Advanced On-line Course

IP Portfolio Management & Commercialization

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Designing an IP/Bioproperty License as a Value-capture/Risk-sharing System

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- 20 years as Director of Technology Transfer Office, Cornell University
- President of BioProperty Strategy Group, Inc.: international invention/IP tech transfer & commercialization consultancy
- Professor-adjunct, Global Development & Design Tech, Cornell U.
- Advisor to STEM, since its inception
- Sr. Advisor, World Intellectual Property Organization; leader of *Enabling Innovation Environment* Project (6 countries, 70+ institutions)
- Sr Advisor, Commercial Law Development Program

  US Dept of Commerce
- Member, Expert Committee, Intnatl. Vegetable Licensing Platform
- Inventor and US Patent holder
- Founder or founding participant in over 30 new ventures

Why license?

- The only way to establish a sustainable Tech Transfer system
- Retaining ownership assures commercialization diligence by licensee
- Maintains a connection between inventor and implementor – usually arm's length
- Arriving at a mutually-agreed sale price for an invention with unknown market value is very difficult
- The license is ideal means for tech creator and implementor to fairly share returns and risks
- Optimal for serving the public good

What are the challenges?

- New IP/technology may have significant value,

  or not ……

- It's unproven in the marketplace –

  and in scale-up/manufacture

  maybe even in the laboratory

- Tech Readiness Level (TRL) is low (e.g., 1-4 typical)

All this =

RISK

How does a license equilibrate these factors?

When ***DESIGNED*** well, the IP/technology license agreement

reasonably

rationally

and fairly

Allocates

the share of ***value-capture*** and ***risk*** of the IP/tech

between the parties.

It is based on facts, evidence, assumptions, and projections

Designing the License Agreement: the context

Both parties (Licensor & Licensee) need to face certain facts:

- The state and condition (TRL) of the technology
- The R&D roadmap from current TRL to 1st sale
- Technical and market challenges that are likely
- The marketplace of products/services enabled by the IP/tech
- The business capabilities of the Licensee

Both parties should also agree on:

- The nature of the opportunity provided by the IP/tech
- A general commercialization strategy
- The role Licensor (incl inventor) will play in the strategy

IP-based Technology Transfer:

License as "Value-capture/Risk-share System"

- The license has various mechanisms for allocating the share of risk and reward between the parties
- **The ideal balance equilibrates for:**

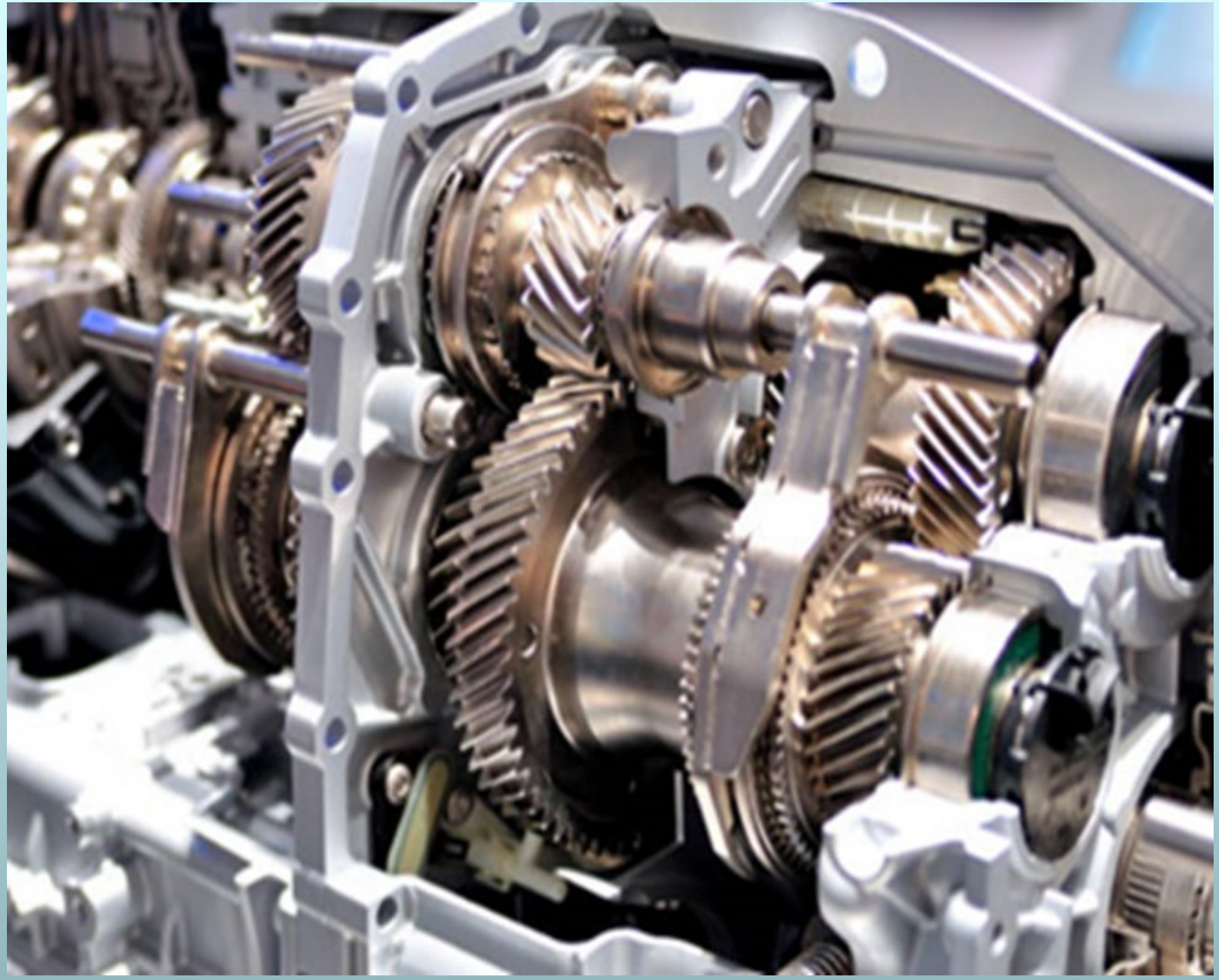
the potential market-value of the technology,

the risk it may not achieve that value,

the investment risk the licensee must make,

the value of the IP (inventiveness),

the IP owner's "opportunity cost"



Building the Value-Capture/Risk-share System

Consider the following "moving parts" in a fine-tuned "value capture/risk-sharing" device:

Scope of the license (field of use, geography)

License fee

Royalty on sales

Milestone payments

Minimum annual royalty

Sublicensing rights and revenue sharing

Future IP

IP costs

IP enforcement

Transfer of License to 3rd parties

The License as Value-capture/Risk-Share System:

Various mechanisms allow balance

- Scope of the license

  what are you handing over?

- License fee

  “guaranteed compensation”

- Royalty on sales

  the marketplace determines value

- Milestone payments

  assures diligence & shares risk

- Minimum annual royalty

  the price of exclusivity

License as Value-capture/Risk-share System

Various mechanisms allow balance

- Sublicensing rights and revenue sharing

  powerful mechanism in exclusive licenses

- Future IP

  could be very significant

- IP costs

  critical for Public Sector TTOs

- IP enforcement

  ultimately essential

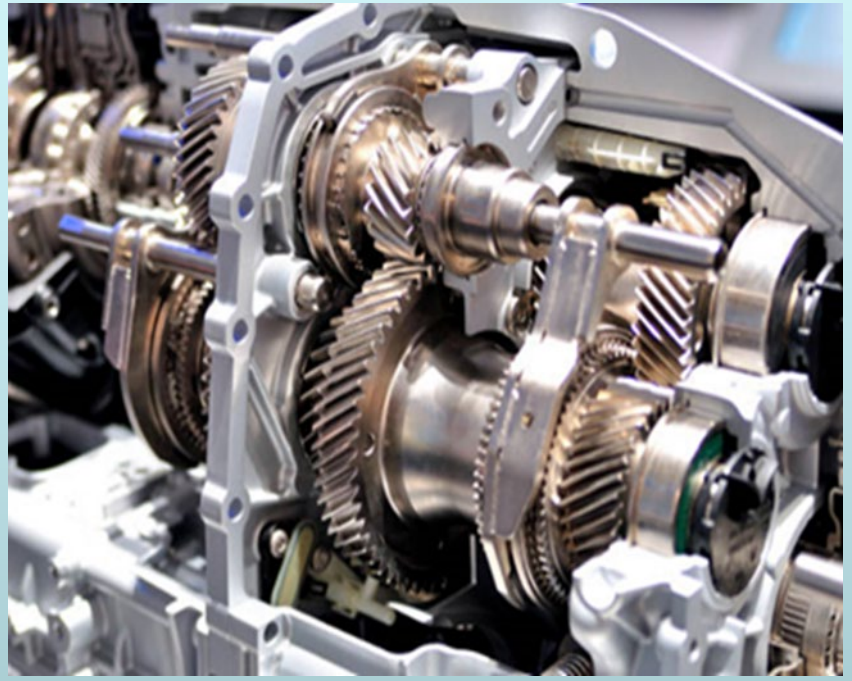
- Transfer of License to 3rd parties

  can have significant impact

License as Value-capture/Risk-share System

Various mechanisms allow balance

- All the components should integrate
- Tech Transfer Professional as “license designer”

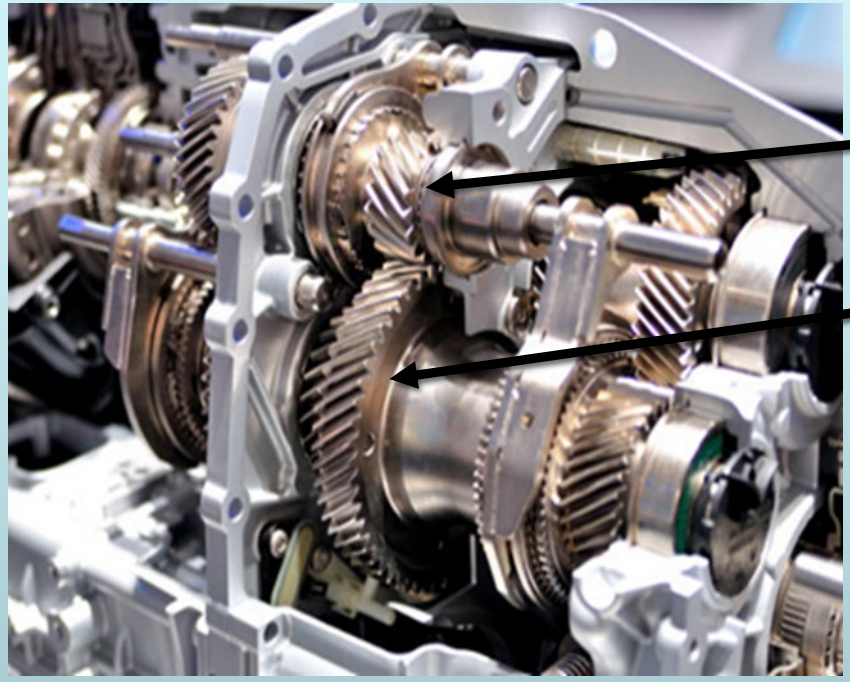


- The license components comprehensively combine to function like a “Swiss watch”

License as Value-capture/Risk-share System

Various mechanisms allow balance

The License Designers easily "Zoom-in/Zoom-out"



The License "System

Building the Value-Capture/Risk-share System

- Create multiple value-capture/risk-share mechanisms

  Upfront fees, milestone payments, exclusivity payments

  Royalty on sales

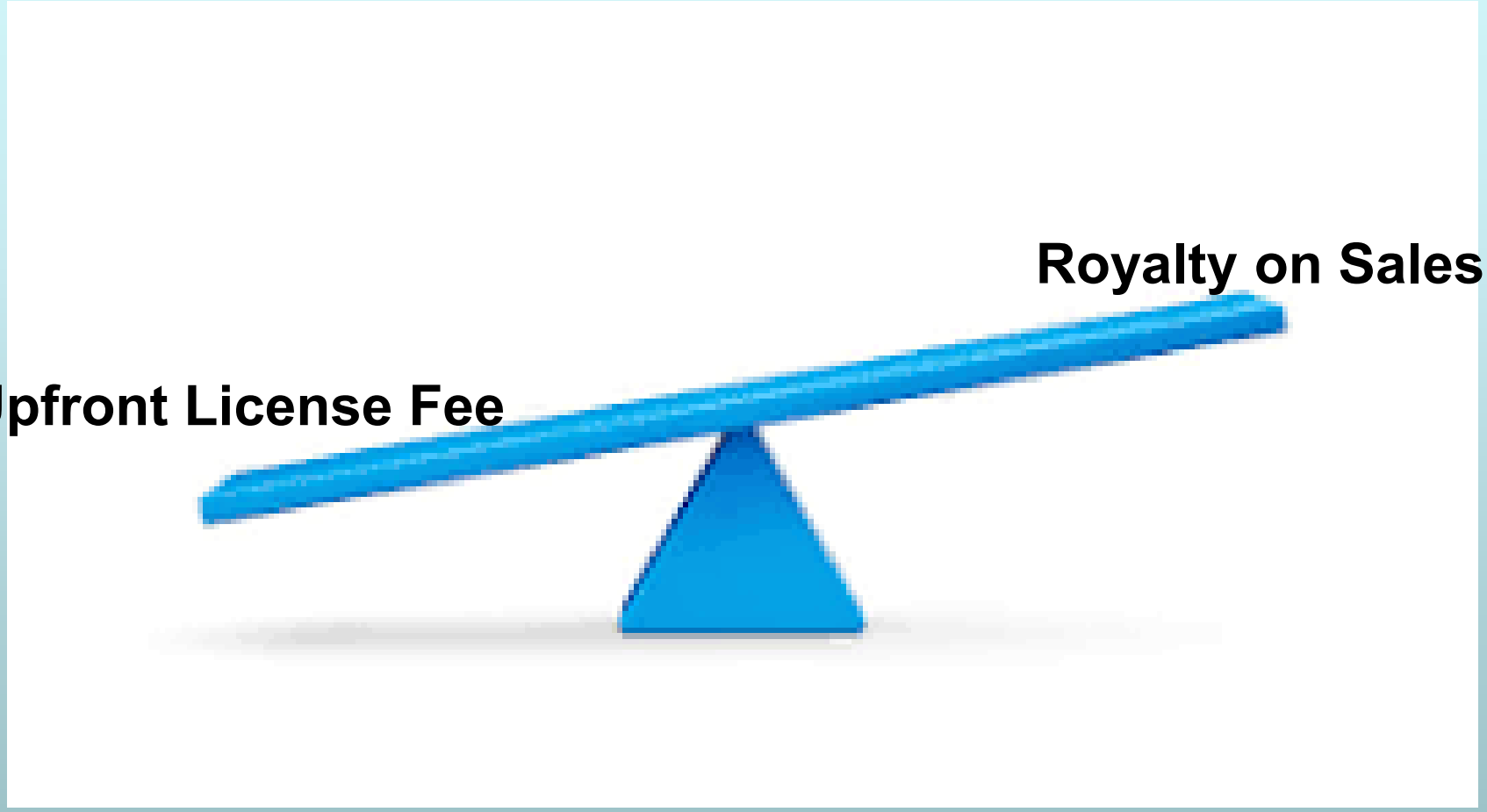
  Sub-license revenue sharing

  equipment, other in-kind

- Establish valuation assumptions, justify them, be prepared to modify them in the professional dialogue
- Consider alternative benefits (e.g. cross-licensing, technical and/or business linkages)
- “front-loaded” vs. “back-loaded” value capture

License as Value-capture/Risk-sharing System

"Front-loading" vs "Back-loading"



Technology Valuation: some basics

- No one can accurately predict the true (market -based) value of a new technology
- The license should be designed so that both parties realize tech/IP value
- Remember the risk the commercial partner is taking
- The commercial partner probably (they should) understands their industry and business assumptions better than you ……ask questions…. listen and respect their knowledge

License as Value-capture/Risk-sharing System

"Front-loading" vs "Back-loading"

Front-loading

- capturing more value in early stages of license
- higher license fees/lower royalty shifts risk to licensee
- Maybe less value capture in the long term

Back-loading

- Lower license fees/higher royalty, higher later minimums and milestones
- Lower early return, maybe more value capture in long term

Creating a Value-Capture/Risk-sharing System

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

Anatomy of an IP License Contract

Parties defined

Whereas clauses
(no legal power; provide context)

Definitions
(where the action is)

IP defined (ownership & scope)
(precisely defined; territory; also bioproperty)

Grant of rights
(type, territory, field-of-use, exclusivity)

License fees
(amount & schedule, usually non-refundable)

Royalty
(structure & amount)

Minimum royalty & milestones
(timing, event-based, other)

Anatomy of an IP License Contract

…….continued

Reporting & accounting

Term (duration) **& Termination**

Managing liability risk

Future inventions

Infringements by 3rd parties

R&D collaboration

Legal boilerplate language

Structuring License Financial Terms

License Fee

(typically upfront, lump sum, non-refundable,
but, can be phased:
over time, or
events (a favorite!)
generally linked to value of the opportunity

Royalty

(usually linked to sales, industry standards)

Minimum royalties & Milestone Payments

(assures diligence, shares risk)

Amounts & schedule

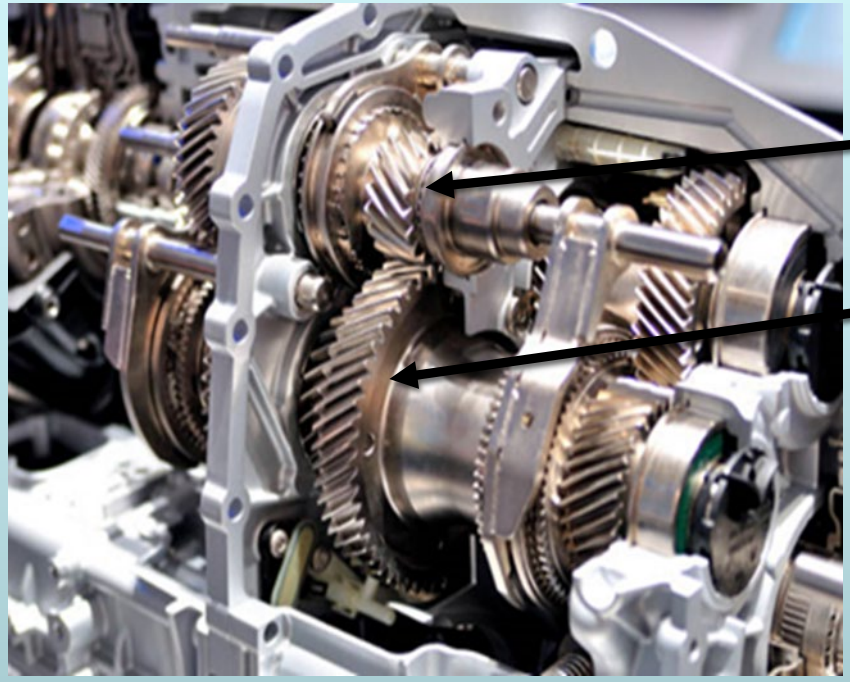
Ongoing cost sharing

(patents, R&D, bioproperty, etc)

License as Value-capture/Risk-share System

Various mechanisms allow balance

- All the components functionally integrate



- The “License Designers” (Tech Transfer Professional) uses the Zoom-in/Zoom-out approach

Structuring License Terms

License Fee: the factors

Inventiveness of the technology

(uniqueness & superiority)

scope & value of the IP

market and product

demand

investment to date and future

cash flow needs

market size & characteristics

competition

opportunity cost

exclusivity

development status

Technology Readiness Level (TRL)

TRL 1: Basic principles are observed and clearly documented
TRL 2: A technology application concept or application is formulated
TRL 3: A proof-of-concept has been demonstrated for a critical function, characteristic, application
TRL 4: The technology is validated in a laboratory setting
TRL 5: The technology is validated in a relevant application environment
TRL 6: Working model/prototype demonstrated and validated in a relevant application environment
TRL 7: A working model or prototype is demonstrated and validated in an operational environment
TRL 8: Technology completed, qualified, and made fully functional for users via testing and demonstration
TRL 9: Technology qualified as reliable through successful iterative operations; fully ready for implementation and/or commercialization

The Effect of TRL on License Fee: an illustration

A preliminary assessment of the IP/tech leads to an NPV of $500,000

TRL 7, 8, or 9: License Fee = $400k - $500k

TRL 5/6: License Fee = $350k-$400k

TRL 4: License Fee = $200k

TRL 3: License Fee = $125k

TRL 2: License Fee = $75k

TRL 1: License Fee = $25k

But, remember the Front-load/Back-load balance:

As License Fee goes down,

Royalty rate generally moves up

Establishing a License Fee

- A pre-negotiation valuation: NPV, Cost, Comparables, etc.
- Opportunity cost
- Scope of rights granted
- Earnest money (depends some on company size)
- Investment is at its riskiest

  this can make for difficult negotiations since the sides may not agree on risk level and/or potential market value of technology
- Upfront vs. spread out (time or event-based)

  risk sharing, especially if event based

Factors in determining up-fronts and milestones

Based on eventual revenue generation

(market size, sales, etc.)

Risk factors

Cost-to-develop

Are there other who want it?

the “Buyer/Seller” negotiation

Designing a License Fee: Example

- NPV = $500,000
- Lumpsum upfront = $500,000 due on signing
- Scheduled (time-based):

  $100,000 due on signing

  $100,000 each year for next 4 license years
- Scheduled (event-based)

  $100,00 due on signing

  $100,000 due on first prototype

  $150,000 due on 1st sale

  $150,000 due on anniversary of 1st sale

Structuring License Terms

Setting a Royalty: the factors

Gross Profit of enabled product as basis

sales price – COGS = Gross Profit

Industry standard range

Goldschieder's "25% Rule"

Structuring License Terms

Royalty: the factors

What is the "Goldscheider 25% Rule"?

The owner of a patent that **fully enables** a product deserves 25% of the Gross Profit of the sale of the product

- "fully enables" = patent covers entire product

  car versus windshield wiper analogy

- Gross Profit = Sales Price – COGS

  (Cost-of-Goods Sold)

- Only a "rule of thumb" – usually not ideal

Structuring License Terms

Royalty: the factors

Industry standard range

Goldschieder's "25% Rule"

business model of licensee

market characteristics (i.e., typical margins)

COGS and pricing

Value and scope of technology & IP

royalty stacking (3rd parties)

Setting a Royalty

Royalty (typically tied to sales)

- The standard: % of Net Sales (not fixed)
  - both parties share market risk
  - linked to sales and profit margins
- Ideally based on business reality
  - COGS vs pricing: gross profit margins
- Excellent means of getting the parties on same page (important for building the partnership)
- Industry standards (use as guide, not absolute)
- Remember: it is in licensor's and licensee's best interest that the licensee will be able to sell profitably

Setting a Royalty Rate

- Use industry standards as a guide (ranges)
- The "25% Rule as *starting point*:

The Rule: the owner of the patent that fully (100%) enables the product deserves 25% of the gross profit on sale of the enabled product.

Example of a patent that fully enables the product:

$200 sale price

$100 Cost of Goods Sold (COGS)

= $100 Gross Profit

Patent owner share: 0.25 x $100 = $25

Royalty = $25/$200 = 12.5%

Setting a Royalty rate

Using the "25% Rule" & Enabling Factor

For a product with a $100 Gross Profit

on sale of $200

Patent 100% enables product: royalty = 12.5%

Patent 75% enables product: royalty = 9.4%

Patent 50% enables product: royalty = 6.25%

Patent 10% enables product: royalty = 1.25%

Setting a Royalty rate

The "25% Rule"

- Provides a starting point
- Adjusted according to "enabling value" (%)
- Typically, after analysis of manufacturing cost, market pricing dynamics, value-add by licensee….
- The parties agree to a simpler approximation

  5% not 4.85%

  8% not 7.89%
- 25% Rule is a good starting point but almost never the final royalty rate agreed-to

Royalty rate variations

Royalty % can:

- Remain constant over life of the license

  or

- increase over time

  or

- decrease over time

  or

- Some creative combination

License as Value-capture/Risk-sharing System

Scope of the license

- Exclusive vs. non-Exclusive, co-Exclusive, time-limited
- Field-of-use
- Territory
- All commercial-use rights, mfg only, sales only, etc.

License as Value-capture/Risk-sharing System

Royalty – some variations

- Per “seat” or per “site” royalty
- Fixed with periodic, pre-agreed adjustments
- Technology value-add in market application
- Pick an industry standard

License as Value-capture/Risk-sharing System

Milestone Payments

- Should be based on business and technology reality
- Parties should agree on development plan and timeline, understanding hurdles and their risks
- At key de-risk events, a payment to be made
- Time-based milestones can also useful

Structuring License Terms

Minimums & Milestones

- One of the most powerful tools for:
  - value capture
  - risk sharing
  - licensor control
- Typically linked to product development schedule
  - Time-based
  - Event-based

License as Value-capture/Risk-sharing System

Minimum Annual Royalty

- Should be based on business and technology reality
- Based on Parties' agreement on development plan and timeline
- Based on sales projections (timing and amounts) of Licensee
- Economic "teeth" of duty of commercial diligence
- Protects the public interest by economically penalizing failure to commercialize
- Ongoing leverage by university to assure development

License as Value-capture/Risk-sharing System

Minimum Annual Royalty: how it works

- The parties agree on sales projections
- Royalty projections are based on sales projections
- Consider giving licensee a "forgiveness cushion" of 25%-35%
- Licensee pays minimum at BEGINNING of license year
- At end of license year, royalty owed is calculated and minimum already paid is deducted
- Licensee either:

  met sales projections (no more royalty owed),

  exceeded sales projections (more royalty owed),

  or didn't meet projection (paid royalty without sales)

License as Value-capture/Risk-sharing System

Sublicensing rights and revenue sharing

- A value to be negotiated not given away lightly
- Licensee/licensor can share sublicense revenue in any manner they negotiate
- Mandatory sublicensing clauses can be used
- Incentives for sublicensing can be used

(assures widespread dissemination)

may be integrated with milestones or minimums owed

License as Value-capture/Risk-sharing System

Future Inventions/IP

- A value to be negotiated not given away lightly
- Ownership and disposition

  based on trust-filled relationship

  (and focus on success of IP/technology)
- Try to find solution that is in best interest of both parties

License as Value-capture/Risk-sharing System

IP costs & Enforcement

- IP is usually a significant expense
- Related to scope (exclusive vs. non-exclusive)
- Who pays is a matter of philosophy, policy, negotiation, and a practical matter
- For universities with limited IP budgets, sustainable operation points to the (exclusive) licensee paying;

  can be a factor in setting other financial terms

Designing the Value Capture/Risk-sharing System

- Create multiple value-capture mechanisms

  Upfront fees, milestone payments, exclusivity payments

  Royalty on sales

  Sub-license revenue sharing

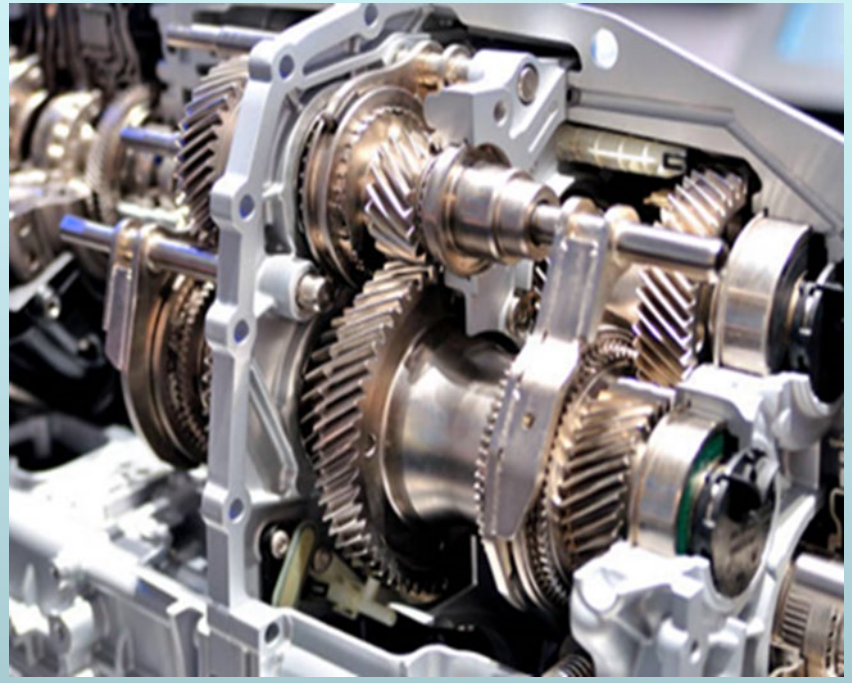
  equipment, other in-kind

- Establish valuation assumptions, justify them, be prepared to modify them in a professional dialogue
- Consider alternative benefits (e.g. research support) philanthropic/ humanitarian aspects?
- “front-loaded” vs. “back-loaded” value capture
- TRL effect

License as Value-capture/Risk-share System

Various mechanisms allow balance

All the components functionally integrate



The License Design

License Types, Structures, Elements

Types of Licenses

Option: a pre-license agreement

Commercial vs. research use, evaluation

Exclusive vs. non-exclusive

Exclusive licenses:

world-wide, all fields

by territory, and/or field-of-use

time-limited

consortia

Non-exclusive licenses:

typically available to all qualified

non-exclusive in one territory, and exclusive in another territory

Structuring License Terms

Special Issues & Topics

- R&D collaboration
- Future inventions
- Personnel exchanges, equipment sharing

IP Portfolio Management & Commercialization

Designing an IP/Bioproperty License as a Value-capture/Risk-sharing System

Thank you

Questions?