# Applying valuation and analytics tools to licensing

Licensing negotiations can throw up bewildering questions, from market prices to future risks. However, using different types of valuation and analytics tools can help to deliver a successful licensing programme

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What is a fair price in a licensing negotiation? How should future risk factors be accounted for? What are others paying for access to similar assets? Which companies should be approached when considering a licence or a sale?

These questions, and others, are common when negotiating a licensing deal or participating in a private auction for rights to one or more patents or other intangible assets. We have found that the following three categories of valuation and analytics tools can be utilised to answer them and to help in the successful implementation and execution of a licensing programme:

- Patent analytics and portfolio review.
- Market and financial information.
- Valuation models.

These tools help at various stages in the licensing transaction lifecycle. Figure 1 illustrates the stages in a typical licensing transaction lifecycle in which each tool is most helpful.

**Patent analytics and portfolio review**
Patent analytics tools are useful when reviewing a complex or large patent portfolio. They can be used to compile and analyse the package of IP to be licensed or sold.

A number of tools provide patent analytics, but one that we have utilised for this purpose is the Derwent World Patents Index. Derwent provides a separate and distinct coding schema from the International Patent Class codes used by the US Patent and Trademark Office. This hierarchical coding schema, referred to as Derwent manual codes, consists of a set of standard codes that correspond to specific detailed technology areas. Derwent has a subject-matter expert assign one or more manual codes after reviewing the patent.

We have found that grouping patents into certain category buckets based on the assigned Derwent manual codes is a useful first step in the opportunity assessment and packaging phase of a licensing transaction. There are many reasons to develop patent category buckets, and there are multiple methodologies and criteria that may be used to assign patents to category buckets. For example, each bucket may represent a specific potentially licensable technology or application, which provides a structure for assessing the opportunity and packaging of the IP. Once the patents have been grouped into category buckets, additional tools can be used to analyse the market and to identify potential licensing partners. These tools provide insight into the IP landscape in a particular industry and can be used to analyse the extent of patent activity in the industry; identify companies which have generated significant numbers of patent applications (and also which companies have not); determine the extent of the patents' geographic coverage (eg, whether coverage is primarily in the United States or worldwide); determine the extent to which a given bucket of patents is cited by other patents and which assignees own the citing patents; and evaluate the extent to which the portfolio to be licensed complements

a potential licensee's portfolio.

While patent analytics tools provide valuable information about the nature and scope of an IP portfolio, additional analysis is usually required. This is typically performed by subject-matter experts and is helpful in gaining an insight into the distinct advantages provided by the IP. Understanding the nature of the advantages provided by the IP is crucial to constructing a useful valuation model.

For example, in an engagement in the telecommunications sector, meetings with inventors and lead product architects enabled us properly to identify which of the client's products incorporated the subject IP and then to isolate the specific functionality of those products. This allowed us to identify patents that were potential out-licensing candidates because they did not directly support a product line and also to analyse the extent to which the company's patent strategy aligned with its product and business strategy.

In a separate engagement in the information processing sector, our conversations with in-house subject-matter experts clarified the nature of the advantage inherent in the IP which, for this particular portfolio, was processing cost savings. As a result, our valuation model was based on the quantification of the cost savings, as opposed to an analysis based on other variables, such as increased sales.

**Market and financial information**
In many cases, obtaining data about the market or industry group that will be using the IP portfolio is crucial to developing a valuation model and successfully monetising the portfolio. A number of financial databases are available for this purpose.

In evaluating potential buyers or licensees, it is important to have a broad understanding of the competitive landscape of the industries being licensed. The potential acquirer of the IP may not be the industry leader, but rather a second-tier company seeking to launch a new product. It may be a company that is three years away from launching a product and is about to make a critical decision about which of two competing technologies it should rely upon. Industry analysis may include answering the following questions:

- What companies have products in the industry?
- What companies are conducting significant R&D in the industry?
- What is the technology roadmap for the industry?

Information regarding the structure and profitability of targeted markets, as well as company-specific (whether the company is public or private) financial information, may assist in developing a list of targets, determining a range of potential royalties (or outright sales amounts) and structuring agreements in a profit-maximising manner.

Numerous financial systems can be used to perform market and company-specific financial analysis, including Capital IQ, Bloomberg and Hoovers. We have used such services to obtain both income statement and balance-sheet information, and to analyse historical trends.

Profit margins, found on the income statement, may provide insight into the level of royalties that can be absorbed by companies in a particular industry. Often, though, the subject technology to be licensed pertains to either a business segment or product whose profitability is not apparent from a review of financial information. Conversations with industry

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Figure 1. **Valuation and analytics tools mapped onto a licensing transaction lifecycle**
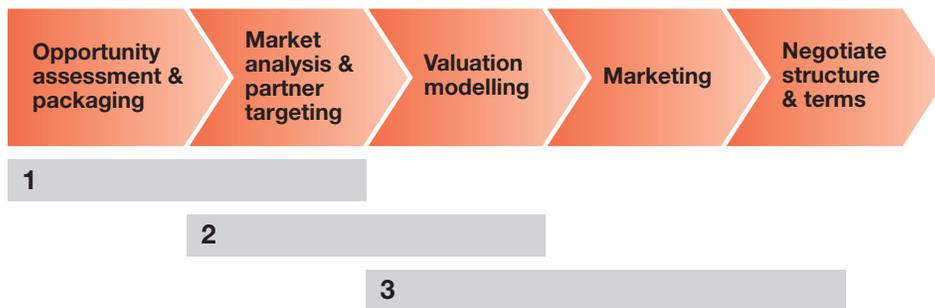


1. Patent analytics and portfolio review
2. Market and financial information
3. Valuation modeling

experts or an analysis of similar products will often provide sufficient information to proceed with a valuation.

Balance sheets, especially for privately held companies, provide a window into the financial health of the potential licensee. In an assignment involving internet gaming patents, a number of the potential licensees were privately held companies. A review of the companies' balance sheets helped to prioritise the intended licensing targets based on the relative strength of their balance sheets. Additionally, a balance-sheet review may provide important information about a company's ability to pay upfront licence fees or to purchase the IP outright.

**Valuation models**

Valuation models provide the final piece of the analytics and valuation tools puzzle. Before discussing the specific tools available to support valuation modelling, a brief overview of valuation approaches is appropriate. Generally, there are three basic approaches to valuing IP: the cost, market and income approaches.

The cost approach is based on the premise that the value of the IP is largely reflected in the cost that would be incurred to recreate IP with similar functionality. The market approach utilises transactions that have occurred for similar assets to obtain a value for the IP. The income approach values IP based on the cash flow attributable to it.

The cost approach may be appropriate in valuing custom-developed software which has functionality that could be readily duplicated. There are useful tools available to help estimate the amount of

time and effort it will take to design and develop such software. One such tool is the COnstructive COst MOdel (COCOMO), originally developed by Dr Barry Boehm.

The market approach can be enhanced by using research tools which identify transactions that have occurred involving similar types of assets to the IP being evaluated. The challenge in valuing IP under this approach often lies in the lack of transparency associated with IP-related transactions. This lack of transparency makes it difficult to evaluate whether the transactions are truly comparable. We have found financial information tools that include a transaction screening capability, such as Capital IQ, to be useful in identifying comparable transactions. There are also numerous tools which provide historical information about publicly available licence agreements and IP-related transactions. In addition, numerous firms maintain proprietary licence agreement databases and patent damages databases.

The income approach often requires projections of cash flows (eg, from increased sales or decreased costs) and the determination of an appropriate discount rate. Numerous financial databases, such as those earlier discussed, can be used to help prepare financial models under this approach.

Regardless of the approach utilised, we have found that the use of a decision tree model often provides a concrete, but flexible, framework for arriving at a transactable value for IP. Part of an in-depth valuation process should include identifying and understanding any key risk factors that could impact on the licensing or monetisation process. For example, in an assertion-based model, understanding key potential risks in the litigation process, and accurately estimating the size (and potentially the distribution) of these key risk factors can help in decisions about various courses of action during the litigation, such as whether to accept a certain settlement offer before reaching a key risk factor. A robust model allows a decision maker to understand the current expected value of the action and, importantly, how that expected value will change based on the outcome of specific events. Figure 2 shows an example of a basic decision tree framework with static probabilities.

Instead of developing a model that provides a single answer, it may be helpful to use one that provides a range of valuation results and insight regarding the risk factors with the greatest impact on the IP's value. The process of developing a valuation model can be beneficial for this exact reason — it

Figure 2. **Example of a simple decision tree framework**
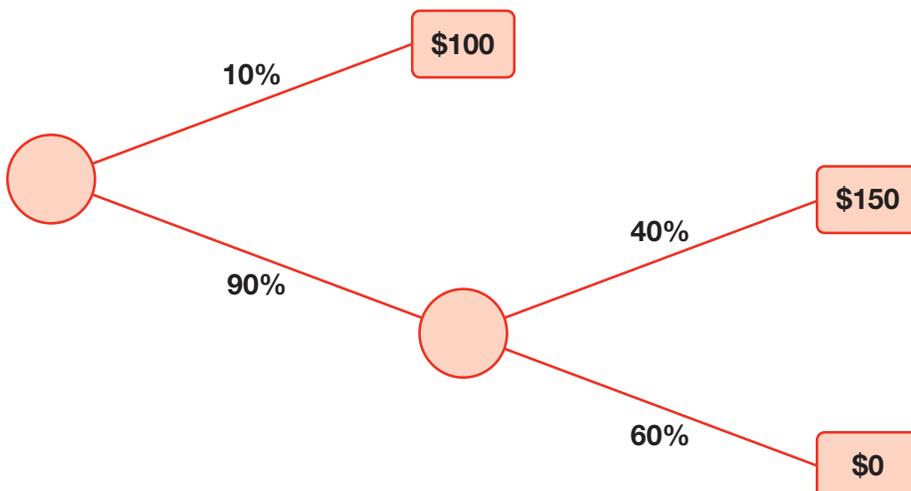
provides a framework for thinking through all the different issues and risks associated with the specific licensing opportunity being considered. In past assignments, we have found it useful to develop the inputs to this model collaboratively with the client and/or additional subject-matter experts, as needed, so that there is agreement on what factors the model considers. Once such a model is developed, it should be sufficiently flexible to take into account additional information which may arise. In addition, such a model could be shared (typically with certain values omitted so as not to give away the entirety of the bargaining position) with a potential licensee as part of the negotiations. If agreement can be reached on certain key variables, or at least points of disagreement can be identified, then a contingent licence agreement can be structured to have multiple payment scenarios, depending on the eventual resolution of the underlying risk factors.

While a number of approaches may be used to develop a flexible model as described above, we have found that incorporating Monte Carlo modelling techniques provides flexibility, while also producing a distribution of potential outcomes. Monte Carlo modelling methods rely on repeated random sampling using a defined set of input variables to produce an output distribution. There are a number of tools available that provide this capability, such as Crystal Ball and @Risk. By generating a set of input values and then executing the model hundreds or

even thousands of times, a range of outcomes is produced that may provide additional insight during negotiations. Figure 3 provides an example of an output distribution from a Monte Carlo model that was developed to analyse the NPV of a potential commercialisation opportunity.

The subjects addressed in this article are presented for illustrative purposes and are not intended to reflect a comprehensive review of any given subject area. Every situation has specific unique facts and circumstances that affect what valuation approaches and tools might be useful.

*This article reflects the views of the authors and not necessarily those of Charles River Associates or its employees.* **iam**

Figure 3. **Example of an output distribution from a Monte Carlo model**
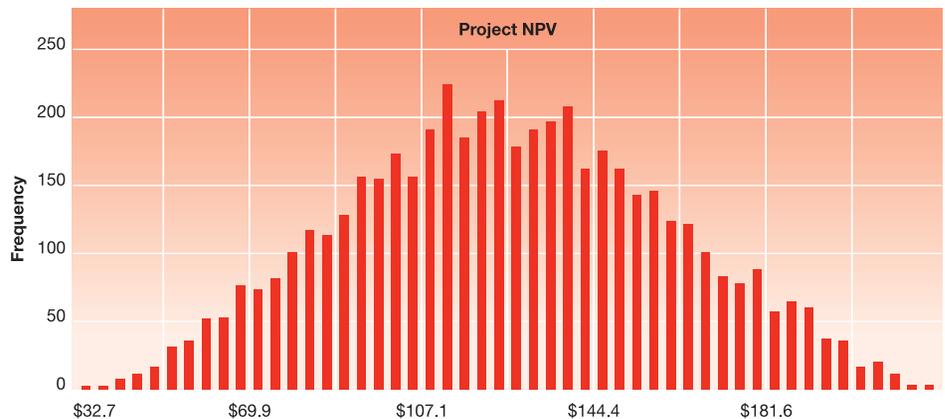
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