

# Patent Valuation (专利估值)

By Sam YIP  
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# The 4 Horsemen of Patent

## Exploitation

- Product encompassing patent
- Scope of protection
- % of profit contributed by patent
- Can make the same profit w/o the patent?

## Licensing

- Where to find licensees?
- Exclusive / non-exclusive
- Depends on licensee's revenue
- Royalty rate and terms

## Sales

- Where to find buyers?
- What should be the **sales price**?
- Post sales conditions and control possible?

## Enforcement

- Cost of litigation
- Probability of success
- Damage rewards
- Repercussion

# Patent Valuation

- Major Methodologies:
  - Cost Method (成本方法)
  - Income Method (收入方法)
  - Market Method (市場方法)

# Patent Valuation – Cost Method (成本方法)

- Value of an asset is the cost to replace the asset with an identical or equivalent asset
- How easy to design around the patent
- Different accounting approaches
  - Original R&D + IP procurement costs
    - Apportionment
  - Reproduction costs
    - Total costs, at today's prices, to develop the exact same IP
  - Replacement costs
    - Total costs, at today's prices, to develop an asset having the same functionality
  - Design around cost

# Patent Valuation – Income Method (收入方法)

- Present value (PV) (现值) of expected future income on a patent
  - $PV = FP / (1 + r)^n$ 
    - FP is future payment, r is discount rate, n is years before payment received
  - Net PV (NPV) (净现值) = sum of PVs
  - Product income: portion of sales attributed to the patent
  - Licensing income: Upfront payment + licensee's revenue x Royalty rate = Royalty revenue
  - Discount rate (折扣率)
    - Higher risk and uncertainty, higher the discount rate and lower the PV
  - Remaining useful life
    - Shortest of: statutory life / contract life / judicial life / economic life / technological life / analytical life

# Patent Valuation – Market Method (市場方法)

- Value is determined by price paid for comparable assets
  - Subjected to discount or premium
- Conditions necessary for market method valuation
  - Public exchange market information available
    - Stock prices
    - Financial reports
  - Standardized exchange terms
  - Multiple number of recent transactions

# Patent Valuation – Market Method (市場方法)

- Acquisition Comparable
  - Comparable company X was acquired for \$150mil. Believe \$50mil. is due to expected synergies. Believe 30% of value is from X's 30 patents. Our targeted company Y has 10 patent equivalents. How much is our Y's patent portfolio worth?
- Stock Price Indication (price swing)
  - X's market cap avg. \$150mil in last 5 trading days. Today came a positive court ruling on its 30 patents' validity and its market cap surged to \$180mil. How much is our Y's patent portfolio worth?
- Stock Price Indication (financial ratio)
  - X is trading at price-to-cash flow of 9 but others in X's sector is 6. X has \$10mil cash flow and 30 patents. The others in X's sector has no patent. So how much is our Y's patent portfolio worth?
- Publically traded licensing company
  - A is a licensing company with \$60mil market cap. \$10mil in cash. It holds 100 patents. Our targeted patent is similar to one of A's patents so how much is our patent worth?

# Patent Valuation – Royalty Rate (专利费率)

- Market Method
  - Weighted average of similar licensing deals
  - Hard to find public records
  - Licensing deals have varying terms and conditions besides royalty rate
- 25% Rule
  - Licensor should receive 25% of licensee's net profits from the licensed IP
  - Use tax return, exchange report filing for profit determination
  - Negotiate the calculation of profit
- Industry Standard Royalty Ranges (i.e. from Les Nouvelles)
  - Auto: 1~15% (median 4%)
  - Software: 0~70% (median 6.8%)
  - Pharma: 4.75%~6.57% (median 5.66%)



# Valuable Patent

- Ultimately, the value of a patent is dependent upon:
  - (1) the scope, validity and enforceability of its claims;
  - (2) the market to which it applies; and
  - (3) reasonable royalties pertaining thereto

# Valuable Patent – 7 Factors (Allison)

1. Recently issued
2. Domestically owned
3. Issued to individual or small company
4. Cite much prior art (and are frequently cited)
5. Are prosecuted longer
6. Have more claims
7. Come from mechanical, computer and medical device companies v. chemical and semiconductor companies

# Patents for Licensing - Dominate and subordinate patents

- A patent that more broadly claims a field of an invention is typically called the “dominant patent”
- A patent that relates to an improvement in a field of invention is typically referred to as the subordinate patent
  - Examples: Patent A broadly claims “A semiconductor device.” Patent B claims “A CMOS semiconductor device.” Patent A is the dominant patent, Patent B is the subordinate patent. Patent B cannot manufacture the CMOS semiconductor device without getting a license from the owner of Patent A. Likewise, if the owner of Patent A wants to make a CMOS semiconductor device, it must obtain a license from the owner of Patent B

# Patents for licensing

- It is important to know the patent landscape BEFORE investing substantial resources into a research project. If there are dominant patents in your field of research, potential licensees will be unlikely to license your invention because they will not be able to practice your invention without first obtaining a license from the owner of the dominant patent
- However, if you are targeting the owner of a dominant patent as a potential licensee, and you know that the patent owner has made investments in the technology of the dominant patent, making a substantial improvement in this technology and patenting it can make the improvement patent an attractive potential license

# The takeaway message

- Patent searching should be performed early on in making the selection of a research project. This will identify any patents that may be a problem before a large financial commitment has been made. It will also identify the corporations and research organizations involved in the field of research to identify potential licensees or potential research partners.

# Patent search for the purpose of licensing

- As mentioned earlier, it is important to perform patent searching to see if there are any dominant inventions, as well as for the typical reason of determining whether a particular field of research would yield a patentable invention.
- Thus, it is prudent to perform many brief patent searches over the course of a research project to ensure that the final product of the research will be patentable and licensable.

# Drafting patent claims for licensing

- Product Claims are favored over Method Claims
  - Why is this? Product features are “detectable.” Method features are not as easily “detectable.”
  - Example: Invention is a method for doping a quantum dot composition through a plasma vapor deposition process. Instead of claiming a method of plasma deposition, focus on claiming the quantum dot composition with a level of doping that is unable to be achieved other than by the inventive method. It will likely be harder to obtain these claims but the claims will have a better chance of being licensed.

# Drafting patent claims for licensing

- Royalty base: The royalty base for a percentage royalty is typically based on the value of the product set forth in the patent claim
  - So, for example, a patent should include claims of high-value products so that the royalty payments will be higher
    - EXAMPLE: “A carbon nanotube layer on a substrate” (raw material = lower cost, lower royalty)
    - “A thin film transistor comprising a carbon nanotube layer on a substrate” (product, but lower price point product, intermediate level of royalties).
    - “A display including a thin film transistor array, the thin film transistor array including a transistor having a carbon nanotube layer on a substrate.” (largest price item that includes the carbon nanotubes, can argue that the royalty base should be the price of the display).
  - Note that the royalty base is still a point of negotiation but there is no basis to argue the higher-value royalty base if the patent doesn't include claims to the higher-value item



# Growing a patent portfolio for licensing

- To create a portfolio, multiple patents targeting a technology field are needed
- Can grow a portfolio targeting either multiple aspects of a final product (e.g., parts of a display) or a group of materials that can be used in a class of products (various organic compounds for use in creating OLEDs).
- Need to do a market analysis and target potential licensees before determining which type of portfolio is best to pursue
  - Helps to look at other patent portfolios- patent landscaping to determine the kinds of patents included in a technology field of various companies

# Who we are

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