Intellectual Asset Management

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Eli M. Noam, *Media and Digital Management*, https://doi.org/10.1007/978-3-319-72000-5_7

7.1 Intellectual Assets

7.1.1 What Are Intellectual Assets?

In this chapter, we will cover a key element of media and information management: how to create, protect and manage intellectual assets (IAs). IAs are more commonly referred to as intellectual property (IP) or intellectual property rights (IPRs), terms derived from a legal perspective. For business purposes, we should think of them as assets—items of value that are designed, invested in, produced, improved, valued, priced, sold, licensed, or exchanged.

It is characteristic of information products that they are expensive to create but easy to duplicate. Technology makes it easier for a producer to create and distribute information, but it also makes it more difficult to protect information from unauthorized copying and distribution by rivals and users. This applies to new content as well as to new technology. Due to the difficulty in excluding others from use, the ability to collect payments is reduced and, with it, the incentives to create new information and innovation. These fundamental characteristics have led to the creation of the legal construct of IPRs.

To discuss intellectual property one must first clarify, more generally, what "property" means. Property is the collection of ownership rights held by someone in an item, that are protected by the state. This "bundle"[1] includes some or all of these rights: to use, consume, destroy, sell, rent, extract, and exclude. "Property" is a central feature of the economic system. Under feudalism, when land was the main resource, real property (i.e. land) was central to law and commerce, and defined the social and economic order of the era. In the industrial age, machinery and financial resources became all-important and "personal and financial property" became the focus of legal and managerial attention. In the information age, information is the key resource, and intellectual assets are an increasing center of economic activity and, hence, of management efforts. However, this area has been left primarily to lawyers and, until recently, it was under-appreciated as a managerial task.

We should start with a broad picture. Individually-held property, i.e. the notion of private ownership, is an alien concept to some cultures. For example, before European colonization most Native American tribes exercised a communal rather than personal ownership of land,[2] though individuals or families personally owned items such as weapons, clothing and jewelry.

Even in Western cultures, not everything is property—i.e. owned by someone. Much of the oceans, which constitute two-thirds of the world's surface, are not owned by anybody, even by states. Space is another example. Also, many places and things are not owned privately but, rather, collectively—such as parks, roads, national forests, and military installations. Approximately 40% of the US land area is publicly owned.[3]

As late as the 1950s and 1960s, the expression "intellectual property" was rarely used[4] and was applied narrowly. Certain creations with potential economic value were left outside the notion of "ownership," such as dance steps, weather predictions, a great scientific idea, or business strategies. But, for each of these examples, the realm of intellectual property has expanded and private ownership is now being claimed.

7.1.2 History

Intellectual Property is not a new concept; it has been around for well over 500 years, at least. In 1469, the Venetian Senate granted John of Speyer (Spiro) the exclusive right to print classic works for a period of 5 years. This privilege ended soon with his death; freed from exclusivity, Venice printing flourished in subsequent decades and it became Europe's major publishing center. Venice was also the first jurisdiction to grant, after 1450, patents on inventions, particularly in glass-making. In Britain, the statute of Anne (1710) created

1 Penner, J. E. "The Bundle of Rights Picture of Property." *UCLA Law Review* 43, no. 3 (February 1996): 711–820.

2 Isakson, Hans R., and Shauntreis Sproles. "A Brief History of Native American Land Ownership." In *Indigenous Peoples and Real Estate Valuation*. Eds. Robert A. Simons and Rachel Malmgren. New York: Springer, 2008, 63–75.

3 Lobowski, Ruben N. et al. *Major Uses of Land in the United States, 2002*. Washington, DC: Economic Research Service, United States Department of Agriculture, 2006.

4 Scherer, Frederic M. "The political economy of patent policy reform in the United States." *Faculty Research Working Papers Series*. Cambridge, MA: Harvard Kennedy School of Government, October 2007.

property rights for authors and publishers.[5] In the USA, the drafters of the Constitution of 1787 made special provisions for IP protection in Article I of the document: "Congress shall have the power…to promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries."

Though IPRs create incentives to innovate, they also encourage monopoly pricing. AZT, the first antiretroviral effective against AIDS, sold initially for $10,000, while incremental production costs were much lower.[6] Many patients—or public health systems—could not afford such expensive drugs. Patents lead to high medicine prices and may prevent treatment of patients living in poor countries. On the other hand, without patent protection some of the drugs may not have been developed in the first place.

It is similar for copyrights, where protection keeps prices way above marginal cost. The incremental cost to produce and ship a CD-ROM copy of the PC operating software Windows is about $2.40, including the disc, packaging, shipping and so on. For an electronic download version, incremental cost is close to zero, except for minor administrative expenses. But the price charged is $350 for professionals, $200 for residential use and $120 for students.

Beyond affordability, IPRs can also create petty restrictions. For example, in 1996, the American Society of Composers, Authors and Publishers (ASCAP) threatened to sue girl scouts organizations for singing campfire songs such as "This Land is Your Land" without obtaining a license and paying for it. Some large restaurant chains did not serenade their patrons with "Happy Birthday" since that ditty was claimed by Warner Music Group to be under copyright until 2030, despite its dubious origins. (Eventually, the copyright claim was invalidated in 2015 in a court challenge.)

Every change in the property system is a change in the ownership of assets and resources, and is hence a fight over wealth and income in society. Therefore, it is not surprising that IP is an area whose growth has been accompanied by increasing controversy, both economic and political. Opponents argue that patents often reward very little innovation, stifle progress and suppress the free flow of information. Companies use them to block each other. Furthermore, critics state that patents and copyrights rights have become too broad, and give excessive rights to first movers, shutting out competition.

Intellectual assets affect non-profit organizations, too. An example is the licensing income received from patents by Columbia University, which in 2008 was $134 million, highest among American universities[7,8] according to the American University Technology Managers, and $115 million in 2014.[9,10] This income benefitted its students and faculty. But, at the same time, the same university had a student body that topped a list by the film industry of film piracy at universities in the USA with 1198 "unauthorized uses of copyrighted material."[11,12] This kind of internal contradiction mirrors the similarly conflicted roles of many individuals: they are consumers of media and information, and yet they often are also producers of content of some value to others—as writers, managers, artists, or entrepreneurs. Often, they do not mind sharing their ideas and creations, but are not willing to let someone else "rip off" their creations to make money.

Despite the importance of patents and copyrights, most firms have no effective IA strategies. A 1998 survey of 360 US companies found that 71% admitted wasting patents through mismanagement. Another study showed that more than

5 The German philosopher Immanuel Kant provided an ethical rationale. Kant believed that an author has an inherent right to protection against unauthorized compulsion to speak, and that unauthorized publishing would violate the individual's personal autonomy. Kant, Immanuel. "Of the Injustice of Counterfeiting Books (Von der Unrechtmaessigkeit des Buechernachdruckes)." *Essays and treatises on moral, political, and various philosophical subjects*. London, 1798.

6 Scherer, Frederic M. "The political economy of patent policy reform in the United States." *Faculty Research Working Papers Series*. Cambridge, MA: Harvard Kennedy School of Government, October 2007.

7 Gordon, Larry. "How the UC system is making patents pay off." *Los Angeles Times*. October 10, 2015. Last accessed May 22, 2017. ► http://www.latimes.com/local/education/la-me-uc-patents-20,151,011-story.html.

8 National Academy of Inventors. "Top 100 Worldwide Universities Granted U.S. Utility Patents 2015." Last accessed May 22, 2017. ► http://www.academyofinventors.com/pdf/top-100-universities-2015.pdf.

9 Gordon, Larry. "How the UC system is making patents pay off." *Los Angeles Times*. October 10, 2015. Last accessed May 22, 2017. ► http://www.latimes.com/local/education/la-me-uc-patents-20,151,011-story.html.

10 In 2015, Columbia was the ninth highest recipient of patents (119) among educational institutions in the world. National Academy of Inventors. "Top 100 Worldwide Universities Granted U.S. Utility Patents 2015." Last accessed May 22, 2017. ► http://www.academyofinventors.com/pdf/top-100-universities-2015.pdf.

11 Fisher, Ken. "MPAA Names its Top 25 Movie Piracy Schools." *Law and Disorder*. April 2, 2007. Last accessed June 9, 2010. ► http://arstechnica.com/tech-policy/news/2007/04/mpaa-names-its-top-25-movie-piracy-schools.ars.

12 Columbia University was followed by the University of Pennsylvania with 934, Boston University with 891, University of California, Los Angeles with 889, and Purdue University with 873.

35% of US patents go unused by their owners, though they are potentially of value to others.[13] The estimated value of wasted patents was $150 billion. The value of under-utilized copyrights is vast, although even more difficult to estimate.

The questions for this chapter are what options exist for a media and information firm to create and protect its innovations? How can a firm optimize the benefits from its IAs? We will use the firm General Electric (GE) as the main example.

7.1.2.1 Case Discussion

GE Intellectual Assets

In 2012, at its peak, GE was ranked the fourth largest firm in the world in *Forbes Magazine*'s Global 2000, based on a set of several metrics. The company was active in consumer electronics, aviation engines, appliances, financial services, energy, health and transportation. It was the most successful conglomerate in America.

From 1981 to 2001, legendary CEO Jack Welch led the company. Welch raised GE's market value by 4000% to make it the most valuable company in the world. In 1999, he was picked by *Fortune Magazine* as the "Manager of the Century."[14] GE was the 4th largest company in the world by profits, 7th for management, 5th for global brand, 15th "most admired," and 19th for "most innovative." It had 333,000 employees working in 160 countries. By 2018, however, the sprawling company was performing poorly and narrowed its focus by divesting several of its operations.

GE operates with 12 major divisions, each holding substantial autonomy. It acquired the electronics technology firm RCA in 1986 and, with it, its subsidiary, the major media company NBC. It also acquired the Universal Pictures film studio from French video game company Vivendi in 2004. GE then sold control of the combined NBCUniversal to the major cable firm Comcast in 2012. NBCUniversal is one of the world's leading media and entertainment companies. The NBC Television Group consists of the NBC network with its many in-house produced shows in entertainment, news and sports; numerous owned and operated local stations; the Spanish-language channel Telemundo; and many cable channels such as MSNBC, CNBC, E!, Bravo, Syfy and the USA Network. Universal Pictures is a major motion picture company. It also owns Universal Theme Parks & Resorts, a popular entertainment destination, and Dreamworks Animation. Hulu.com is an online video service offering TV shows, movies and clips, of which NBC owns 30%.[15]

GE owns valuable trademarks. It holds trade secrets, confidentiality agreements and business methods for which it owns business process patents. It holds patents for complex technology. GE received 1652 patents in 2016 alone. In 2012, it was the third largest patent creator in the USA.[16, 17] GE spent $5.5 billion on R&D in 2016. In just one year, 2011, it collected 184 "green energy" patents (the highest number of such patents received in the USA).[18] Over the course of its corporate history, GE has amassed more than 67,500 patents.

GE was a major content producer when it owned NBC and Universal Pictures, holding a vast collection of valuable copyrights.

There are several questions for discussion:

- How does GE manage these assets?
- How does GE protect and exploit its innovations?
- How does GE deal with the property rights of others?

7.1.3 How Companies Organize Their Intellectual Property Management

With the importance of IAs rising, the question is how companies organize the management of this area. Often, the function is delegated to the legal department—the people who deal with a company's contractual rights and obligations. Other companies assign different types of IP to different departments. For patents, the R&D unit is in

13 Rivette, Kevin G., and David Kline. *Rembrandts in the Attic: Unlocking the Hidden Value of Patents*. Boston: Harvard Business School, 2000, 122.

14 Comstock, Beth. "Best Advice: What I Learned From Jack Welch Hanging Up on Me." *LinkedIn*. February 26, 2013. Last accessed July 16, 2013. ► https://www.linkedin.com/today/post/article/20130226113021-19,748,378-best-advice-what-i-learned-from-jack-welch-hanging-up-on-me.

15 NBCUniversal. "This is NBCUniversal." Last accessed July 15, 2013. ► http://www.nbcuni.com/corporate/about-us/.

16 Anderson, Ash. "IBM, King of the Patents." *SFGate*. January 16, 2013. Last accessed May 22, 2017. ► http://www.sfgate.com/business/fool/article/IBM-King-of-the-Patents-4199052.php.

17 GE. "GE Reports." March 8, 2010. Last accessed June 13, 2013. ► http://www.gereports.com/twenty-thousand-patents-this-decade-and-counting/. GE list of its patents (over 20,000 in a decade) can be viewed on FreshPatents.com.

18 GE. "GE Reports." April 13, 2012. Last accessed June 13, 2013. ► http://www.gereports.com/ge-tops-clean-energy-patent-list/.

charge; for trademarks, the marketing unit;[19] for licensing, contracts, and infringements, the Legal Counsel; for trade secrets, the HR department;[20] and for valuation, the corporate finance group. Whatever the company's organizational structure, it is clear that collaboration between various departments within a company is essential, often implemented through an IA review team with representatives from all groups.[21, 22]

7.1.3.1 Case Discussion

How GE Organizes Its Intellectual Asset Function

GE's IA function is led by a Chief Intellectual Property Counsel at the corporate vice-president level, an upgrade of the position in rank from what it had previously been. That person reports to the Corporate General Counsel. All 12 GE business groups have a dedicated IP division,[23] which includes a Head of Intellectual Property, Senior Intellectual Property managers, a legal counsel and others.

At the corporate level, GE Licensing is in charge of outbound patents and trademarks. Inbound licensing is handled by the units in need of a license. GE also has a Central IP Group, which supervises trademarks and foreign patent filings.

In the 1990s, GE changed its accounting practices, providing an incentive to its individual units to generate licensing revenue. License fees received were credited from the corporate level back to the business unit that had created the IA.

7.2 The Different Types of Intellectual Assets

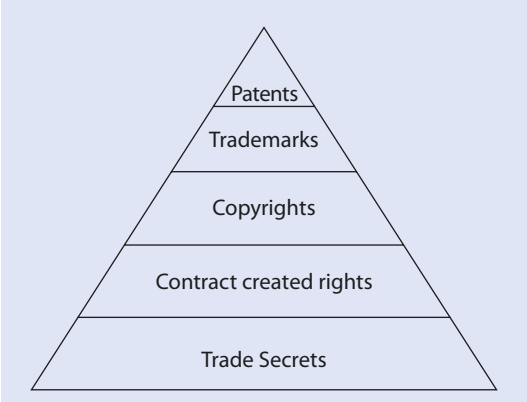
One can distinguish five basic types of IAs: trade secret protections, contract-created rights, patents, trademarks and copyrights. The pyramid in ◘ Fig. 7.1[24] ranks them in terms of frequency and difficulty in creation.

Patents are fairly rare and very difficult to obtain. Trademarks are easier to get but offer less protection. Copyrights are created frequently and easily, but have limited protections. Most abundant are trade secrets, which will now be discussed.

7.2.1 Trade Secret Protections

By one estimate, 90% of overall commercial value in IA is found in trade secrets.[25] A trade secret is information which is not already well-known publicly, which benefits a business commercially and which the owner has taken reasonable measures to keep secret. For example, the fast food chain KFC keeps its Kentucky fried chicken recipes secret. Only a handful of people are told the recipe after signing strict confidentiality agreements. KFC goes so far as to use different companies to blend the spices together so that no company has the complete recipe.

Firms may use trade secrets when it is not feasible to obtain a patent. Some creations



◘ **Fig. 7.1** Hierarchy of intellectual property rights by frequency

19 Tao, John et al. "Developing an Effective Strategy for Managing Intellectual Assets." *Research-Technology Management* 48, no. 1 (January/February 2005): 50–58.

20 *Managing Intellectual Property*. "25 ways to be a more effective TM manager." May 1, 2006. Last accessed May 22, 2017. ► http://www.managingip.com/IssueArticle/1254631/Archive/25-ways-to-be-a-more-effective-TM-manager.html.

21 Thomas, Brad. "Intellectual Property Management Tips." *The CPA Journal* 73, no. 8, (August 2003): 10.

22 "Meeting of the Minds." *Risk Management* 49, no. 12, (December 2002): 28.

23 Wild, Joff. "The GE Revolution." *Intellectual Asset Management*. (August/September, 2004): 25–28.

24 Poltorak, Alexander I., and Paul J. Lerner. *Essentials of Intellectual Property*. New York: John Wiley & Sons, Inc., 2002.

25 Anton, James J. "Little Patents and Big Secrets: Managing Intellectual Property." *RAND Journal of Economics* 35, no. 1 (Spring 2004): 1–22.

are not readily patentable; for example, David Copperfield's magic tricks or Coca Cola's syrup formula. But many patentable inventions have not been submitted for a patent. The reasons are that companies ask themselves whether it worth trying to get a patent for 20 years, spend considerable money and time to obtain it and, in the process, disclose the invented technology thereby risking imitation, particularly from abroad. Or is it better, faster, safer, and cheaper to use trade secrets? This is particularly the question in those areas of technology where innovation is rapid and accelerating, and where patents are less important than a head start which is helped by adequate measures of trade secret protection.[26] This helps, in particular, where innovation exists in the production process itself. Here, secrecy can be better protected internally than for consumer products that circulate widely and can be reverse-engineered.

Keeping innovations as trade secrets avoids the costs of applying for patents and the disclosure of the technology to rivals. But it is not cost free. There are costs associated with protecting the secret. The more valuable the trade secret, the more a firm should spend to protect it,[27] by deterring theft and inadvertent disclosure.

There are several approaches to protecting trade secrets. One is physical security, such as guards, locks and paper shredders, as well as locked document files. There is electronic security, including password protection, firewalls and so on. Employee background checks and training are part of HR security. There are non-disclosure agreements with employees and business partners (discussed later), as well as internal access and document control.

Obtaining confidential information about a rival's plans and products is not an offense as long as it does not involve a criminal act, such as breaking and entering, or bribery. In many countries, the theft of trade secrets is a criminal offense and is punishable by substantial penalties. To remedy some trade secret breaches, a firm can use its lawyers to obtain a court order (injunction) that aims to stop the beneficiaries or perpetrators of the breach. To discourage frivolous applications for such an order, the firm usually has to post a substantial bond, which costs money. Firms whose trade secrets were violated can also sue for damages, including punitive damages.

Trade secrets and their laws do not prevent "reverse engineering."[28] Reverse engineering is used to analyze how a competitor's product works, or how it is made, and to develop similar or interoperable products. This is common in software, games, consumer electronics and microchips. Where no patent exists, the reverse-engineered copycat product is perfectly legal.

7.2.1.1 Case Discussion

GE and Its Trade Secrets

GE possesses a wide array of highly confidential information that is important for its business. It includes contract terms for deals, the manufacturing processes for jet engines, primetime TV schedules, business plans, technology in development, story ideas, royalty rates and much more.

In 1997, GE charged a former employee of using the confidential knowledge he acquired while working for GE in order to start his own company. A Chinese court agreed with GE but imposed a fine, at only $120,000, a small sum relative to the competitive gain and business volume obtained by the Chinese company.[29] In another lawsuit, *General Electric v. Sung* (1994), the company won protection for trade secrets used to manufacture synthetic industrial diamonds.[30] The defendant was a synthetic diamond expert who worked for GE in the 1980s. He pleaded guilty to stealing numerous documents and trade secrets from GE; he was sentenced to a lenient six months of house detention and fined $200,000, plus another $120,000 in restitution. The firm

26 Anton, James J. "Little Patents and Big Secrets: Managing Intellectual Property." *RAND Journal of Economics* 35, no. 1 (Spring 2004): 1–22.

27 Friedman, David D., William M. Landes, and Richard A. Posner. "Some Economics of Trade Law," *Journal of Economic Perspectives* 5, no. 1 (Winter 1991): 61–72.

28 *NPD Solutions*. "What Is Reverse Engineering?" Last accessed May 25, 2017. ► http://www.npd-solutions.com/reverse-engineering.html.

29 People's Republic of China, Ministry of Commerce. "GE Wins Trade Secret Infringement Case against Jiuxiang." *Intellectual Property Protection in China*, November 12, 2007. Last accessed June 1, 2011. ► http://www.chinaipr.gov.cn/casesarticle/cases/caseothers/200711/247674_1.html.

30 *New York Times*. "GE Wins a Stolen Secret." August 3, 1993. Last accessed October 5, 2010. ► http://www.nytimes.com/1993/08/03/business/ge-wins-on-stolen-secret.html.

which bought the information was a Korean company named Iljin Corp, but no damages were awarded against it.[31]

Complaints go both ways. GE has also been the subject of trade secret litigation as a defendant. In 1997, the Dow Chemical Company sued GE for theft of trade secrets. Dow claimed that GE employed 14 engineers who previously had worked at Dow, and put them to work on similar and competing projects.[32] Dow's former head of plastics sales and marketing had taken a confidential Dow document and used it after he started work with GE. GE settled the case.

7.2.2 Contract-Created Intellectual Assets

Contractual agreements are a major practical way of protecting many trade secrets, in particular those that cannot be copyrighted or patented. The law expects employees to be loyal to their employers, and this includes not disclosing trade secrets to competitors, even without any particular signed agreements. However, specific agreements can be made to toughen confidentiality requirements of employees, to spell out restrictions and penalties, and to put them on notice that they must not disclose sensitive information.

Companies thus attempt to create contract-based IAs by non-disclosure agreements (NDAs), work-for-hire agreements, and covenants to not-compete (CNCs). These are also known as "confidentiality agreements." Such contracts require employees to refrain from activities that compete with their employer after their employment ends and, for others involved, such as potential investors or partners, not to make use of the information gained.[33] However, many NDAs and CNCs are actually legally invalid and, hence, unenforceable. They must be limited in duration and apply to specified and relevant information. Unreasonable parts of a contract are voided by judges as being contrary to good public policy. They would make it difficult for an employee to quit and could, for example, prevent former employees from ever working again in their chosen field. CNCs are typically held valid for up to three years. In addition, confidentiality agreements do not cover third parties that have no obligations, such as a taxi driver who overhears privileged information. In other instances, CNCs are simply a "golden hanshake"—a way to pay a great deal of money to former top managers beyond their term of actual work for the firm.

Software companies create contract-generated IP rights by way of a "shrink-wrap" contract. The seller considers users to have agreed to and to be bound by a contract once they open the shrink-wrap packaging. The same term applies to software that is downloaded. In order to be valid, such contracts must be stated in a conspicuous, legible and printable manner, and the user must have the opportunity to turn it down. (This is usually not much of a realistic option, even assuming that a user will peruse a lengthy agreement.)

Ideas can also be the subject of contractual IA protections. A writer who pitches a story idea to a studio or publisher is vulnerable to theft, since ideas are not protected under copyright law. However, a story idea can be protected by making it the subject of a contract, where a film producer agrees not to use the story idea presented except with those who pitched it. Realistically, a struggling writer is usually in no position to demand a signed advance agreement from an influential producer. A less threatening approach is to make the producer orally agree to confidentiality, in the presence of other participants who could be witnesses.[34] An agent who does repeat business with the producer adds a layer of protection. The writer could start by saying something like: "I want to make sure you understand that I am telling you this idea with the understanding that it is confidential and, if you decide to use it, I expect to receive reasonable compensation." The producer will probably nod affirmatively or say "sure," and this would create an agreement. The writer should follow up with a polite letter restating verbal

31 Kennedy, John H. "Jury rules Korean company misused GE diamond secrets." *Boston Globe*. July 31, 1993. Last accessed May 25, 2017. ► https://www.highbeam.com/doc/1P2-8238711.html.

32 Gilpin, Kenneth N. "Dow and G.E. Resolve Suit on Theft of Trade Secrets." *New York Times*, April 10, 1997.

33 Anawalt, Howard C., and Elizabeth F. Enayati. *IP Strategy Complete Intellectual Property Planning, Access and Protection*. Eagan, MN: West Publishing, 1999, 536–537.

34 Litwak, Mark. *Contracts for the Film & Television Industry*. Los Angeles: Silman-James Press, 1998.

agreements made in the meeting. But, if the producer does not agree, warning lights should go off and the author may choose not continue disclosing information.

That said, it is not easy to define what constitutes the theft of an idea. Story elements are often similar. Not everyone who writes a play about two young lovers from hostile families has stolen the idea from Shakespeare (who, in turn, was not the first to come up with the story). It has been claimed that "there are only six basic plots." Some instances of parallelism may be quite innocent. Others are not. Media firms have been subject to legal challenges from authors who believe they have been plagiarized. To reduce such lawsuits, media firms will often not review unsolicited manuscripts unless submitted through a reputable agent or other trusted intermediary.

7.2.3 Patents

7.2.3.1 Patent Overview

The term "patent" is derived from Latin, meaning "to lay open." It was applied to many rights—such as offices, military commissions, titles, status and monopolies—conferred by the ruler, often in return for payments or some other service to the Crown. In its modern and narrower meaning, a patent is the grant of an exclusive right to make (or use, sell, import, or license) an invention. The grantee of a patent has the exclusivity for the production and use of the product, or process. In return, he must disclose details of the invention. There are several ways to make money from a patent. In particular, companies can use it, sell it (assignment), rent it (licensing), or not use it at all but instead prevent rivals from using it.

After a government agency grants a patent, the product is protected typically for 20 years. But, since patented technology tends to become quickly outdated in many fields, the average economic life of a patent is said to be 5 years.[35] After the patent expires, the innovation is in the "public domain," and anyone can use it without permission.

Inventors who obtain patents have a monopoly on the exploitation of their innovation, which helps recoup research and development costs. The patent also adds credibility to a startup venture. However, the downsides of patenting are, as mentioned, that not only must inventors disclose details of the invention, but they also shoulder the high cost of obtaining and protecting the patent.

A patentable invention can be a product, a process, a method, a composition of matter, a design, or a plant. Innovations that cannot be patented include ideas ("sail westward to reach India"), laws of nature ($E = MC^2$), mathematical formulas, unsafe drugs and surgical techniques. Albert Einstein could not patent his scientific discoveries, but he obtained eight patents with another famous physicist, Leo Szilard, for something as mundane as a refrigerator pump. However, the recent patentability of software and "business methods" edges toward patents for formulas and ideas. Other things that cannot be patented include inventions for illegal purposes (e.g. devices to counterfeit money) and naturally occurring substances, plants and animals.

7.2.3.2 How to Get a Patent

Patents are granted by governments through a patent and trademark office (PTO). The process typically takes between two and four years. Examiners search the databanks to determine if an invention is new. The inventors need not actually construct the invention or demonstrate that it works, as long as they can describe plausibly how one could make it work. In theory, the description must allow a skilled person to make and use the invention, but patents are often complex, under-described and hard to understand, often on purpose.

The PTO usually responds to the application within 12–18 months after the application. Typically, the patent office rejects most of the claims, which have often been drawn over-broad to maximize coverage. The inventor and patent lawyer then dispute the ruling, resulting in give-and-take between the inventor and the PTO, and a reinstated application, typically with a narrower focus.

Due to this complex interplay, only one-fifth of patent applications in the USA were filed without the assistance of a patent lawyer. To get a US patent typically costs between $10,000 and $25,000. To obtain additional patents in other countries costs a further $10,000 to $20,000 per

35 Poltorak, Alexander I. "Valuing Patents as Market Monopolies." *Patent Strategy & Management* 4, no. 5 (September 2003).

country.[36] One study estimated that a European Patent Office filing valid for 13 EU countries costs an average of €30,000 per patent.[37]

7.2.3.3 Case Discussion

GE and Its Patents

GE's first patent was to Thomas Edison, initiator of General Electric, for electric lights using a carbon filament (1880). Over the first half of the twentieth century, GE won more patents than any other US company and, over the course of its corporate history, GE has amassed more than 67,500 patents.[38, 39] GE spent $5.5 billion on R&D in 2016, in areas such as aviation, renewable energy and power, and transportation.[40] The majority of GE's many thousands of patents probably have little value. Even so, the sizable patent portfolio represents a significant deterrent to competitors.

7.2.3.4 Patent Infringements

Applying for patents is not cheap, but the cost of maintaining them can be much higher. If the patent has commercial value, it will attract imitators. The inventor will have to defend the patent in the courts. Often, the cost of litigation is larger than the revenue the inventor may subsequently earn from royalties or licensing.

A patent infringement occurs if another person uses the elements of the "claims" of a granted patent. To stop them, the original inventor can obtain a court injunction (a cease-and-desist order), seek payment for damages, or demand the return of up to three times the infringer's profits (treble damages). Microsoft had to pay IBM $30 million in a patent infringement suit. The patent holder need not actually produce the invented product or process to claim infringement. Companies can just use their patents to block somebody else. Patent holders can then threaten to shut down the operations of other companies.[41]

For many years, large companies rarely sued each other over patents. But, today, it is normal. "Patent trolls" are firms that buy or file patents and later sue other firms in their field.[42] They buy patents and operate in plaintiff-friendly states or countries.[43] Patent infringement suits grew in the USA from an annual 1500 in the 1990s to more than 3000 in the 2000s. Complex patent trials can easily cost over $5 million. The average cost to challenge a patent is $1.2 million; thus, it is often cheaper and faster to pay royalties than to challenge a patent. Most suits are settled before the trial. In trials, and even with the ability of the challenger to the claimed patent to seek a friendly jury, the defenders of the patent win 58% of copyright infringement trials and 68% of jury trials.[44]

Protecting patents is relatively more costly for small firms than for large firms. Small companies, even with solid patents, can be overwhelmed by legal challenges from deep-pocketed firms who tie them up while catching up in their R&D, or by patent trolls with spurious claims but with the ability to create delay.

The risk of a challenge to a vital patent has led to the emergence of IP insurance. This strengthens a small firm's bargaining position in licensing deals, since the license is more secure.[45]

7.2.4 Trademarks

Trademarks are another major category of intellectual assets. A trademark is a word, name, phrase, sound, logo, or symbol used to identify a company and to distinguish its products and services. The aim of a trademark is to protect the

36 Quinn, Gene. "Overview of the US Patent Process." *Patents & Patent Law*. February 15, 2008. Last accessed June 15, 2010. ► http://www.ipwatchdog.com/patent/patent-prosecution/.

37 Von Pottelsberghe, Bruno. *Lost Property: The European Patent System and Why It Doesn't Work*. Brussels: Bruegel Blueprint Series, 2009.

38 General Electric. "Fact Sheet." Last accessed May 25, 2017. ► http://www.ge.com/company/factsheets/corporate.html.

39 ifi Claims Patent Services. "2016 U.S. Patent Trends & Insights." January 6, 2017. Last accessed May 25, 2017. ► https://www.ificlaims.com/news/view/ifi-claims/2016-u-s-patent-trends.htm.

40 General Electric. GE 2016 Annual Report. Last accessed May 25, 2017. ► https://www.ge.com/ar2016/assets/pdf/GE_AR16.pdf.

41 Griffin, Greg. "System patently out of date, some inventors complain A CU symposium dissects U.S. patent procedures in light of an explosion in technological innovation." *Denver Post*. April 10, 2006.

42 Chapman, Glenn. "Patent wars plague Internet Age, add innovation tax." *The Sydney Morning Herald*. April 16, 2012. Last accessed October 22, 2012. ► www.smh.com.au/it-pro/business-it/patent-wars-plague-internet-age-add-innovation-tax-20120416-1x2ej.html.

43 Crovitz, L. Gordon. "Google, Motorola and the Patent Wars." *The Wall Street Journal*. August 22, 2011. Last accessed October 22, 2012. ► http://online.wsj.com/article/SB10001424053111903639404576518493092643006.html.

44 Poltorak, Alexander I., and Paul J. Lerner. *Essentials of Intellectual Property*. New York: John Wiley & Sons, Inc., 2002.

45 Lanjouw, Jean O., and Mark Schankerman. "Protecting Intellectual Property Rights: Are Small Firms Handicapped?" *The Journal of Law and Economics* 47, no. 1 (April 2004): 45–74.

investment in a name or logo to build reputation and brand, avoid confusion by consumers, or create brand awareness. Examples of trademarked terms are "Windows 10," "Disney World," or "iPhone."

Some names started out for distinct products by a company but were not registered. They became generic over time and lost protection. Examples are aspirin, cellophane, escalator, kerosene, yo-yo, zipper and trampoline. In consequence, companies now make major efforts to clarify that the names of products that are used in everyday language—such as Xerox, Kleenex, or Band Aid—are identified as distinctive trademarks and use a clarifying qualification such as "Xerox copier" or "Kleenex tissue."

How does one obtain a trademark? Typically, trademark registration goes through a country's patent and trademark office. Such PTO grants the use of the registration symbol (R in a circle). But there are also "common-law" trademarks, for which no registration is required. An unregistered trademark holder can generally only defend in the area in which it does business, not necessarily in the entire country. Also, it cannot sue to recover damages; it can only prevent the use of the name or logo. The symbol "TM" is used for unregistered trademarks. This also prevents others from using the same or similar marks. In Europe, a trademark regulation was passed in 1993 that made a trademark valid throughout the EU and established the European Trademark Office in Alicante, Spain. In the USA, Europe and Japan, official trademark registration lasts ten years and can be renewed forever. But, if a trademark is not used for two years (five years in the EU), a presumption of abandonment is created.

What kind of words can a firm register as a trademark and thus get legal protection of some exclusivity? Easiest to protect are arbitrary new words, such as Xerox.[46] According to photography pioneer George Eastman, a good trademark should be short, easy to spell, punchy and mean absolutely nothing—such as his company's name "Kodak". Trademark names to avoid, because they are hard to protect, are personal and family names, nicknames, initials, or words that describe a product's characteristics or location. Personal names can get protection if they become distinct, such as "Ben & Jerry's" for ice cream (but not for a garage, especially if the owners are indeed named that way, and avoid misleading customers to believe that they are connected to the ice cream company).[47] To create trademark names, there are name consultants, websites and software programs such as NameStormers. They also offer to screen for meaning in other languages, avoiding the problems of the French soft drink Pschitt.

Beyond names, there are trademarks for unique symbols, for phrases such as "Don't leave home without it," for musical jingles, for distinctive colors associated with a company and even for odors. One can trademark a film or book title, if it has acquired a distinct secondary meaning.[48]

Internationally, trademarks are covered by the Singapore Treaty concluded in 2006, which established a regulatory framework of common standards.[49] If a company is regularly doing business in another country, a trademark registration there may help to protect it.[50] Companies may spend much effort on protecting their trademarks. At the consumer products company Unilever, the trademark team alone consists of 54 professionals based in three different countries.[51]

46 Gardner, Steven. "Basics of Trademark Law and Trademark Registration Procedures for the General Corporate Practitioner." *Campbell Law Observer*. April 1, 1999.

47 Elias, Stephen and Kate McGrath. "Trademark Legal Care for Your Business & Product Name." Berkeley: Nolo Press, 2010.

48 Greene, K. J. "Abusive Trademark Litigation and The Incredible Shrinking Confusion Doctrine – Trademark Abuse in the Context of Entertainment Media and Cyberspace." *Harvard Journal of Law & Public Policy* 27, no. 2 (2004): 608–642.

49 New International Treaty. *WIPO Magazine*. April 2006. (An earlier common framework was the "Madrid Protocol," which offered a trademark owner in one country the ability to obtain registration in many other foreign countries.)

50 Internicola, Charles. "What Are The Benefits of The International Trademark Registration Process?" Charles N. Internicola, Business and Franchise Lawyer, 2011. Last accessed June 2, 2011. ▶ http://www.franchiselawsolutions.com/faqs/what-are-the-benefits-of-the-international-trademark-registration-process.cfm.

51 *Managing Intellectual Property*. "25 ways to be a more effective TM manager." May 1, 2006. Last accessed May 25, 2017. ▶ http://www.managingip.com/IssueArticle/1254631/Archive/25-ways-to-be-a-more-effective-TM-manager.html.

7.2.4.1 Case Study

GE Trademarks

GE has over 2000 registered trademarks in the USA alone. GE's primary trademark since 1900 has been the well known "GE" monogram, with the stylized letters "GE" inside a circle with four curlicues (■ Fig. 7.2).[52]

In 2003, *BusinessWeek* ranked the GE brand the fourth most valuable in the world. GE trademarks the actual letters "GE" across many different industries, from medical technologies to fuel cells to chemical research. When it owned NBCUniversal, GE held many iconic trademarks of entertainment media, such as the NBC peacock and chime jingle, and Universal Studios' globe, both recognizable to most TV and film viewers.

GE also held the trademarks owned by Universal, including those for films and TV series such as *Jurassic Park*, *Magnum P.I.*,[53] *The Tonight Show* and *Saturday Night Live*. Not only is the name *Saturday Night Live* protected, but NBC also trademarked the initials of "SNL," a nickname by which the show is commonly known.

In 2011, a subsidiary of the office supply chain Staples reached a deal with NBC Universal to create a "Dunder Mifflin" paper brand that was based on the fictional paper company of the popular TV series *The Office*. NBC receives 6% of Staples' revenue from its paper sales under the Dunder Mifflin brand name. The cases of paper are sold (at a price that is well above market price) for $65 each, so NBC gets $3.90 for each case of paper reams sold.[54]

■ **Fig. 7.2** GE trademarked logo

7.2.5 Copyrights

7.2.5.1 Copyright Overview

Copyright is the property right created by law that grants to the creator of an original work the exclusive rights for its use and distribution. It originally covered books and then expanded far beyond printed works to almost any form of expression, including dance, music, paintings, photographs, movies, software, TV shows, sports, computers, architectural sketches and computer chip designs. In music, for example, these rights include reproducing, distributing and making copies of derivative works based upon the copyrighted work, performing publicly and more. Copyright gives the owner, for a certain period, exclusive rights to use (or to not use) a work, and to transfer ownership of the work. After that period, the work moves into the "public domain."

As mentioned earlier, the first copyright privilege was issued in Venice in 1469. In 1710, the first copyright law was passed in England, known as the "Statute of Anne," after the contemporary English queen. In 1787, the US Constitution listed the protection of authors as one of the specific powers of federal government, and the first US copyright law was passed in 1790, among the very first pieces of legislation at the federal level. Exclusive rights were given for 14 years, renewable for a further 14 years. But, by the twenty-first century, both American and European copyrights had lengthened considerably. In 1962, US copyrights were extended to 28 years, renewable for

52 Intellectual Property Watch. "Inside Views: General Electric's View on Green IP And Technology." June 12, 2009. Last accessed August 1, 2012. ► http://www.ip-watch.org/2008/06/12/inside-views-general-electrics-view-on-green-ip-and-tech/.

53 LegalForce Trademarkia. "Magnum." July 15, 2013. Last accessed May 25, 2017. ► http://www.trademarkia.com/magnum-73281111.html.

54 LoGiurato, Brett. "Dunder Mifflin Paper Comes to Life as NBC, Staples Strike Licensing Deal." *International Business Times*. November 28, 2011. Last accessed June 18, 2013. ► http://www.ibtimes.com/dunder-mifflin-paper-comes-life-nbc-staples-strike-licensing-deal-375734.

an additional 28 years. Over the next 40 years, the US Congress extended the lengths of copyrights 11 times. In 1998, the Sonny Bono Act—named in commemoration of its chief sponsor, the Congressman and pop singer (of the duo Sonny and Cher) who died in a skiing accident—added another 20 years to the previous periods of 50 years beyond the life of the author, and 75 for works of corporate authorship.

These are very long periods, especially since the economic value of most copyrighted works is far shorter than these extensive periods of protection. But there are notable exceptions, among them creations whose authors and artists died in the early or middle part of the 20th century, but whose works still produce income today. This includes films by Charlie Chaplin and Walt Disney, which benefitted from the 20-year retroactive extension. Other beneficiaries were the heirs to Edward Munch, Glen Miller, Wassily Kandinsky, Jerome Kern, Hank Williams, Buddy Holiday, Albert Camus, Ernest Hemingway and Ian Fleming.

A copyright notice contains three elements: the symbol for or word "copyright," the year, and the name of the copyright owner. Use of the © mark is not necessary. However, in an infringement lawsuit the extent of how much notice is given will affect the size of damages that would be awarded. To obtain a copyright, no formal registration is necessary. But if there is no registered copyright, one cannot usually sue for damages but only stop the copying and distribution. Registration provides evidence of the creation and is a notice to others that they cannot use the work. This is especially necessary for screenplays and manuscripts that circulate. While contract-based protections such as nondisclosure agreements are also available, registration provides good evidence in a potential court case.[55]

To register for a formal copyright, the owner sends a copy of the work to the Copyright Office (in the USA, at the Library of Congress), files a copyright registration application and pays a registration fee.

55 Litwak, Mark. "Frequently Asked Questions: Copyright." *Mark Litwak's Entertainment Law Resources*. Last accessed June 27, 2011. ► http://www.marklitwak.com/faq/copyright.html.

7.2.5.2 What Can Be Copyrighted?

Many things can be copyrighted. Literary and dramatic works, sound recordings, choreographic works, pictures, graphics and sculptural works, motion pictures, computer software, names (and logos) of programs, or a program format and set designs can all be protected by copyright trademark. After 1984, copyright protection was provided in the USA and other countries for mask works (the original etching) of semiconductor chips, providing protection for ten years.

What cannot be copyrighted? An idea or a fact, by themselves, cannot get a copyright, though the actual expression of the idea or fact is protected. But, if a different wording is used for the idea, there is no copyright violation, at least not in America. Simple lists of facts do not get a copyright, for example, phone directories arranged alphabetically. That was decided by the US Supreme Court in 1991 when it denied copyright protection for databases that did not involve some original "creative" selection and/or organization of data. Until then, the legal theory was that a "sweat of the brow" effort created copyright for a database. The management consequence therefore is for such lists to be either kept as a trade secret, or augmented and transformed in some fashion.

Direct and unauthorized copying of someone else's work is a copyright violation. Quotes and paraphrases with attribution are acceptable within reason, as are innocent omissions of attribution, especially where the content is not central to the new work or is not truly unique. But there is much of a gray zone when it comes to the commercial use of another person's central ideas without attribution or compensation. Such borrowing has a long history, like the retelling of someone else's joke. But today, some authors (or wannabes) will sue.

Patent protection deals mostly with technological property, whereas copyright protection is mainly concerned with literary and artistic property. But, in some cases, both are available. Computer software or semiconductor designs qualify for either. Which, then, to choose? A patent offers strong protection but for a relatively short period (17–20 years) and must satisfy strict standards, such as novelty. Obtaining a patent can be long process and expensive, and the inventor has no enforceable rights until a patent is issued.

A copyright offers relatively soft protection against direct copying for a very long period (the creator's life plus 70 years). It can be obtained easily and quickly.

Copyright laws differ somewhat in every country. In some jurisdictions, such as France, the "moral rights" of creators against the alteration of work gives them the right to participate in the future profits of resale. Moral rights in a work refer, in particular, to the right to be known as the author of a work, and to the right of authors to prevent others from doing things to their work which can hurt their reputation. Moral rights are retained by an author even if all of the other rights are assigned to another. Moral rights cannot be assigned to anyone else by the author.

7.2.5.3 International Copyright Protection

The USA was pro-piracy in its early years—in fact, the first US copyright law of 1790 explicitly limits the protection of foreign works (typically British ones). This attitude toward foreigners' IP rights encouraged the widespread legal piracy of English books. Only in 1891 did the USA begin to recognize international copyrights. This follows the classic pattern that a country which is primarily an importer of creations and innovations is disdainful of foreigners' IPRs, until that country becomes an exporter itself.

There is no such thing as an "international copyright." However, through international treaties and agreements, many countries recognize each other's copyright legislation. Such agreements began with the Berne Convention for the Protection of Literary and Artistic Works in 1886.[56] Each country respects the copyrights of other signatory countries and applies the copyright laws of the nation in which the work is originally copyrighted. The minimal protection period is 70 years for authors and 50 years for performers. The USA eventually adopted the terms of the Convention in 1989. The Berne Convention aimed to help non-national authors and publishers receive payment wherever their works are sold.

Another treaty—the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIP, 1994) —established minimal requirements and procedures for enforcement.[57] Most importantly, that Treaty created the World Intellectual Property Organization (WIPO), a specialized agency of the United Nations in Geneva, with over 180 member nations. Because WIPO has its own financial source in its hefty payment and patent registration fees, it is said to be the richest United Nations agency.

The WIPO's principles are "national treatment" and "material reciprocity." A government is obligated to protect the IP rights of foreign owners in the same way that it protects the rights of national holders, as long as the foreign country grants reciprocal rights. WIPO has also created an arbitration and mediation system.

7.2.5.4 "Fair Use"

The "fair use" exemption permits making and distributing copies for research, teaching, parody, journalism and library activities. Media firms hate fair use but universities rely on it.[58] "Fair use" was at issue in 2005 when book publishers sued Google for copyright infringement.[59] Google had started to scan books and make them available through its search engine when they were out of copyright, but also intended to expand the project to copyrighted works. Developing an electronic library, as many university and public libraries have done, falls under the terms of "fair use." However, creating such a digital library for commercial purposes requires permission of the copyright holders. Publishers argued that Google, while not charging for access to the books, was using the digital library to increase the number of visitors to its site, and therefore raising its advertising revenue.[60]

56 United Nations. *Berne Convention for the Protection of Literary and Artistic Works*. 1979. Last accessed June 6, 2011. ► http://www.wipo.int/treaties/en/ip/berne/trtdocs_wo001.html.

57 United Nations. *Agreement on Trade-Related Aspects of Intellectual Property Rights*. 1994. Last accessed June 6, 2011. ► http://www.wto.org/english/tratop_e/trips_e/t_agm0_e.htm.

58 Minow, Mary. "How I Learned to Love Fair Use." *Stanford Copyright & Fair Use Center*. July 6, 2003. Last accessed May 25, 2017. ► http://fairuse.stanford.edu/commentary_and_analysis/2003_07_minow.html.

59 Gilbert, Alorie. "Publishers Sue Google Over Book Search Project." *CNET News*. October 19, 2005. Last accessed June 21, 2010. ► http://news.cnet.com/Publishers-sue-Google-over-book-search-project/2100-1030_3-5902115.html.

60 Gilbert, Alorie. "Publishers Sue Google Over Book Search Project." *CNET News*. October 19, 2005. Last accessed June 21, 2010. ► http://news.cnet.com/Publishers-sue-Google-over-book-search-project/2100-1030_3-5902115.html.

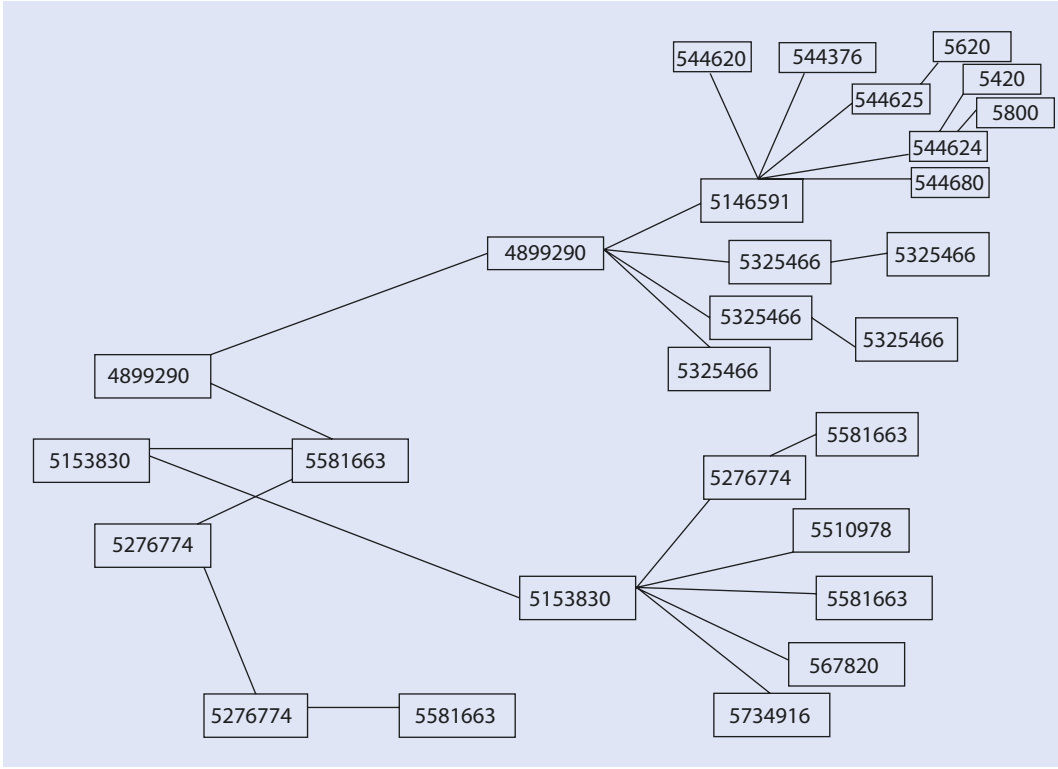


Fig. 7.3 Mapping of the *Prior-Art* interrelationship of patents

7.3 The Commercialization of Intellectual Assets

Now that we have described IAs and their scope, we will look at how one creates value from them.

7.3.1 How Important Is an Intellectual Asset?

How to judge the importance of an item of intellectual property? One way is to use the public record. Applications and registrations for patents, copyrights and trademarks are public.[61] In the case of patents, the applications require specific references to "prior art." This permits a check on which patents are out there and which seem to be important to subsequent inventors. This information can be used to check on the importance of a patent and its place in the broader technology trends of its field, as well as the technology status of rival firms and inventors.

Patent "parents" (backward citations) show the influences of prior art, and assess whether an innovation potentially infringes on a prior patent, and whether a firm should acquire a license before using the technology. One can also trace an invention's "children" (forward citations): Who has been influenced? Where did it lead? Are there potential infringements? Does it provide clues to technology competitors and to potential licensees?

Figure 7.3[62] shows the "children" of patent no. 5153830 ("Method and apparatus for providing assistance with respect to the development, selection, and evaluation of ideas and concepts") awarded to Fisher Idea Systems. Six subsequent patents refer to it. And 14 patents refer to patent no. 4899290 ("For a system for specifying and executing protocols for using iterative analogy and comparative induction in a model-based computation system",

61 The free US government PTO website for patent searches is ▶ http://patents.uspto.gov. A for-pay source for US patents is Micropatent (▶ http://micropat.com). European patents can be searched through the European Patent Office (▶ http://www.epo.co.at:80/index.htm). Japanese patents can be found in translation through the International Science and Technology Associates (▶ http://www.intlscience.com and ▶ http://www.jpo-miti.go.jp).

62 Based on Aurigin Systems, Inc. 1999. Aurigin is now part of the Clarivate company.

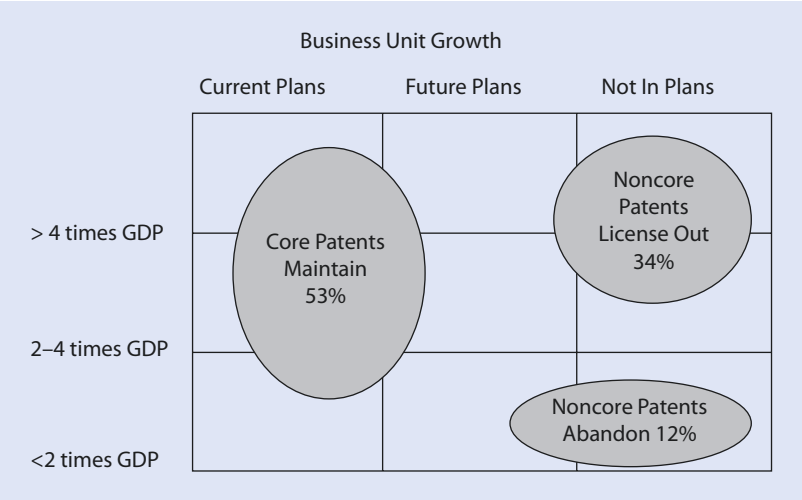


Fig. 7.4 Intellectual asset audit map

awarded to the Digital Equipment Corporation (DEC), which seemed to be a rival.

7.3.2 Aligning Intellectual Assets with Strategy: Intellectual Asset Audits

A second tool for IA analysis is the internal IA audit. A company must systematically review what it owns, what it needs, and what it could sell or otherwise dispose of. An "audit map" visually represents what IAs are most valuable to the firms' business strategy (see Fig. 7.4).[63] The *X*-axis is for IAs and shows the asset's fit and importance in the company's current and future plans; the *Y*-axis is the rate of growth of that business line as a ratio to GDP growth.

Figure 7.4 shows in broad terms which IAs have the most commercial value for the business. The most valuable patents are in the northwest quadrant—the high growth area. The map also shows which IAs should be supplemented, licensed, sold, or abandoned. The audit helps differentiate between core and non-core patents. Core patents are technologies central to current or future products, and are not usually licensed. Non-core patents are technologies not being used in current or planned products, and these are often licensed.[64]

Using such an audit, Dow Chemical audited its 29,000 patents and, after identifying and valuing them, assigned each to one of the 15 major Dow business units, which thereafter assumed responsibility for its use. Dow then abandoned or donated the unused patents to universities or non-profit groups, yielding a savings of $50 million in taxes and the lower maintenance cost for unneeded patents. At the same time, patent licensing revenues rose from $25 million in 1994 to $125 million in 1999.[65]

7.3.3 How to Value Intellectual Assets

7.3.3.1 The Book Value Approach

Business assets are normally recorded at the cost of creation or purchase. But IAs are treated differently. The main issue is that accounting standards treat in-house developed IAs as an expense rather than an asset. The development of a videogame or a film may create an asset of considerable value, but it will not show up on the balance sheet. If, for example, a company develops a new software product and gains a valuable copyright, patent and, perhaps, trademark, the costs (performers, programmers, editors, overheads and so on) are written off as expenses against current revenues. The IA rights to the software are not assets on the balance sheet and they cannot be depreciated. In contrast, for a

63 Based on Rivette, Kevin G. and David Kline. *Rembrandts in the Attic: Unlocking the Hidden Value of Patents*. Boston: Harvard Business School, 2000, 68

64 Rivette, Kevin G., and David Kline. *Rembrandts in the Attic: Unlocking the Hidden Value of Patents*. Boston: Harvard Business School, 2000.

65 Rivette, Kevin G., and David Kline. *Rembrandts in the Attic: Unlocking the Hidden Value of Patents*. Boston: Harvard Business School, 2000.

machine, the cost of that machine would be written off against revenues over a period of several years. The exception is where the intellectual asset has been acquired in a purchase transaction from another party and thus has a clearly stated value as an asset. It should be noted, however, that companies' stock price valuations reflect, to some extent, the value of the patent holdings and the earnings that they produce, even if they do not show up as assets on the balance sheet. [66]

In the USA, the rules are set in a document called FASB Statement 142, which decrees that patents, copyrights and trademarks with finite lives are amortized over their useful lives, and for not more than 40 years. Thus, although copyrights are granted to the author of a work for the life of the creator plus 70 years—which could easily exceed 100 years—according to the rules, the cost of the copyright is amortized only over the expected life of the benefit, not to exceed 40 years. Similarly, the cost of creating or acquiring trademarks must be amortized over the period of the benefit, not to exceed 40 years. Domain names have a depreciation period of 2–10 years and website development has a period of 3–5 years.

7.3.3.2 The Cost Approach

The *cost approach*, closest to an accounting treatment, defines the value of the IA to be the expense that it took to create it. It is rarely straightforward to measure such costs, given the high overheads and the joint costs of several projects, and to assign them to the particular patent or copyright that was created. Beyond the measurement problems, there is a more fundamental point. The problem is that the cost expended for an invention or creation is not necessarily related to its economic value. Many costly developments do not lead to successful inventions or products, i.e. they are worthless. Should the costs of such unsuccessful inventions be counted as an asset?[67] Conversely, would one value an invention or melody conceived in a flash of creativity at the cost of that brief effort, rather than at its much greater economic worth as an asset?

7.3.3.3 Market Valuation

The third technique, market valuation, assigns the value of the IA as the value given to it by the market. If there are buyers for the rights to a particular video game at $1 million, but not higher, then that is the value of such an asset. This is fine in concept but, for this approach to work, a market must be active with the exchange of comparable products and must incorporate only arms-length transactions (i.e. transactions in which both sides are independent of each other). It must also provide readily available transaction data. Because those conditions are seldom met, the market approach is rarely used for intangible assets. In the media sector, the market approach is sometimes used for "commodity" TV series such as game shows.[68] There are computer programs that simulate a market and draw parameters from other similar industries or products. These valuation models use various formulas to crunch data about the markets, competition, forecasts and assumptions, and then come up with a value that might serve, at least, as the starting point to negotiation.

7.3.3.4 Income Approach

The income approach is based on the net present value (NPV) of the income stream the patent generates. This method identifies the value of income flows related to the IA in each time period and then capitalizes cash flows by discounting them to the present.[69] The income approach is best suited to the appraisal of licenses and franchises.[70] The income approach is implicit in various rules-of-thumb. Typically, music licenses are valued at 5–8 times the revenues they generate per year, or sometimes even 12–13.

The income approach has major challenges: how to estimate revenues into the future, and how to pick a discount rate to use. More fundamentally, the income approach has a major conceptual flaw. It does not distinguish between the value of the IP and the value of the technology.[71] A newly invented technology or a new movie would have

66 Penman, Stephen H. "Accounting for Intangible Assets: There is Also an Income Statement." *Abacus* 45, no. 3 (September 2009): 358–371.

67 WIPO. "WIPO National Workshops on Assessment and Valuation of Inventions and Research Results for Technology Transfer and Commercialization." August 12, 1997.

68 WIPO. "WIPO National Workshops on Assessment and Valuation of Inventions and Research Results for Technology Transfer and Commercialization." August 12, 1997.

69 Bertolotti, Nick. "Valuing Intellectual Property." *Managing Intellectual Property* no. 46 (February 1995): 28.

70 WIPO. "WIPO National Workshops on Assessment and Valuation of Inventions and Research Results for Technology Transfer and Commercialization." August 12, 1997.

71 Poltorak, Alexander I., and Paul J. Lerner. *Essentials of Intellectual Property*. New York: John Wiley & Sons, Inc., 2002.

a value even without the patent or copyright. The patent or copyright's value is the *extra* value due to the monopoly in commercializing the patent or copyright. (This objection is applicable to some of the other valuation methods, too). For example, the value of Intel's patents is difficult to determine because of its comparative advantages in chip production. Intel would have significant revenues from its chips even without any patent protection, and it would therefore be incorrect to attribute all of Intel's revenues from a particular chip to the patents associated with it.

The simplest practice to use in the income approach for the patent value is to estimate the price differential obtainable with an IA above the price of a comparative generic, unbranded product; to estimate sales volume and thus calculate gross revenues attributable to the patent; and to deduct the corporate overheads, support costs and incremental costs that are associated with obtaining and protecting the patent, and the relevant taxes on the extra profit. The industry rule-of-thumb is that a patent is typically worth four to five times the extra profit figure.[72]

7.3.3.5 The Residual Approach

The key question identified in the preceding section is how to figure out the extra value that the IA gives to a product. Baruch Lev, an accounting professor at New York University, proposed a solution by capitalizing what is left of earnings after deducting the normal expected return from a business's financial and physical assets. These residual earnings are then attributed to intangibles including IAs. A variant of the approach is called calculated intangible value (CIV). Lev's approach makes it possible for outside investors to estimate the value of intangibles.

The problem with this method is that it lumps together all intangable assets, of which intellectual assets are only a subset. Also, they are all aggregated, and one cannot calculate the value of a particular IA.

7.3.4 Intellectual Asset Management

So, now you've set up an IA department. You understand the legal issues of IPRs. You've identified the importance of your assets and their fit in overall company strategy. You know how to value IAs. The next step is to develop IA-savvy management. We start with licensing.

7.3.4.1 Licenses

A major way for profiting from IAs is by licensing them out. Licensing is an allocation of rights to a product or property among parties. It is somewhat analogous to a rental or lease in real estate. Licensing can take place at any point in the value chain of media, from creators to producers to packagers, distributors, retailers and end users.

Figure 7.5 shows the flow of rights and license fees. The rights flow from the creators to the producers to the packagers, to the distributors, retailer, and end users. The license fees flow in the opposite direction, from the users and retailers toward the creators. Creators are writers, game programmers, musicians, athletes and so on. Producers are book publishers, film production companies, music labels, sports teams, newspapers, or bundlers of content products (e.g. a TV channel). Packagers are sometimes part of producers and sometimes part of wholesale distributors (such as a TV network.) A distributor is a wholesaler to retailers, such as a cable TV channel, a book distributor company such as Ingram, or a film distribution studio. Retailers are a local

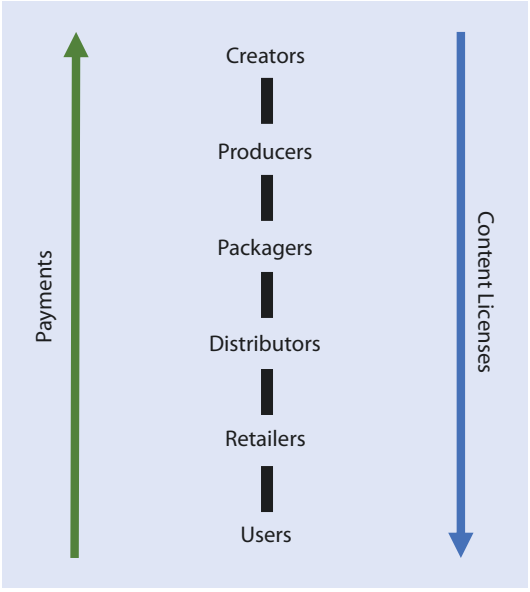


Fig. 7.5 The Flow of Rights and License Fees

72 Poltorak, Alexander I., and Paul J. Lerner (2002). *Essentials of Intellectual Property.* New York: John Wiley & Sons, Inc. 2002.

TV station, a cable multi-system operator, a book store, an online streaming service and so on.

Payments from IA licensing are often called "royalties." Royalties can be paid in two ways: in an upfront lump sum, called a "paid up" license, or based on sales, profits, units, or other measures of the licensed products, called a "running royalty." Profits are often difficult to define and measure. Sales revenue figures may seem to be easy to track but, in practice, they are also not easy to define and measure. Counting units sold, too, has its own problems, since it may not differentiate between different product grades.

For "running royalties" based on sales revenues, typical rates for patent licensing range from 1% to 5% of the gross sales related to the patents.[73, 74] For important technologies, rates are 3% to 5% of gross sales. For computer hardware, typical royalty rates also range from 1% to 5%. In patent infringement litigation, courts have typically ordered payments in the range of 1% to 5% of the gross sales related to the patents, and maybe twice as high for important technologies.[75]

When the royalty is tied to profits, rates for fully commercialized technology are often a 50% profit share. For less-developed technology, the licensor will receive a lesser profit share (e.g. 25%).[76] Application software could have royalties of up to 25% of profits.

For videogames, a publisher typically pays the game developer a percentage of wholesale revenues with a flat advance fee upon signing the deal. Similar arrangements are used when a game publisher or developer creates a game about an existing movie. The license will typically include an upfront payment as well as royalties based on sales.[77]

After firms license a patent or copyright to others, many lose track of their licenses, the revenues generated for the licensee and the use to which they are being put. Thus, it is necessary to establish a licensee accounting and tracking system, and to check on licensees frequently. This is known as a "royalty audit." Any license given must include audit provisions that allow the licensor to review and inspect the licensee's books that are relevant to the license.[78]

7.3.4.2 Strategic Licensing

"Strategic licensing" by a firm can be part of a wider attempt to shape the market. A firm can use licensing to deter the entrance of strong competitors, or to select the preferred competitors for the time after the patent protection expires by giving them a head start through a license. For example, pharmaceutical firms are often reluctant to license firms considered tough rivals, and prefer licensing friendlier firms with whom they collaborate on other matters.[79]

Exclusive licensing is often not the best way to go. Given a non-exclusive license at a reasonable price, a firm's competitors may become its technology followers.[80] Thus, a firm can use the licensing process to create industry standards around its technology.

In one classic example, Matsushita/Panasonic licensed the VHS system used in videocassettes to other companies, and it became industry standard. In contrast, Matsushita's competitor, Sony, did not offer licenses for its rival Betamax video recorder, which became a business failure despite its technical superiority.

A similar dynamic exists for the price of the licensing royalty. A high royalty can be counterproductive if it creates incentives to develop alternative technologies, or join another standard coalition, or even engage in unlicensed use. An overpriced royalty will also weaken the competitiveness of the licensee and, therefore, its sales.

73 Kinsella, P., R. Leonard, and G. Weinstein. "Four keys to successful technology in-licensing." *Licensing in the Boardroom*. October 8, 2007. Last accessed March 15, 2017. ► http://www.iam-media.com/Intelligence/Licensing-in-the-Boardroom/2009/Articles/Four-keys-to-successful-technology-in-licensing.

74 Lichtenthaler, Ulrich. "Corporate technology out-licensing: Motives and scope." *World Patent Information* 29, no. 2 (June 2007): 117–121.

75 Megantz, Robert C. *How to License Technology*. New York: John Wiley & Sons, 1996, 55–69.

76 Megantz, Robert C. *How to License Technology*. New York: John Wiley & Sons, 1996, 55–69.

77 Wiley, Sam, and Adam Falconer. "Licensing and IP Issues for Mobile and Social Game Developers." *Ipstrategycom*. June 13, 2013. Last accessed June 3, 2014. ► http://ipstrategy.com/2013/06/13/licensing-and-ip-issues-for-mobile-and-social-game-developers/.

78 *IAM* magazine supplement "Licensing in the Boardroom". "The How's and Why's of Monitoring your Licensees." (October 2005): 44–46.

79 Rockett, Katharine E. "Choosing the Competition and Patent Licensing." *RAND Journal of Economics* 21, no. 1 (Spring 1990): 161–171.

80 Shapiro, Carl, and Hal R. Varian. *Information Rules: A Strategic Guide to the Network Economy*. Boston: Harvard Business School Press, 1999.

7.3.4.3 Cross-Licensing and Patent Pools

When several firms hold critical patents and block each other, cross-licensing is often necessary to get a new technology moving. "Patent pools" reduce the risk of litigation and intentional blocking, but they also lower innovation, because firms have fewer incentives to leapfrog each other's technology.[81] In the USA, the government and courts had a skeptical view on cross-licensing due to its potential to reduce competition by substituting collaboration.[82]

Nevertheless, cross-licensing has become frequent. Often, entire fields, rather than single patents, are cross-licensed. One reason is that, in some fields, innovations build on each other. To avoid the risks of mutually blocking patents, firms often cross-license all their patents in that field. To engage in such cross-licensing, a portfolio of strong patents that covers large areas of the partner's product markets is essential. If the patent portfolios of the firms are not equally strong, some balancing payments may be required. A listing of a firm's most valuable patents (the "proud list") is used to assess their value.[83] A royalty rate is assigned to each patent and is multiplied by its quality weighting factor and by the annual sales of its product base. This determines the royalty rate percentage of a patent holder in total sales revenues.

7.3.4.4 Music Licensing

Music rights are a highly complex system with many types of participants. Every musical recording consists of two separate copyrights. The first is for the underlying musical creation (the music and the lyrics). Copyrights for this "musical work" are typically owned by the songwriter(s) and/or their music publisher. Royalties for this musical creation, when it is performed publicly, are collected and distributed by performance rights organizations such as ASCAP, BMI and SESAC on behalf of composers and lyricists.

The second type of copyright is for the "sound recording"—the actual recording itself. This includes the artist's performance and interpretation of the musical composition, and the contributions of the producer, sound engineers and background musicians. The copyright to the sound recording is held by the music label, or an independent musician. Thus, an audio transmission of a musical recording— for example, by an online music service such as Spotify—usually requires payment for both the underlying musical work and the actual sound recording.

Songwriters typically let "music publishers" manage the IA created by them, either on their behalf, or through direct ownership by the publisher. Music publishers must be distinguished from the labels and distributors, which do the actual production, marketing and distribution of the music. In practice, the major music publishers are owned by the major music groups, which also own labels and distributors. But the functions are distinct. There are music publishers who do not produce or distribute, and vice versa. Bertelsmann Music Group (BMG) sold its labels and its production and distribution system to Sony but kept the music publishing part and, indeed, strengthened it through acquisitions.

Using a recorded piece of music in a visual medium—such as film, television, advertisements, video games and so on—requires a "synchronization" royalty. Usually, these are negotiated between the music rights owner and the maker of the visual material such as a film producer. The rights owner will charge a one-time use fee, which will vary based on several factors—such as the centrality of the song, how much of it is used, how well-known the song is, how wide a release the material will have and so on. This payment can range from a few hundred dollars up to hundreds of thousands of dollars.

Music Licensing by Performing Rights Organizations

Large media companies have licensing departments that negotiate and collect copyright licenses. They have legal departments that monitor violations and file legal complaints accordingly. Small copyright holders, in the music field, however,

81 Crovitz, L. Gordon. "Google, Motorola and the Patent Wars." *The Wall Street Journal*. August 22, 2011. Last accessed October 22, 2012. ► http://online.wsj.com/article/SB10001424053111903639404576518493092643006.html.

82 *Standard Sanitary Mfg. Co. v. United States*, 226 U.S. 20 (1912).

83 Grindley, Peter C., and David J. Teece. "Managing Intellectual Capital: Licensing and Cross-Licensing in Semiconductors and Electronics." *California Management Review* 39, no. 2 (1997): 8–41.

must resort to joint collection agencies. These are known as performing rights organizations (PROs). PROs grant licenses to all types of venues and broadcasters, including TV and radio stations, networks, bars and the like.[84] PROs were first established in France in 1851. They license and collect royalties for the public performances of members' copyrighted works. Members include composers and authors, but not artists or record companies.

Performing rights organizations exist in many countries.[85] Major PROs in the USA are the American Society of Composers, Publishers (ASCAP); the Society of European Stage Authors and Composers (SESAC, owned since 2017 by the Blackstone private equity firm); and Broadcast Music, Inc. (BMI), which is owned by broadcasters. There is also Sound Exchange, which is appointed by the Library of Congress and is a non-profit performance rights organization that collects royalties from digital broadcasting media, such as cable TV music channels and satellite radio.[86]

In the USA, terrestrial radio broadcasters pay royalties to songwriters and composers but not to performers. A license fee is paid by the radio stations to PROs. These, in turn, distribute the revenues to their members, who are songwriters and composers. But a song being played on an FM station will not generate royalties for the artist. The idea is that the promotional value of being played on the radio is the benefit conveyed to the artist. PROs such as SESAC track songs on an online database (DJMonitor). DJMonitor has a playlist management system (PMS) that allows rights holders to review the music performed to verify the results and to make corrections.

PROs gives radio stations a blanket license for all of the music of its members. The typical fee for such a blanket license in the USA is about 1.6% of the radio station's net revenues. Alternatively, stations may purchase a "per program" radio license, keep track of all music used and pay periodically for those songs used.[87] The rates negotiated for blanket licenses vary, depending on bargaining strength and the value of the music to the distributor. A 1993 court case disclosed that the broadcast network NBC paid 0.44% of gross network revenue (TV and radio) to ASCAP for licenses for use by its 261 TV and radio outlets.

The PRO distributes the license fees it collects, minus administrative costs of about 20%. ASCAP determines performance credits based on the number of uses, the type of use and the estimated audience. There are various formulas for the distribution of revenues. For example, for a musical, five-twelfths (approximately 42%) could go to the composer, three-twelfths (25%) could go to the author, and four-twelfths (33%) could go to the publisher.[88] In the USA, no license fees at all are paid by radio stations to artists and labels. They deem to be adequately compensated by the promotional value of being played on the air to wide audiences.

For live venues such as restaurants and bars, PROs usually charge a flat fee per year, with a set limit of number of people covered. The rate varies based on the type of establishment and its size. A small restaurant may pay $105 per year flat rate for music events up to 2100 customers. Beyond that number, the restaurant may have to pay an additional 0.05 cents per person.

For live concerts, the performer himself gets paid by the concert promoter/venue. The upper echelon of the music touring industry (Rolling Stones, Bon Jovi, Taylor Swift and the like) will get paid a flat, upfront fee for a specific number of shows (i.e. $10 million for 40 shows in the USA). The performers are then responsible for various costs (i.e. backing band, background dancers, scenery, special effects, equipment, grips and so on). They also may receive a percentage of the net as well (what is left over after the concert promoter/venue covers all costs for the show). This is called

84 Obringer, Lee Ann. "How Music Royalties Work." *Howstuffworks Entertainment*. April 2011. Last accessed June 28, 2010. ► http://entertainment.howstuffworks.com/music-royalties.htm.

85 Examples are the Kenya Association of Music Producers (KAMP), the Indian Performing Right Society (IPRS), the Argentine Society of Music Authors and Composers (SADAIC), the Russian Organization for Intellectual Property (VOIS), and the Japan Society for Rights of Authors, Composers and Publishers (JASRAC). In the EU, there are 25 collection societies, each one the sole society for that country, established as a government-affiliated monopoly that collects all of the royalty money in the country. PROs try to coordinate internationally in order to reduce the ability to bypass national payments.

86 *SoundExchange*. "SoundExchange." Last accessed June 8, 2010. ► http://www.soundexchange.com/.

87 American Society of Composers, Authors, and Publishers. "Common Licensing Terms." Last accessed June 28, 2010. ► http://www.ascap.com/licensing/termsdefined.html.

88 To calculate performance royalties, PROs use different methods. ASCAP, for example, gives different weights to different performance types. A song that is featured on TV or on the radio is weighted higher than background music in a radio commercial. Similarly, the time of day a song is played is a factor. The total number of credits of a song is then multiplied by a "credit value," a factor which equals the total credits for all writers and publishers, divided by the total collected money for that quarter. Royalties are paid out quarterly.

a "door split" deal. For lesser-known performers, a door split deal is usually the way they are paid. The performer's take might be 50–75% of the net receipts, i.e. after many others get paid as expenses. Music labels may offer performers a loan called "tour support." Because it comes with a variety of strings attached, not all performers will elect to take this and, instead, self-finance their tours.

Another type of rights representation negotiates on behalf of copyright holders/publishers with the music labels. In the USA, the Harry Fox Agency (owned since 2015 by SESAC) is the major clearinghouse for "mechanical licenses" by music publishers to music labels. It was established by the National Music Publishers' Association in 1927 and mostly serves these music publishers/rights holders.[89] It negotiates with labels and collects and distributes royalties.

7.3.4.5 Licensing of Books

In book publishing, acquisition editors sign authors to book contracts. A contract gives the publisher the rights to the book, usually worldwide, and may include rights to all derivative works, such as TV shows, films toys and so on. Royalties to authors range from 5% to 15% of gross sales revenues. Authors typically receive a higher percentage for hardcover books and a lower rate for paperbacks and romance books. A publisher may hire a writer as a contractor or employee to write a book for a set honorarium rather than a royalty, either under the publisher's name, such as in a travel book series, or under the author's name, or under a pen name.

The purchase price for a screenplay is subject to negotiations, but the minimum terms for a Hollywood production are set by an industry-wide contract negotiated with the writers' union (the WGA). The minimum purchase price for an original screenplay, is around $30,000–$70,000, depending on the production budget. But the WGA agreement does not cover books, articles, or plays that form the basis for a film. The copyright holder may get a fixed amount upfront, or a percentage of the production budget, or a percentage of the net profit of production (typically 5%).

Online book publishing has somewhat different arrangements. Amazon.com's Kindle store pays authors or publishers a 70% royalty rate of retail revenues.[90] There are several conditions, including that the price of the book must be below $10, and above $3, and at least 20% lower than the price charged for a paper version of the book.[91] Outside of these brackets, Amazon keeps a much steeper cut of 65% in order to discourage such pricing. In contrast, Apple iStore keeps a flat 30% regardless of the publisher's list price.

7.3.4.6 Licensing of Films and TV Shows

Film producers or distributors often issue licenses to pay-TV networks such as HBO or Canal+, and to advertising-supported TV networks such as CBS or Televisa. Each of these programming wholesalers buys licenses for hundreds of titles a year, spending billions of dollars to license slates of films from major Hollywood distributors.[92] Such licensing of films to programming wholesalers can gives studios and producers a solid base of financing in advance of production. Another option is to sell distribution rights of the film in exchange for an agreed royalty or sharing percentage in gross or net revenue ("participation"). Producers can borrow money from banks using these agreements as collateral.[93] A film or TV show can be sold by a producer to a distributor in every aspect, or limited in terms of rights to a particular language market, geographical territory, media type (PPV, VOD, TV, in-flight movies, etc.). The producer tries to keep the license specific and narrow in order to license the product to other licensees.[94] Films also have future potential licensing opportunities through sequels, TV series, books, products, and so on. The ownership of these rights needs to be clearly partitioned from other licensing agreements.[95]

89 The Harry Fox Agency. "About HFA." Last accessed June 28, 2010. ► http://www.harryfox.com/public/AboutHFA.jsp.

90 Trachtenberg, Jeffrey A. "Amazon Launches Royalty Plan for E-Books." *The Wall Street Journal*. January 21, 2010. Last accessed May 31, 2017. ► https://www.wsj.com/articles/SB10001424052748704320104575014653299582416.

91 *Engadget*, "Amazon announced new option they put their loyalties to 70% and it will start from end of July." January 20, 2010. Last accessed August 22, 2011. ► http://japanese.engadget.com/2010/01/20/kindle-70-6/.

92 Marich, Robert. *The European Commission EC versus the Hollywood Studios*. New York: Informa, 2004.

93 Garon, Jon. "Film Financing and Distribution Deals." Gallagher, Callahan and Gartrell, August 2009. Last accessed August 1, 2012. ► http://www.gcglaw.com/resources/entertainment/film_distribution_deals.html.

94 Lisotta, Christopher. "Reality Gets Reworked for Prime." *Television Week* 23, no. 33 (August 16, 2004): 41–42.

95 Litwak, Mark. "Frequently Asked Questions: Music." *Mark Litwak's Entertainment Law Resources*. Last accessed June 27, 2011. ► http://www.marklitwak.com/faq/music.html.

Production companies license programming to networks. A typical network licensing fee in the USA for regular television shows is about $1–2 million per episode, with one rerun, and $0.7–0.8 million for reality shows. Exclusive and unique shows such as award ceremonies have higher licensing fees.[96] Additionally, networks or independent producers may license—or "syndicate" —their program licenses to other broadcasters. In 2010, NBCUniversal bought exclusive syndication rights to the hit sitcom *Modern Family* for its USA channel for $1.4 million per episode, and *Glee* for its Oxygen channel for $500,000 per 1 hour episode. TV shows are often licensed for syndication at major TV trade fairs, such as the NATPE Market in the USA and MIPCOM in Cannes, France.

7.3.4.7 Licensing of Online Video

Licensing of online distribution of video content is an active area of development. Download services for feature films, such as Amazon, typically pay about 50–60% of their revenue to the copyright holders. This payment is somewhat lower for subscription services. Streaming services such as Netflix negotiate a time release (such as 12 months from the opening date) when the film enters the streaming service. The rate at which the streaming service pays varies based on the film's box office performance. Netflix uses a rate card which in 2016 set the rate which it paid for the film; this could range from $787,500 for a film grossing less than $1,000,000 up to $19,000,000 for a film grossing more than $125,000,000.[97] Such rate cards are negotiated between the two sides, based on various factors such as exclusivity, the time frame of the contract (how many years it runs) and other factors.

7.3.4.8 Compulsory Licenses

So far, we have mostly discussed the licenses among producers and distributors, or between distributors and retailers. These are commercial transactions, with prices set by market forces and bargaining among the parties. Inevitably, various economic interests and constituencies will try to modify the commercial transaction through governmental intervention. Some parties will argue that they are being expropriated, or overcharged, or excluded, or that consumers suffer and, in consequence, that regulated license fees are necessary. In the USA, a compulsory license exists for most musical compositions. An artist may use someone else's composition in live performance or recordings. The artist must give notice to the copyright owner (or the copyright office, if the owner cannot be found) and pay a royalty set by the governmental body in charge. Compulsory licenses exist for "cover songs," in which an artist plays another artist's song. Example: The Jimi Hendrix version of Bob Dylan's "All Along the Watchtower." To cover this song, Hendrix had to serve notice of intention to do so on Dylan and the copyright office. He had to pay the then-current royalty rate, which was 9.1 cents per normal length song (or 1.75 cents per minute of playing time).[98] The compensation rate is set by bodies such as Copyright Tribunals (UK, Australia and other countries), or the Copyright Royalty Board in the USA. Artists and composers were often unhappy with this system. The late singer Prince complained: "A lot of times, people think that I'm doing Sinead O'Connor's song and Chaka Khan's song when in fact I wrote those songs. …there's this thing called the compulsory license law, which allows artists, through the record companies, to take your music, at will, without your permission. And that doesn't exist in any other art form, be it books, movies—there's only one version of 'Law and Order'. But there are several versions of 'Kiss' and 'Purple Rain.'"[99]

In 2018, the US Congress debated a "Music Modernization Act" that would create a mechanism for music streaming services to pay

96 Networks pay a fee of between $5.5 million and $7.5 million for the Emmy awards and $5 million annually for the Grammy awards. ABC has a seven-year contract for the Oscars for a total of $350 million ($50 million per year). Albiniak, Paige. "The Emmy goes…nowhere." *Broadcasting & Cable*. November 17, 2002. Last accessed May 31, 2017. ► http://dev.broadcastingcable.com/news/news-articles/emmy-goes…nowhere/94525.

97 The information regarding this rate card came about due to an ongoing lawsuit between Relativity Media and Netflix. Gardner, Eriq. "Relativity's $1.5 Billion Lawsuit Offers Rare Peek at Netflix License Agreement." *The Hollywood Reporter*. October 18, 2016. Last accessed May 31, 2017. ► http://www.hollywoodreporter.com/thr-esq/relativitys-15-billion-lawsuit-offers-939463.

98 17 U.S.C. § 115 "Scope of exclusive rights in nondramatic musical works: Compulsory license for making and distributing phonorecords". The UK's copyright tribunal in 1991 set the record royalty rate for musical works at 8.5% of the dealer price (excluding VAT) of every record. This can alternatively be expressed as 6.5% of the retail price (excluding VAT).

99 Masnick, Mike. "Prince claims when someone covers your songs, the original no longer exists." *Techdirt*. April 21, 2011. Last accessed February 27, 2012. ► http://www.techdirt.com/articles/20110420/13280113977/prince-claims-when-someone-covers-your-song-original-no-longer-exists.shtml.

songwriters and music publishers. It would create a government-sanctioned mechanical licensing collective overseen by both songwriters and streaming services, and enable the latter to get blanket licenses rather than having to track down the rights holders. It would also create a database of rights holders so they would receive their license royalty payments.

7.3.4.9 Sports Licensing

Traditionally, major sport rights have been controlled by industry cartels ("leagues") of content producing companies ("teams"), or by event sponsors such as the International Olympic Committee (IOC) and the international soccer federation (FIFA). They operate through three legal mechanisms[100]:

- Control of access to private location (e.g. stadium, racetrack, etc.);
- Control of IP for distribution of the content (media rights);
- Control of event partners (major advertising "sponsorships" and "sponsorships").

The laws are favorable to sports firms. For example, baseball is specifically exempted from the antitrust laws in the USA.[101] Also, the sport content product is perishable, which reduces piracy.

In sports licensing, there are two principal types of rights:[102]

- Media rights;
- Sponsorship and franchising rights.

Although the categories are overlapping, the former is focused on copyrights and the second on trademarks.

Media Rights Licensing

Media rights are typically sold to TV networks, cable channels, local television stations, and/or radio. Media rights are differentiated by time, territory, medium and so on.[103] Successful teams in large media markets command the best prices for licenses. The duration of media rights deals can range from a one-shot event to an entire league's matches over several years.

In the early decades of TV, the monopoly public services broadcasters in Europe claimed that they had the right to cover sports events in the same way as the print press. They paid trivial amounts to the event sponsors, just to compensate for the logistic arrangements. Until the 1980s, most TV in Europe consisted of public service broadcasters operating as monopolists in their countries. Hence, there was no competition for sports rights and prices were low, despite sports programs attracting huge audiences.[104]

But when private commercial networks emerged in the 1980s—and, with them, competition for viewers—sports events became a big attraction, and the sports leagues cashed in. Soon, the individual team companies, too, claimed their share.[105] In 1999, Rupert Murdoch's News Ltd. went one step further and sought to buy a content producer itself—the world's most popular soccer team, Manchester United. But the UK regulators blocked the deal.

To reduce the financial clout of commercial broadcasters, the EU Commission empowered each member state to draw up a list of events, national or non-national, that the state considered as being of major importance for its society, so that it has to be shown on the free major channels.[106]

Franchise Rights Licensing

For franchise licensing, the rights are administered by a branch of a league known by names such as the "properties division." It approves licenses for products, polices the trademarks infringement, distributes licensing revenues among league franchises, and handles marketing and sponsorship efforts.[107] National Football League Properties, Inc. (NFLP) is a company set up and owned by all the clubs of the NFL. Each

100 Couchman, Nic. "Sports Right Issues." September 2000. Last accessed August 2, 2012. ► http://www.couchmansllp.com/old_site_2005_11_18/library/sports_rights_issues.doc.
101 Weinberger, James D. "Baseball Trademark Licensing and the Antitrust Exemption: An Analysis of New York Yankees Partnership v. Major League Baseball Enterprises, Inc." 23 Colum. – VLA J. of L. & Arts 75 (Winter 1999).
102 Couchman, Nic. "Sports Right Issues." September 2000. Last accessed August 2, 2012. ► http://www.couchmansllp.com/old_site_2005_11_18/library/sports_rights_issues.doc.
103 Couchman, Nic. "Sports Right Issues." September 2000. Last accessed August 2, 2012. ► http://www.couchmansllp.com/old_site_2005_11_18/library/sports_rights_issues.doc.
104 Noam, Eli. *Television in Europe*. New York: Oxford University Press, 1992.
105 Thus, in 1998, a German court awarded the media rights to the clubs themselves. Gratton, Chris, and Harry Arne Solberg. *The Economics of Sports Broadcasting*. New York: Routledge, 2007.
106 Gratton, Chris, and Harry Arne Solberg. *The Economics of Sports Broadcasting*. New York: Routledge, 2007.
107 Mullin, Bernard J., Stephen Hardy, and William A. Sutton. *Sport Marketing*. 2nd ed. Champaign: Human Kinetics, 2000.

club grants NFLP an exclusive license to act as a licensing agent for its trademarks, logos and so on. NFLP then negotiates with manufacturers for licenses to produce merchandise with the NFL and member clubs' trademarks. The royalty fee is set at 6.5% of all net sales of the licensed products. Of NFLP receipts, 15% goes to the league itself.[108] NFLP maintains a quality control program of its licensees' merchandise, and investigates and enforces adherence.[109] Licenses can also be given by players themselves for their endorsements of products. Players' unions can administer this for its members, or a player's personal business representatives does so. For example, the NFL Players Association annually issues about 100 licensees, for about $30 million.[110] It collected more than $35 million in royalties from the games manufacturer Electronic Arts in 2008.[111]

For college sports, the inter-collegiate sports association, the NCAA, has long enforced strict rules barring college athletes from cashing in on their celebrity status. Athletes, however, have challenged these restrictions in court for the right to control the use of their images.

For individual professional sports (as opposed to team sports), athletes have agents who handle licensing agreements. For example, skateboarding champion Tony Hawk got $1.5 million per year for licensing and endorsements.[112]

All this is dwarfed by the fees collected by the sponsors of the Olympic Games and of the Football (Soccer) World Cup. The IOC, headquartered in Lausanne, Switzerland, set up a sponsorship arrangement called The Olympic Partner (TOP) Programme that included big sponsors, such as Coca-Cola and McDonald's, who paid many millions of dollars. These payments are shared between the host cities that foot the bill for the venues and infrastructure, and the IOC. Sponsors are given exclusive rights to the Olympics trademark of five rings, and only their products can be sold at the Olympic venues.[113] For the 2012 London Games, these TOP sponsorship corporations paid the IOC over $100 million each. The next tier of sponsors each paid $40 million.[114] The London Organising Committee of the Olympic and Paralympic Games, which did the actual staging of the summer games, raised another £700 million in sponsorship.[115] Beyond the sponsorships, the IOC raised $4.87 billion in broadcast fees and sponsorship for the London and Vancouver Olympics.

The Football World Cup in Brazil, sponsored by the international soccer federation FIFA, also headquartered in Switzerland, similarly generated about $4 billion in revenue, with $1.4 billion from sponsorships by 22 companies and $2.6 billion from TV rights to the matches.[116] There were three sponsorship tiers with the top tier ($730 million combined) for 2014 comprising six companies (Adidas, Coca-Cola, Sony, Hyundai/Kia, Emirates and Visa). In addition, the various national teams and individual athletes had their own deals, sometimes also with Adidas and other major FIFA sponsors.[117] Nike, for example, sponsored the teams of Brazil, England, France and Portugal. In some cases, an advertising agency itself, such as Dentsu in Japan, buys the rights to an event or season and then place advertisement spots for its various clients into the available slots.

Do sports sponsorships make business sense? It seems that sports licensing has a marketing impact due to fan identification.[118] Sport provides

108 Friedman, Avi. "Protection of Sports Trademarks." *Loyola of Los Angeles Entertainment Law Review* 15, no. 3 (1995): 689–716.

109 The trademarked categories of NFLP are numerous and include: NFL Pro Line (the league's most elite or prestigious label because it is the same product and apparel worn and used by players and coaches), NFL Fitness (a brand of equipment and apparel for letting fans work out like the pros), NFL Spirit (apparel for women), NFL Classic (for everyday use), NFL Kids, NFL Pro Line Kids, NFL Baby, NFL Back to School, NFL at Home (pillows, bedspreads, wallpaper, lamps), NFL Tailgate (coolers, tablecloths, barbecue grills), NFL Pet Shop, NFL Auto, NFL Quarterback Club, NFL Throwbacks (vintage replica items), NFL Trading Cards, NFL Collectibles, NFL Publishing, and NFL Films.

110 Mullin, Bernard J., Stephen Hardy, and William A. Sutton. *Sport Marketing*. 2nd ed. Champaign: Human Kinetics, 2000.

111 Thomas, Katie. "College Starts Sue over Likenesses in Video Games." *New York Times*. July 3, 2009. Last accessed May 31, 2017. ► http://www.nytimes.com/2009/07/04/sports/04ncaa.html.

112 Covell, Daniel, and Sharianne Walker. *Managing Sport Organizations: Responsibility for Performance*. New York: Routledge, 2013.

113 Peck, Tom. "Father of Olympic branding: My rules are being abused." *The Independent*. July 20, 2012. Last accessed May 31, 2017. ► http://www.independent.co.uk/sport/olympics/news/father-of-olympic-branding-my-rules-are-being-abused-7962593.html.

114 O'Reilly, Terry. "The ever-increasing cost of being an Olympic sponsor." *CBC News*. February 8, 2014. Last accessed May 31, 2017. ► http://www.cbc.ca/news/business/the-ever-increasing-cost-of-being-an-olympic-sponsor-1.2527993.

115 *The Economist*. "Victors and spoils." July 21, 2012. Last accessed May 31, 2017. ► http://www.economist.com/node/21559326.

116 Wiesman, Tom. "FIFA World Cup Sponsorship: Is it Worth It?" *Analytic Partners*. March 10, 2014. Last accessed May 31, 2017. ► http://www.analyticpartners.com/news-blog/2014/03/fifa-world-cup-sponsorship-is-it-worth-it/.

117 Wiesman, Tom. "FIFA World Cup Sponsorship: Is it Worth It?" *Analytic Partners*. March 10, 2014. Last accessed May 31, 2017. ► http://www.analyticpartners.com/news-blog/2014/03/fifa-world-cup-sponsorship-is-it-worth-it/.

118 Burton, Rick. "Teams as Brands: A Review of the Sports Licensing Concept." In *Sports Marketing and the Psychology of Marketing*. Eds. Lynn R. Kahle, and Chris Riley. New York: Psychology Press, 2004.

a collective identity and solidarity, especially among young people.[119] Fans see themselves as members of the team, which leads to an elevation of their self-perception of status. A committed fan identifies with a team and, therefore, with the team's sponsors in retail settings.[120] As auto manufacturers with stock cars at the NASCAR circuit have long believed, "Win on Sunday, Sell on Monday." On the other hand, the National Guard in the USA could not trace a single recruit who was due to its NASCAR sponsorship in 2012. Yet, in 2014, it again paid $32 million for NASCAR-related sponsorships. It also paid $12 million to sponsor one of the teams on the Indy Car circuit.

These racing and sports sponsorships make up 37% of the National Guard's marketing budget, with the aim of strengthening its "brand," not necessarily for direct recruiting. In contrast, the US Army dropped NASCAR sponsorship, stating: "Currently, only 5% of the NASCAR audience is made up of 18–24 year old males, NASCAR is the highest cost per qualified lead and cost per engagement property in our portfolio."[121]

7.3.4.10 Case Discussion

NBC Sports Licenses

Football
NBC aired NFL football games starting in 1939. In 2005 it paid an annual fee of $603 million for a NFL package, that included the season kickoff, three pre-season games, all Sunday night games, two Saturday playoff games, two post-season "wild card" games, two Super Bowls and two Pro Bowls (2009 and 2012). NBC's contract was renewed for the seasons 2013–2022 for an annual fee of $1.05 billion, a 74% increase from the prior contract. The agreement was similar to the prior package and included the rights to broadcast the Super Bowls in 2015, 2018 and 2021.

Soccer
In 2012, NBC acquired the rights to broadcast English Premier League Soccer in the USA for 2013–2014 for $250 million. Prior to that, Fox (News Corp) had held the US rights for nearly two decades. With this deal, NBC became the exclusive English- and Spanish-language media rights holder to all 380 Premier League matches across all platforms and devices in the USA. Its aim was, in particular, to reach the Latino audience in America.

Formula One Racing
In 2012, NBC signed a four-year deal for exclusive US media rights to Formula One car racing for an undisclosed price. This deal provided NBC with more than 100 hours of programming, including the 2012 Grand Prix Monte Carlo. NBC aired four races—the Canadian Grand Prix and the final three races of the season—on its main network, and the remaining 16 races were shown on the NBC Sports Network.

Olympic Games
The Olympics have long been NBC's signature programming event and part of its brand. NBC bought the rights to carry the six Olympic Games in the United States from 2022 to 2032 on all current and future distribution platforms. It paid $7.75 billion, i.e. $1.12 billion per game (the Summer Games as well as the Winter Games, with the latter less valuable). This was vastly higher than in earlier years. NBC had paid $77 million, on average, for the 2004, 2006 and 2008 Olympics. In 1995, NBC made the first multiple-Olympics deals, for the 2000 and 2002 games at $1.2 billion.[122] For the 2014 Winter Olympics in Sochi, Russia, it paid $775 million; for the 2016 games in Rio de Janeiro, $1.23 billion; and for the 2020 games in Tokyo, $1.45 billion.

7.4 Challenges to Intellectual Assets

7.4.1 Piracy

Digital technologies have made the issues of IA more relevant than ever. Creators and copyright owners now face parties with new tools enabling them to copy for themselves and to distribute and commercialize to others.

119 One study (conducted by Sports Illustrated for Kids) found that 60% of boys and 37% of girls claimed to own NBA-branded apparel.

120 Burton, Rick. "Teams as Brands: A Review of the Sports Licensing Concept." In *Sports Marketing and the Psychology of Marketing*. Eds. Lynn R. Kahle, and Chris Riley. New York: Psychology Press, 2004.

121 Brook, Tom Vanden. "Army found NASCAR's price too high," *USA Today*. May 9, 2014. Last accessed May 31, 2017. ► http://www.usatoday.com/story/news/nation/2014/05/09/army-national-guard-recruiting-scandal/8908841/.

122 Sandomir, Richard. "All the Way to 2032, Come What May." *New York Times*. May 8, 2014. Last accessed May 31, 2017. ► http://www.nytimes.com/2014/05/09/sports/olympics/nbc-olympic-tv-deal-accounts-for-advances-in-technology.html.

Music, movies, television shows, software and other media are pirated[123] via various ways of physical and electronic copying, streaming, or distribution, such as via peer-to-peer networks. In 2005, the music industry claimed that 37% – or 1.2 billion – of all CDs purchased globally were pirated, i.e. manufactured without license.[124] The movie industry, too, saw a quick rise in piracy. Already by 2003, a study found that 60% of 312 popular movies to be available on file-sharing networks, (of those, 77% seem to have been released illegally by industry insiders).[125]

7.4.2 Protection Strategies

Given the growing problem of unlicensed use of content for producers and distributors, what can they do? It is difficult for media companies to protect against piracy. An effective IA protection strategy against the constantly changing challenges requires a wide array of measures. All actions must be balanced against the harm from inconveniencing and alienating potential customers.

7.4.2.1 Moral Appeals

The first protection strategy to use is moral appeals. This approach has been largely unsuccessful because users tend to feel that they do not impose marginal cost on the copyright holder and that they are therefore not really "taking". Other users engage in an anti-corporate justification, or argue that they would not have bought the music or video anyway.

7.4.2.2 Enlisting Government

Firms seeking protection from piracy lobby for stronger laws, better enforcement and diplomatic pressure on other governments. At one point, US government representatives tried to restrict the doctrine of first sale internationally, even though it is legal in the USA.

The international WIPO Copyright Treaty (1996) requires all signatory countries to enact laws against the circumvention of protective measures. The US Congress enacted laws to enforce IP rights domestically, or to sanction other countries that did not sufficiently protect American IPs.[126] In France, the 2009 HADOPI law provided for a mandatory termination of any Internet connectivity to a user who violated copyrighted materials for third time. After one million warnings had been sent out by the government, and after significant public opposition, the law was dropped. Other developed countries take relatively similar protection positions. For China to become a member of the WTO required its commitment to protect other countries' IAs.

In 2008, the US Congress passed a law aimed at protecting IAs which created an Intellectual Property Enforcement Division under the President. The law created US prosecutors specializing in IP enforcement and international IP specialists based in US embassies worldwide, and added money for state IP enforcement programs. It also revised the law to increase statutory damages and penalties in counterfeit cases, and prohibited the export of counterfeit or pirate goods from the USA.

In the USA, the most important law to protect IAs has been the Digital Millennium Copyright Act (DMCA) of 1996. The DMCA prohibits the circumvention of technological protection measures such as encryption used by copyright owners to control access to their work. It also outlaws the manufacture, sale and distribution of tools that make circumvention possible.[127] The DMCA shields ISPs from copyright infringement liability as long as they have no actual knowledge of the infringement, have not financially benefitted, have established a system for dealing with infringement complaints and comply with "takedown"

123 The word "piracy," which is frequently used, is a loaded term. But, since it has been adopted proudly by some of those engaged in such use (who have even formed political "pirate parties" that have, at times, been remarkably successful in elections), we will use this term to loosely refer to a use without permission by the holder of a valid IPR. The term is less pejorative than "theft," which the content industry uses, and less euphemistic than "sharing."

124 IFPI. "The Recording Industry 2006 Piracy Report." July 2006. Last accessed August 2, 2012. ► http://www.ifpi.org/content/library/piracy-report2006.pdf.

125 Byers, Simon et al. "Analysis of Security Vulnerabilities in the Movie Production and Distribution Process." *Telecommunications Policy* 28, nos. 7–8. (August–September 2004): 619–644.

126 The examples include the Caribbean Basin Economic Recovery Act of 1984, the Computer Software Protection Act, the No Electronic Theft Act of 1997, the Trademark Anti-Counterfeiting Act of 1984, the Semiconductor Chip Protection Act of 1984, Copyright Infringement Act, Computer Fraud and Abuse Act, Economic Espionage Act of 1996, Copyright Felony Act of 1992, the Counterfeit Access and computer Fraud and Abuse Act of 1986, and the National Information Infrastructure Act of 1996. Additionally, each US state has enacted corresponding legislation offering additional statutory IP protections.

127 Electronic Frontier Foundation. "Unintended Consequences: Twelve Years under the DMCA." March 3, 2010. Last accessed August 1, 2012. ► https://www.eff.org/wp/unintended-consequences-under-dmca/.

standards for removing copyright material.[128] ISPs are expected to remove from users' websites material that violates copyright, otherwise they face liability.[129]

The DMCA has been severely criticized as being over-protective of industry and as jeopardizing fair use, competition and innovation. Critics allege that the DMCA has been used to block aftermarket competition in laser printer toner cartridges, garage door openers and computer maintenance services.[130]

7.4.2.3 Litigation

A third strategy for media companies is to sue violators of their copyrights. Litigation over innovation is nothing new. Johannes Gutenberg was intensely engaged in it in the fifteenth century. Abraham Lincoln litigated disputes over his patented creation.[131] Today, the music industry has been suing unauthorized users, or threatening to do so, to deter illegal downloading. The Recording Industry Association of America (RIAA) sent 1.8 million notifications of file-sharing violations to individual users by 2010,[132] including over 270,000 to students. In 2003, it sued 261 people, including a 12-year old girl living with her single mother in public housing. By 2008, it had filed, settled, or engaged in legal action against 30,000 people.

In addition to filing lawsuits against individual users, the RIAA also brought lawsuits against file-sharing providers and ISPs themselves, both in the USA and abroad. It won important cases against Napster in 2000 and against Grokster in 2005.[133] A Japanese court found the file-sharing company MMO guilty of copyright infringement and ordered it to pay fines of $350,000. A 2010 legal action against the founders and host server-owners of Sweden's Pirate Bay involved also a criminal complaint. The music companies have also sued telecommunications providers to block access to file-sharing sites in an effort to combat overseas piracy.

The RIAA also sent waves of "pre-lawsuit" letters to universities demanding they forward to them the names of students who used the university's network for piracy. Facing the prospect of thousands of dollars in legal costs and settlement payments to avoid a lawsuit, many universities took some action to prevent the illegal downloading by their students. UCLA imposed a one-semester suspension for repeat piracy offenders, and Ohio University banned access to peer-to-peer networks. Stanford fined students against whom a complaint was brought by charging escalating "reconnection fees." On the other hand, several universities refused to cooperate with the RIAA, such as the Universities of Kansas, Maine and Wisconsin.

Not all in the music industry believe that such litigation—"suing one's customers"—is a good business practice. Rather than for an individual company to expose itself to targeted backlash, it is usually better for the industry to operate jointly through its association. But for joint action a common perspective is needed, and care must be taken not to violate antitrust laws.

7.4.2.4 Counter-Attacks

Another strategy is to make piracy inconvenient and frustrating to users. To that purpose, music companies distributed decoy copies of songs on file-sharing networks with altered or no content. Users may spend time downloading a file to get a movie or songs, but then discover in mid-listening that they got a corrupted file. On the KaZaA platform, for some songs, more than 50% of all files were found to be polluted. (One test revealed 76.8% of copies of the song "My Band" and 68.9% of "Naughty Girl.") Through the sharing of corrupted files, it spreads from one user to the next user, like a virus.[134]

128 Wallis, Rosemary, and Thomas Huthwaite. "ISP liability for copyright infringement: Are dodgy subscribers worth the risk?" *Lexology*. April 12, 2013. Last accessed May 31, 2017. ► http://www.lexology.com/library/detail.aspx?g=e466d7dc-e24e-4f6d-bba3-bb33bba46b53.

129 Smith, Breana C., Don Ly, and Mary Schmiedel. "Intellectual Property Crimes." *The American Criminal Law Review* 43, no. 2 (Spring 2006): 963–714; UCLA Online Institute for Cyberspace Law and Policy. "Digital Millennium Copyright Act." February 8, 2001. Last accessed July 8, 2010. ► http://www.gseis.ucla.edu/iclp/dmca1.htm.

130 Electronic Frontier Foundation. "Unintended Consequences: Twelve Years under the DMCA." March 3, 2010. Last accessed August 1, 2012. ► https://www.eff.org/wp/unintended-consequences-under-dmca/.

131 Scherer, Frederic M. "The political economy of patent policy reform in the United States." *Journal on Telecommunications & High Technology Law* 7, no. 2 (Spring 2009): 167–216.

132 Riley, Jason L. "Copyfight." *The Wall Street Journal*. November 26, 2005, A.10.

133 Mann, Charles C. "The Heavenly Jukebox." *The Atlantic Monthly* 286, no. 3 (September, 2000): 39–59.

134 Liang, Jian et al. "Pollution in P2P File Sharing Systems." Presented at IEEE INFOCOM, Miami, Florida. March 13–17, 2005.

7.4.2.5 Technology Fixes

"Technology fixes" include a large array of technical anti-piracy measures designed to make unauthorized copying of copyrightable material difficult or impossible. Together, these measures are known as digital rights management (DRM). Each of these technologies can be defeated ("hacked"). The question is how much effort a pirate would have to expend, and how great the benefit would be. Safeguards can be strengthened. Yet, making them too formidable could degrade the content and be inconvenient for regular users, and they will be turned off. The key to successful anti-piracy technical programs is to use a diverse mix of measures, and to vary protection measures from product to product and from release to release.

DRM tries to control media access, and the sharing, saving, printing and altering of content. It can be in the system operating software, in the program software, the content, or the hardware itself. DRM also prevents perfectly legal fair use copying, and it can be used by authoritarian governments to block content for political reasons.[135] The main types of DRM are "marking," which uses watermarks or other tags to instruct the devices that the content is copy-protected, and "containment," where encryption excludes unauthorized users.[136]

7.4.2.6 Business Responses

The prevalence of these legal and technological strategies against illicit copying and file-sharing may obscure the fact that, often, the best response by media companies is through new business strategies.

There are multiple approaches. Perhaps most obviously, content providers can lower the price. The incentives to piracy drop if the legitimate price of the content is lowered. For example, magazines and paperback books are rarely pirated, because their price is low enough to make the effort of piracy less worthwhile. A common response by media companies is that "You cannot compete with free," i.e. that even a low price is too high. But many commercially-marketed goods and services disprove this and successfully offer for-pay versions where free versions also exist: bottled water, pay-TV and commercially purchased music in the presence of free radio. Pay products win when they provide a value added, such as convenience, immediacy, quality, or reliability.

A business response related to a lowering of the price is to use more differentiated pricing models. One example is "pay-per-use." Fee payment models have emerged. For example, music companies may allow a customer to pay each time they want to hear a song, or just buy only one song instead of the whole album. Pay-per-use payment models exist for music, TV shows, films, books, newspapers, magazines and games. In the pay-per-use models, success depends on the provider's ability to control post-sale copying.

An alternative approach is to rely on advertising-based content services. This has traditionally been the case for commercial television. Here, there are several pricing models. Some content is premium—paid and on-demand—; other content is based on a channel subscription; yet other content is on the basis of a subscription to a large bundle of channels; and other content is entirely "free" and advertising-based.

Some newspapers and magazines offer a free look at the first part of a story. If the reader wants to continue, they must pay. Others provide a limited number of free stories per month. Beyond that number, the reader must pay. *The Wall Street Journal* and *The Economist* offer free full-text searching of archives but charge a fee to download articles.

Differentiated pricing offers many other approaches. Songs could be offered for a limited number of plays at a low price before repurchasing. Repeat or long-term customers could receive incentives and pay less than those charged to the general market.

Will consumers pay for content? Surveys indicate that the majority of students, for example, will pay for compelling content of a good technical quality and without annoying limitations. For movies, price has to be comparable or to be lower than a DVD rental ($3–$5). TV episodes must be less than 99 cents each and $5 for a series.

135 *The Economist*. "A fine balance: How much copyright protection does the internet need?" January 23, 2003. Last accessed June 13, 2012. ► http://www.economist.com/node/1534271.

136 Electronic Privacy Information Center. "Digital Rights Management and Privacy." March 29, 2004. Last accessed August 1, 2012. ► http://epic.org/privacy/drm/.

Companies can also quicken the pace at which they release new versions of their products, staying a step ahead of mass piracy. Another strategy is to connect the online content with the physical product and human interaction,[137] such as manuals and tech support. The goal is to make the product into a service, with users connected to content providers. Companies can create additional incentives by offering periodic access to enhancements. This improves the quality of service, a benefit which rarely exists for illegally pirated goods.[138]

Going one step further, some content could shift from digital back to physical. In music, the move to concert tours rather than sales of recordings is an example. In the past, a band's tour promoted its record. Now, the record may promote the tour. In 2015, 24 artists grossed more than $40 million each at the concert venue box office while CD sales stagnated or dropped.[139]

Some companies give away their products, rather than seek to limit them, with the goal of widespread usage. This has been the model of "free" radio and TV broadcasting for almost a century. Beyond the aim of getting advertising revenues, the strategy creates a large user community which generates network externalities and switching costs for users. It enables companies to introduce a complementary, non-free product.

7.4.2.7 The Open Source Movement

The open source movement is a loose community of volunteer developers who collaboratively create software known as "freeware."[140] The movement challenges the notion that people will not invent or create without the profit incentive of patents and copyrights. Users of the software "pay" by contributing improvements. This creates a higher-quality product than programmers could afford to develop on their own. Also, because open source software is peer reviewed, it is more dependable than closed or proprietary software.[141]

Prominent open-source projects include the Linux operating system, the Internet protocol Mozilla Firefox and Thunderbird, and various developer tools (e.g. WinSCP). Linux, started by Linus Torvalds at the University of Helsinki in 1991, is a free computer operating system that encouraged the development of compatible software as an alternative to Microsoft's pricy Windows operating systems.

An alternative copyright arrangement is called a "copyleft." It allows users to redistribute, modify and use the software freely, but also gives its creators some of the legal protections of copyright over their own and derivative works. "Copyleft" says that anyone who redistributes the software, with or without changes, must in turn pass along to others the freedom to further copy and change it.

In 2002, inspired by the "copyleft" license, an organization called Creative Commons (CC) created a set of license templates that make it easy for a creator to release particular rights under clearly specified conditions.[142] It allows the use of digital files as long as proper credit to the originator is given.[143] The creator retains ownership, allowing others to use the work but not steal it. It also means that no other company can claim ownership rights.[144]

137 Shapiro, Carl, and Hal R. Varian. *Information Rules: A Strategic Guide to the Network Economy*. Boston: Harvard Business School Press, 1999.

138 Barlow, John P. "The Economy of Ideas," *Wired*. March 1, 1994. Last accessed August 1, 2012. ► http://www.wired.com/wired/archive/2.03/economy.ideas.html.

139 Surowiecki, James. "Hello, Cleveland." *The New Yorker*. May 16, 2005. Last accessed May 31, 2017. ► http://www.newyorker.com/magazine/2005/05/16/hello-cleveland.

140 *The Economist*. "A fine balance: How much copyright protection does the internet need?" January 23, 2003. Last accessed June 13, 2012. ► http://www.economist.com/node/1534271.

141 Open Source Initiative. "Open Source Case for Business." Last accessed August 1, 2012. ► http://opensource.org/advocacy/case_for_business.php/.

142 Kay, Russell. "Quick Study: Creative Commons." *Computerworld*. May 22, 2006. Last accessed August 1, 2012. ► http://www.computerworld.com/s/article/111316/Creative_Commons?taxonomyId=70&pageNumber=2.

143 Rohter, Larry. "In Digital Age, Advancing a Flexible Copyright System." *New York Times*. June 26, 2006. Last accessed May 31, 2017. ► http://www.nytimes.com/2006/06/26/arts/26crea.html.

144 *Creative Review*. "Made for Sharing." June 5, 2006, 36. Each of the six model Creative Commons licenses contains a combination of four license conditions: "attribution" (abbreviated "by"), "Share Alike" ("sa"), "non-commercial" ("nc"), and "no derivative works" ("nd"). "Attribution," the most common condition among the CC licenses, states that works can only be used if credit is given to their original creator; "noncommercial," that works can be used freely only for noncommercial purposes; "no derivative works," that works can only be used in "verbatim" form (i.e. new works based on the CC original are not allowed); and "Share Alike," that others can only distribute an original work if the subsequent work has an identical license.

7.5 Case Conclusion

7.5.1 Case Discussion

Conclusion: How Much of GE's Value and Profits Are Based on IA?

In 2007, *BusinessWeek* estimated that GE's intellectual assets were valued at $50 billion. GE was ranked fourth in terms of global brand value and second in terms of global market capitalizations.[145] GE's financial statements are more conservative. Its total property, plant and equipment were valued at $70 billion in 2012. Intangible assets, including goodwill, were valued at only $12 billion. Hence, the company booked the total of its intangible assets as constituting about 17% of its assets.

How can one estimate the value of GE's IAs? We estimate the share of IAs in GE's overall value by using the "residual approach" described earlier in the section on valuation.

GE had seven major lines of business, including GE capital, home and business solutions, energy infrastructure, aviation, healthcare, transportation and media.[146] We proceed with a valuation methodology based on the "imputed value" approach discussed earlier. Given the reported respective revenues of various divisions, one can estimate the profits of these divisions. Using an estimate of the tangible assets one can calculate earnings attributable to tangible assets. The residual earnings are then attributable to intangibles and IAs. One can then calculate the value of the IAs and the share of IAs in the overall assets. The results are shown in Table 7.1.

The results show, in the right-hand column, that for three of GE's seven main divisions, imputed IAs value was about half that of overall assets, i.e. similar in magnitude to the tangible assets. For media, IAs constituted 44.7%. For financial services, the figure was 46.7% and for aviation, 41.3%. IAs represent a less important part of value in transportation and energy. Overall, the value of IAs for GE can be totaled to be almost $47 billion, a figure similar to that estimated by *Business Week*. This is about four years' worth of 2012 earnings. Given such a large contribution to earnings and value, and to GE's future, the creation and management of IAs needs to be one of the company's top priorities.

Table 7.1 Intellectual Asset Value in GE's Divisions

	Imputed $ value of intellectual assets ($)	Imputed intellectual asset value in total assets of division (%)
Energy	5.7	12.3
Aviation	5.9	41.3
Healthcare	8.4	29.1
Home	3.6	24.5
GE Capital	21.1	46.7
Transportation	0.9	9.8
Media	3.4	44.7
Total	46.8	28.8

145 General Electric. "Statement of Financial Position." *GE 2012 Annual Report*. 2012. Last accessed July 16, 2013. ► http://www.ge.com/sites/default/files/GE-AR2012-Statement-of-Finacial-Position.pdf.

146 MSN. "General Electric Co." *GE Company Report, Financial Results, Key Ratios, Income Statement*. Last accessed 6 June 6, 2013. ► http://investing.money.msn.com/investments/company-report/?symbol=ge.

7.6 Outlook

IP was once the domain of lawyers. Now, it has become an essential input into management and output. It is a vital component in strategy, mergers and acquisitions, operations and investment. Protection and exploration of IAs is a critical management task. What is the point of developing and producing creatively and efficiently if the subsequent licensing and protections are ineffective?

For firms in the media and information sector, IAs are the main assets and the core of their value. Protection of these assets from infringement is important, but their exploitation and commercialization is still more valuable. Yet, the markets for IA transactions are still fairly imperfect—there are information problems and arbitrage.

The future of IA management will be defined by several conflicting forces:

- In an information society and economy, IAs are more valuable than ever before and their incentive value is important.
- However, legal restrictions to protect IAs slow everyone down.

- More information is produced with a shorter shelf-life, and with more commodity characteristics.

We conclude that the management of IAs is just as important as their legal protection. It is a complex function to run. Yet, it is a key profit activity for successful information and media firms in the digital economy, and its mastery is an essential business tool.

7.7 Review Materials

Issues Covered

We have covered the following issues in this chapter:

- The characteristics of IA;
- How IA developed over the years, and its positive and negative effects on society;
- The options for a media and information firm to create and protect its innovations;
- How a firm optimizes the benefits from its IAs;
- How to organize the management of IAs;
- The reasons for business method patents;
- What trade secrets are and how to protect them;
- The benefits and risks of patents;
- How companies solve patent infringements;
- The requirements to file patents;
- What trademarks are and how to obtain them;
- How copyright is created and protected;
- The roles of international treaties and organizations for IAs;
- How to value IAs;
- Why companies cross-license;
- How IAs are treated in a company's balance sheet;
- The advantages and disadvantages for strategic licensing;
- How patent pools reduce the risk of litigation and intentional blocking;
- How Performing Rights Organizations (PRO) work;
- How compulsory licenses work;
- The kind of protection strategies that can be used against piracy;
- How digital rights management operates;
- How the open source system works.

Tools Covered

We described tools to address some of the above issues:

- Patent filing;
- Patent infringement suits;
- Trademark requirements;
- Copyright and trademark registration;
- Contract-generated IP rights;
- Protecting trade secrets;
- Fair use criteria;
- Identifying patent "parents" and "children;"
- IA audit map;
- Valuation techniques for IAs;
- Residual approach of IA valuation;
- Optimal licensing rates;
- Cross-licensing pools;
- Sport licensing;
- Piracy protection strategies;
- Copyleft and open source.

7.7.1 Questions for Discussion

1. Practically speaking, how can a company check for infringement of its copyrights?
2. How would a media company account in its books for a patent before it has created any tangible item based on it?
3. If a manufacturer has developed a new audio technology that produces better sound at a lower bit rate, contrast the method of keeping this information as a trade secret vs. applying for a patent.
4. Explain how a firm can best protect itself from having its product reverse engineered?
5. After a company independently develops a new product or technology, describe the process a company can take to ensure that no other firm or individual already has a patent on the same process.
6. Describe the differences between a patent, a trademark and a copyright? For which assets would a company want to obtain these protections?
7. How should companies respond to the "intellectual commons" movement?

8. How should a record company respond to challenges to its IP?

9. Discuss how the concept of fair use applies to universities and startups.

10. When should a company join a patent pool? And when is it a bad idea?

7.7.2 Quiz

1. Company XYZ sells music CDs online. For the past two years, music CD sales have slipped dramatically. Instead, music downloads have increased significantly. A bad idea for company XYZ would be to:
   A. Direct its focus to an area less vulnerable to competition.
   B. Undercut competitors by selling its CDs much cheaper.
   C. Enforce its IPRs.
   D. Further advertise CDs with the hope that CD sales will eventually re-emerge.

2. All of the following are IPR benefits of larger firms except:
   A. Usually, greater protection from piracy and P2P users.
   B. Less costly to protect patent rights.
   C. Usually have greater resources when dealing with litigation.
   D. Have larger portfolios, therefore cross-licensing can be an alternative to litigation.

3. All of the following are true concerning the NATPE and MIPCOM shows except:
   A. Allows for bidding between producers and creators of products.
   B. Only permits the viewing of shows that are seeking syndication.
   C. Proves a valuable channel for marketing and purchasing of television programs.
   D. Serves as a promotional venue for producers and, potentially, viewers.

4. Each of the following can be used to determine the value of a company's IAs except:
   A. The amount of times it is cited or referenced to in other patents/patent filings.
   B. Usage of "royalty methodology" such as tax-generated revenue from deals resulting from cross-licensing.
   C. Consideration as to the length of the patent description as filed with the Patent Office.
   D. Whether it is in existing use vs. liquidation value.

5. Which of the following is an important consideration in developing business practices which will protect a trade secret?
   A. B, C, and D.
   B. The ingredients in your secret hamburger sauce can be determined by chemical analysis.
   C. The turnover rate of your employees is high.
   D. The process for making your product was published in a 1968 government report.
   E. None of the above.

6. Which of the following is important in choosing to apply for a patent over using trade secrets to protect your business?
   A. The process for making your product was published in a 1968 government report.
   B. Your Chief Technical Officer has a drinking problem and leaked confidential information about your product to a friend three weeks ago.
   C. Your product is a method for doing business.
   D. All of the above.
   E. None of the above.

7. Which of the following cannot be patented?
   A. An idea.
   B. An organic compound.

C. A mathematical algorithm.
D. A business process.
E. An improvement on an existing patented process.

8. The proprietor of Bill's Duck Farm wants to launch a new product line of orange-colored duck eggs. Which of the following would give Bill the strongest competitive advantage?
A. Labeling each egg, "patent pending".
B. Getting a servicemark for the slogan, "If it walks like a duck, and talks like a duck; it must be a Wild Duck."
C. Getting trade-dress protection for orange-colored duck eggs.
D. Launch a massive advertising campaign emphasizing his new patent for a process for making sure the eggs are orange.
E. Selling his eggs under the brand name, "Wild Duck Eggs."
F. Labeling each egg, "© Duck Bill, 2000".

9. Which is not a problem with encryption?
A. It hinders criminal investigations.
B. Early reliance on copy protection led to the notion that cracking into a software package somehow "earned" one the right to use it.
C. Once something has been unscrambled by a legitimate licensee, it can be widely reproduced.
D. New subscriptions to various commercial satellite TV services skyrocketed after their deployment of more robust encryption of their feeds.

10. Which element(s) are required in a proper copyright notice?
A. The symbol ©, the word "copyright" or the abbreviation "copr."
B. The year in which the copies of the work were first published.
C. The name of the copyright owner.
D. All of the above are required.
E. Only A and B are required.
F. None are required, only recommended.

11. Which of the following is not an example of open source software?
A. Springboard OS.
B. GNU.
C. Redhat Linux.
D. UNIX.
E. None of the above.

12. Of the following, what cannot be copyrighted?
A. Dance choreography.
B. Computer software.
C. Motion pictures.
D. Business operation process.

13. What does the "fair use" means for copyright holders?
A. Central parts of the total work can be used as long as they have an educational purpose.
B. Educational institutions have to acquire licenses in order to copy copyrighted work.
C. Their copyrighted work can, under certain circumstances, be copied for research, teaching and so on.
D. Profit can be made by implementing the knowledge acquired from copyrighted work.

14. Which of the following anti-piracy strategies is most effective once a copied version of a film is already available on the Internet?
A. Technology fixes.
B. Enlist government.
C. Counter-attacks.
D. Litigation.

15. What is not a suitable strategy for managers to use to counteract piracy?
A. Slower introduction of new versions to reduce the advantages of a pirate offering the "newest version."
B. Slower introduction of new versions to increase the advantages of a pirate offering the "newest version."

C. Faster introduction of new versions to reduce the advantages of a pirate offering the "newest version."
D. Competitive pricing in order to adapt more to inexpensive, high-quality illegal copies.

16. Why is the real options approach as a valuation method for patents useful?
A. Managers do not understand the underlying calculations and thus cannot judge the results.
B. Valuation methods, such as decision tree analysis or the Black-Scholes formula, can fully describe the options value.
C. It models the uncertainties of the underlying IAs.
D. Uncertainty can be easily described by a normal distribution.

17. What are valid reasons for the licensing of a technology?
A. To shape market structure.
B. To deter entrance of competitors.
C. To select competitors after patent expires.
D. All of the above.

18. Which of the following are considered a type of Intellectual Asset (IAs)?
A. Trade Secret Protections.
B. Contract-Created Intellectual Assets.
C. Copyrights.
D. All of the above.
E. A and C only.

19. Which of the following statements about Intellectual Assets is correct?
A. By estimations, 90% of commercial value in IA is found in trade secrets.
B. Copyrights are less frequent than contract created rights and trade secrets.
C. Patents are less frequent than trademarks and trade secrets.
D. All of the above.
E. None of the above.

20. Typically, how long does it usually take to obtain a patent?
A. Six months.
B. One year.
C. Two to four years.
D. Five to ten years.

Quiz Answers

1. D
2. B
3. B
4. C
5. D
6. D
7. D
8. E
9. A
10. C
11. A
12. D
13. C
14. C
15. A
16. C
17. D
18. D
19. D
20. C