
<td>$1,520,000</td>
<td>$1,720,000</td>
<td>$1,920,000</td>
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<tr>
<td><strong>Gross profit</strong></td>
<td>$1,200,000</td>
<td>$1,800,000</td>
<td>$2,280,000</td>
<td>$2,580,000</td>
<td>$2,880,000</td>
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<tr>
<td><strong>SG&amp;A expenses:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Selling expenses</td>
<td>$360,000</td>
<td>$540,000</td>
<td>$684,000</td>
<td>$774,000</td>
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<td>R&amp;D expenses</td>
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<td>$150,000</td>
<td>$190,000</td>
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<tr>
<td>G&amp;A expenses</td>
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<td>$516,000</td>
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<td><strong>Operating profits</strong></td>
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<td>$750,000</td>
<td>$950,000</td>
<td>$1,075,000</td>
<td>$1,200,000</td>
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<td><strong>Other income (expenses)</strong></td>
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<td></td>
<td></td>
<td></td>
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<td>Net interest income</td>
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<td>$200,000</td>
<td>($200,000)</td>
<td>($250,000)</td>
<td>$150,000</td>
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<td>Depreciation and amortization</td>
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<td>($225,000)</td>
<td>($250,000)</td>
<td>($200,000)</td>
<td>($220,000)</td>
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<tr>
<td>Extraordinary income (loss)</td>
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<td>—</td>
<td>$300,000</td>
<td>($100,000)</td>
<td>—</td>
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<td><strong>Pre-tax income</strong></td>
<td>$400,000</td>
<td>$725,000</td>
<td>$800,000</td>
<td>$525,000</td>
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<tr>
<td>Income taxes</td>
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<td>$145,000</td>
<td>$160,000</td>
<td>$105,000</td>
<td>$226,000</td>
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<tr>
<td>Net income</td>
<td>$320,000</td>
<td>$580,000</td>
<td>$640,000</td>
<td>$420,000</td>
<td>$904,000</td>
</tr>
</tbody>
</table>
Operating profits

- **Revenues** = money earned for selling a good or service
- **Cost of sales (or production costs)** = cost to produce good or service
- **SG&A expenses (or operating costs)** = company’s day-to-day operating expenses

<table>
<thead>
<tr>
<th>Operating profits</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenues</td>
<td>$12,000,000</td>
</tr>
<tr>
<td>Cost of sales</td>
<td>($5,000,000)</td>
</tr>
<tr>
<td>Gross profit</td>
<td>$7,000,000</td>
</tr>
<tr>
<td>SG&amp;A expenses</td>
<td>($4,000,000)</td>
</tr>
<tr>
<td>Operating profits</td>
<td>$3,000,000</td>
</tr>
</tbody>
</table>
Operating profits

- Operating profits are the company’s profits before interest expenses, depreciation, income taxes, and other exceptional items (see full income statement at end of this handout).
- Operating profits are frequently used when conducting a valuation analysis, because they capture the core economic task of producing and selling the good or service.
- The expenses that come after operating profits are often unique to the individual company, and tell us less about the value generated by the valued asset.
Operating margins

Operating margin is calculated as:

\[ \text{Operating Margin} = \frac{\text{Operating Profits}}{\text{Revenues}} \]

Operating margin shows how profitable a product or service is before taking into account a company’s more exceptional expenses, such as depreciation and amortization, or its particular tax rate.

If:

- Revenues $8,000,000
- Cost of sales ($2,500,000)
- Gross profit $5,500,000
- SG&A expenses ($3,500,000)
- Operating profits $2,000,000

Operating margin = $2 million/$8 million, or 25%

The higher the operating margin, the more profitable the activity.
A patent license reduces competition for a commercial activity, which allows the rights holder to charge a premium price. Being able to charge a higher price allows the rights holder to generate a **better operating margin**.

The improved operating margin is the licensee’s benefit from the license.
Patent licenses and operating margins

Example:

- Licensee is considering licensing a patent for the Device.
- Licensee typically generates a 20% operating margin from its activities.
- Licensing the patent will allow licensee to generate a 35% operating margin for sales of the Device.
- Benefit = additional 15% of operating margin for sales of the Device
Allocating the benefit between the parties
Royalty rate

Royalty rate = allocation of operating margin improvement between licensee and licensor

Operating Margin

Licensor’s share

40%

Licensee’s share

60%
Guidance on allocating the benefit

Licensee likely to receive a larger portion of the benefit. Robert Goldschieder explains:

Running sales royalty

A running sales royalty allocates the operating margin benefit.

Example:

- Licensee typically generates a 20% operating margin from its activities.
- Licensing the patent will allow licensee to generate a 35% operating margin for sales of the Device.

<table>
<thead>
<tr>
<th>If:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenues</td>
<td>$10,000,000</td>
</tr>
<tr>
<td>Cost of sales</td>
<td>($2,500,000)</td>
</tr>
<tr>
<td>Gross profit</td>
<td>$7,500,000</td>
</tr>
<tr>
<td>SG&amp;A expenses</td>
<td>($4,000,000)</td>
</tr>
<tr>
<td>Operating profits</td>
<td>$3,500,000</td>
</tr>
</tbody>
</table>

Operating margin = 35% ($3.5 million/$10 million)
Running sales royalty

Let’s add a 5% running sales royalty. What happens?

<table>
<thead>
<tr>
<th>If:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenues</td>
<td>$10,000,000</td>
</tr>
<tr>
<td>5% running sales royalty</td>
<td>($500,000)</td>
</tr>
<tr>
<td>Cost of sales</td>
<td>($2,500,000)</td>
</tr>
<tr>
<td>Gross profit</td>
<td>$7,000,000</td>
</tr>
<tr>
<td>SG&amp;A expenses</td>
<td>($4,000,000)</td>
</tr>
<tr>
<td>Operating profits</td>
<td>$3,000,000</td>
</tr>
</tbody>
</table>

Operating margin = 30% ($3 million/$10 million)

Licensor receives one-third of licensee’s additional 15% of operating margin.
  - Licensor receives 5%
  - Licensee receives 10%
Calculating running sales royalty—easiest example

- Patent is for a single-patent product (the Device).
- Licensee’s estimated operating margin for the Device = 36%
- Licensee’s typical operating margin = 12%
- Licensee’s benefit = additional 24% of operating margin
- **Pricing zone** = running sales royalty of 0% to 24%
Let’s run some examples

Easiest example:

- Patent is for a single-patent product (the Device).
- Licensee’s estimated operating margin for the Device = 36%
- Licensee’s typical operating margin = 12%
- Licensee’s benefit = additional 24% of operating margin
- **Pricing zone** = running sales royalty of 0% to 24%
- Possible running sales royalty = 8%
Let’s run some examples

Another easy example:

- Patent is for a single-patent product (the Device).
- Licensee would NOT be completely barred from the market without the license. Licensee could use an alternative technology and generate the same revenues, but a worse operating margin:
  - Licensee’s estimated operating margin with license = 36%
  - Licensee’s estimated operating margin without license = 20%
- Licensee’s benefit = additional 16% of operating margin
- **Pricing zone** = running sales royalty of 0% to 16%
- Possible running sales royalty = 5⅓%
Let’s run some examples

Harder example:

• Patent is for a complex, multi-patent product. The patented technology offers an incremental economic improvement to the overall multi-patent product.

• Licensee would NOT be completely barred from the market without the license. Licensee could use an alternative technology and generate the same revenues, but a worse operating margin:
  – Licensee’s estimated operating margin with license = 24%
  – Licensee’s estimated operating margin without license = 20%

• Incremental benefit from license is an additional 4% of operating margin

• Possible running sales royalty = 1⅓%
Guidance on allocating the benefit

For each of the examples, so far, the parties are able to agree on the operating margin impact.

Is that very realistic?
Let’s run some examples—more realistic example

**Assumptions:**

- Patent is for a single-patent product.
- Licensee would be completely barred from the market without the license.
- Licensee’s typical operating margin is 10%.
- Parties estimate Licensee’s operating margin from the patented technology could range from 0% (i.e., the project could fail) to 50% if the project is a success.
- Licensee will have to invest development costs whether the project is a success or failure (i.e., licensee bares significant financial risk in the case of failure).
- The potential for failure is greater than the potential for success.
Let’s run some examples—more realistic example

**Possible Compromise Solution:**

- Estimate operating margin to be 16.5% (to account for the failure risk)
  
  ✓ 50% operating margin x 33% chance the project will be successful = adjusted operating margin of 16.5%

- Benefit is an additional 6.5% of operating margin (16.5% minus 10%)

- Possible running sales royalty would be 2.16%
Let’s do an exercise . . .

(Exercise 4)
AGENDA

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4. More detailed guidance on royalties
Industry royalty rates

Aggregate industry royalty rates are sometimes used as a market-based approach to price a patent license.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Minimum</td>
<td>Maximum</td>
</tr>
<tr>
<td>Electronics</td>
<td>0.5%</td>
<td>15.0%</td>
</tr>
<tr>
<td>Pharma and biotech</td>
<td>0.1%</td>
<td>40.0%</td>
</tr>
</tbody>
</table>

Industry royalty rates

In reality, aggregate industry royalty rates provide almost no guidance on how to price an individual patent license.
Industry royalty rates

A comparable transaction method values an asset by looking at the range of prices paid in past or current transactions for similar assets. There are two main requirements:

1. The market transactions used as guidance must be comparable to the license being priced.
2. The market-derived prices must come from a relatively efficient market.

It is unlikely either requirement is met in the case of aggregate industry royalty rates.
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Licensee has biggest effect on value

Assuming a running royalty-based license, the licensee’s ability to generate future, positive results is the biggest value driver.
Licensee has biggest effect on value

- Need to understand licensee’s business plan for the license.
- Need to understand the sales projections to fully appreciate the royalty rate.
- Amount and timing of sales will both impact the license’s value.
- Need to understand licensee’s risk profile.
Assume three potential licensees. They all produce exactly the same projections for the patented device.

<table>
<thead>
<tr>
<th>Licensee</th>
<th>(low risk)</th>
<th>(medium risk)</th>
<th>(high risk)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NPV @ 30%</td>
<td>$38,462</td>
<td>$236,686</td>
<td>$364,133</td>
</tr>
<tr>
<td>NPV @ 45%</td>
<td>$34,483</td>
<td>$190,250</td>
<td>$262,413</td>
</tr>
<tr>
<td>NPV @ 60%</td>
<td>$31,250</td>
<td>$156,250</td>
<td>$195,313</td>
</tr>
</tbody>
</table>
Licensee has biggest effect on value

Assume two potential licensees. They produce different projections, propose different royalties, and have different risk profiles.

<table>
<thead>
<tr>
<th>Forward Years</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>Total</th>
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</thead>
<tbody>
<tr>
<td><strong>Licensee A</strong></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>(medium risk)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Units sold</td>
<td>1,000</td>
<td>10,000</td>
<td>20,000</td>
<td>35,000</td>
<td>30,000</td>
<td>20,000</td>
<td>5,000</td>
<td>121,000</td>
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<tr>
<td>Price per unit</td>
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<td>$750</td>
<td>$700</td>
<td>$600</td>
<td>$500</td>
<td></td>
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<tr>
<td>Total sales</td>
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<td>$16,000,000</td>
<td>$26,250,000</td>
<td>$21,000,000</td>
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<tr>
<td>5% royalty</td>
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<td>$800,000</td>
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<td><strong>Licensee B</strong></td>
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<td>Units sold</td>
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<tr>
<td>Total sales</td>
<td>$1,000,000</td>
<td>$4,000,000</td>
<td>$8,000,000</td>
<td>$18,750,000</td>
<td>$21,000,000</td>
<td>$15,000,000</td>
<td>$5,000,000</td>
<td></td>
</tr>
<tr>
<td>7% royalty</td>
<td>$70,000</td>
<td>$280,000</td>
<td>$560,000</td>
<td>$1,312,500</td>
<td>$1,470,000</td>
<td>$1,050,000</td>
<td>$350,000</td>
<td></td>
</tr>
<tr>
<td>NPV @ 60%</td>
<td>$43,750</td>
<td>$109,375</td>
<td>$136,719</td>
<td>$200,272</td>
<td>$140,190</td>
<td>$62,585</td>
<td>$13,039</td>
<td>$705,929</td>
</tr>
</tbody>
</table>
Tailoring the license

On a related note, resist granting more rights than the licensee needs.

Consider using field of use, geographic, and other limitations to narrow the license to the licensee’s business plan.

http://mylifewithanorexia.com/2013/04/02/she-is-restricting/
Tailoring the license

If licensee insists on receiving broader licensing rights, you should require licensee to pay for them.

These broader rights have an *option value*. 
Tailoring the license

Example: University obtained a patent on magnetic resonance technology (the “Patented Technology”). It was developed to assist oil companies to find underground oil reserves. Licensee (an oil company) obtains exclusive license for the Patented Technology.

Five years later, a *lucrative medical application for the Patented Technology is discovered*. Who should receive the benefits from this new medical application? The University, the Licensee, both?
Convoyed sales

*Convoyed sales* generally refers to unpatented products that are sold in connection with the patented product. The patented product drives the sales of the unpatented products.
Convoyed sales

**Example:** Patent covers a beverage dispenser that stores beverage syrup and water separately and mixes them just before dispensing. The dispenser features a transparent bowl creating an attractive impression that induces sales.

The *unpatented syrup could be convoyed sales.* See *Juicy Whip, Inc. v. Orange Bank, Inc. et al.*, 382 F.3d 1367 (Fed.Cir. 2004).

Convoyed sales

Should consider asking for royalties on convoyed sales.
Royalty payment caps

Royalty caps should generally be avoided.*

REMEMBER . . .

* Christopher R. Noble (MIT Technology Licensing Office), Technology Valuation Course, New Orleans (Feb. 22, 2015).
Small number of patents account for most of the income

In the United States, licensing income is highly concentrated.

- Top 20 U.S. universities account for 70% of patent activity.*
- The five most successful patents from each of these universities account for 70 – 90% of their licensing income.*

Royalty payment caps

It can be very difficult to determine which patent licenses will be the successful ones. A royalty cap can rob you of the upside from the small number truly valuable patents.
What about sublicensing?

Whether to permit sublicensing (or how to structure sublicensing) goes beyond the scope of my presentations.

But, I do want to leave you with a few pricing thoughts on sublicensing.
If you permit sublicensing

1. **Patent agent model:** If the licensee is serving as a patent agent, you will need to pay a *patent agency commission*.

These commissions can vary widely.
If you permit sublicensing

2. Take-to-market model:* If licensee was expected to take the invention to market, a royalty pass-through on sublicensee sales is common.

This is accomplished by including sublicensee sales in the definition of “Net Sales” in the license.

* Christopher R. Noble (MIT Technology Licensing Office), Technology Valuation Course, New Orleans (Feb. 22, 2015).
What about mandatory sublicensing?

3. Licensee fails to adequately commercialize all fields,* To protect against this problem, may want to include one or more of the following protections in the license agreement:
   - Mandatory sublicensing if milestone not hit
   - Convert exclusive license to nonexclusive license

Let’s do an exercise . . .

(Exercise 5)
John Orcutt is the author of . . .

Available at: http://www.amazon.com/Patent-Valuation-Improving-Decision-Analysis/dp/1118027345
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