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Intellectual Property Issues for Architects, Engineers, and Surveyors

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Introduction



We currently reside in a highly litigious society. Legal matters can be interpreted in various ways. Despite having established laws, the realm of intellectual property, including its rights and protection, allows for broad interpretations. Every year, numerous cases are litigated concerning intellectual property infringement, licensing, and transfer.

The concept of intellectual property has greatly expanded in the past 20 years. With the advent of digital technologies and the internet, it now encompasses much more than the products of literary, artistic, scientific, and technical creativity traditionally associated with the term. For instance, software code, digital content, data, and online platforms are considered forms of intellectual property in today's world. Intellectual property laws have also evolved to accommodate these changes and to address new challenges such as piracy, counterfeiting, and copyright infringement in the digital sphere. Digital technologies have made it easier to copy, distribute, and alter original works, leading to widespread issues with unauthorized use. It is important to remember that just because something is accessible online does not mean it is in the public domain or free to use without potential legal consequences.

Additionally, the issue of intellectual property has taken on heightened importance in the context of open source projects and collaborations, where there is often a tension between the protection of individual contributors' rights and the broader aim of promoting creativity and innovation. And with the rise of artificial intelligence (AI), the question of whether AI-generated work can or should be protected as intellectual property has become a topic of debate.

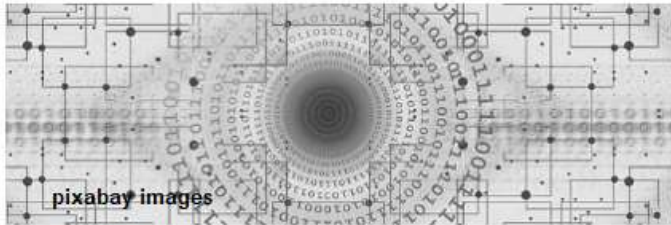
The nature of intellectual property has evolved; it isn't just derived from the mind, but also reflects complex interactions between creative intellect, digital technologies, and online networks. With its inherent potential for generating value, intellectual property is now deeply entwined with the global digital economy.

In light of these considerations, the following statements are offered: Intellectual property is the vast range of creations of the human mind, extending well beyond the traditional domains of literature, arts, and sciences. Today, it encapsulates not only books, articles, art, film, music, engineering, and architectural graphics and specifications, but also software, digital content, data, and innovative internet platforms. Importantly, inventions, ser-



vice marks, and trademarks still form integral components of intellectual property.

Professionals such as architects, engineers, surveyors, programmers, and digital content creators should view their work products and project information as intellectual property with inherent value that warrants diligent protection. This includes considering the implications of open-source collaborations, digital rights management, and even questions surrounding AI-generated intellectual property. The importance of establishing these products as *instruments of service* in professional agreements will be explored acknowledging the ever-evolving landscape of intellectual property rights in the digital age.



While it is accurate to state that certain categories of items like historical events, common information, mere facts, and items in the public domain remain outside the purview of intellectual property, it's also crucial to note the complexity introduced by the digital sphere. For instance, raw data

may be seen as a mere fact, yet when organized, analyzed, and presented using software code or digital tools, it may transform into a valuable and protectable form of intellectual property. Further, it is important to clarify that directory listings, once mere compilations of non-creative items, have evolved into sophisticated, algorithm-driven databases, often with proprietary methodologies underlying their generation and presentation. They have, as such, often been the subject of intellectual property debates, reflecting the shifting landscape of what constitutes creativity and originality in the digital age.

Regarding items in the public domain, digital age complexities arise here too. Works of the Federal government remain, for the most part, immediate property of the public, reflecting a tradition of public ownership of publicly-funded outputs. However, products of state and local governments and products created by third parties for the Federal government may not necessarily be considered in the public domain. This principle is made more complicated by the rise of open-source software and publicly available datasets, which blur the lines between public domain and proprietary rights.

In essence, while the basic principles of intellectual property endure, the advent of digital technologies and the internet have transformed its application and interpretation, making it a more nuanced and complex field than ever before.

Timeline of Legal Developments

The digital age, also known as the *Digital Revolution*, began in the latter half of the 20th century. It marked a shift from mechanical and analogue electronic technologies to digital electronics. This revolution brought about significant changes in production and business techniques through the mass production and widespread use of digital logic, integrated circuit chips, and technologies like computers, microprocessors, digital cellular phones, and the internet. The era started during the 1980s and is ongoing, and it also marks the beginning of the *Information Era*. The digital revolution can be traced back to the invention of the personal

computer and saw important technological developments such as the invention of the integrated circuit chip and the field-effect (MOS) transistor.

The United States Patent Law (USC Title 35) and United States Copyright Law (USC Title 17) have both seen significant changes due to the emergence of the internet and the digital revolution. However, these changes have been more drastic and frequent for copyright law compared to patent law, due to the inherent nature of each. Copyright law is more directly influenced by changes in how content is created, shared, and used, while patents, dealing with inventions and physical processes, have not had to undergo as radical a shift.

For the Copyright Law (Title 17), one of the most significant revisions due to technological advancements was the Digital Millennium Copyright Act (DMCA) of 1998. This law was intended to update copyright legislation for the digital age and to fulfill the requirements of the World Intellectual Property Organization (WIPO) treaties of 1996. It implemented two 1996 WIPO treaties: the WIPO Copyright Treaty and the WIPO Performances and Phonograms Treaty. The DMCA criminalizes the production and dissemination of technology, devices, or services intended to circumvent measures that control access to copyrighted works (commonly known as digital rights management or DRM). It also criminalizes the act of circumventing an access control, whether or not there is actual infringement of copyright itself. Additionally, the DMCA heightened the penalties for copyright infringement on the internet.



As for the Patent Law (Title 35), while the impact of the digital revolution and the internet has been significant, the key legislative changes haven't been directly due to the internet, but more to the evolution of

technology and court decisions interpreting patent law. For example, the Leahy-Smith America Invents Act (AIA) of 2011 was the most significant legislative change to the U.S. patent system since 1952. It transitioned the U.S. patent system from a *first to invent* to a *first inventor to file* system, eliminated interference proceedings, and developed post-grant opposition. While the AIA was not enacted specifically because of the advancements in digital technology or the evolution of the internet, it is part of ongoing efforts to update the patent system in response to a rapidly developing technological landscape.

Several court decisions have also influenced how patent law interacts with the digital world. One such case is the Supreme Court's decision in *Alice Corp. v. CLS Bank International* in 2014, which set a precedent that certain types of software-related inventions could be considered abstract ideas and thus not eligible for patenting.

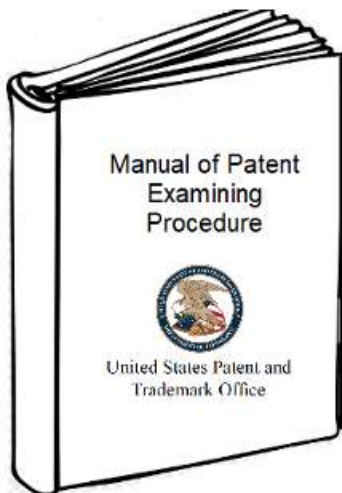
So, while these laws have been revised to accommodate the new realities of the digital age, it is noteworthy to mention that these revisions have not always been clear cut, and they continue to be subjects of considerable debate and further potential reform.

Affirmative Rights

Copyright, trademark, patent, and trade secret laws grant rights and protection for intellectual property. Trademark laws safeguard unique symbols, logos, designs, and other elements like colors, packaging, containers, and so forth. These elements are used by industries to identify their products or services and differentiate them in the marketplace over time. Patent law grants exclusive rights to the creator (inventor) of a new and non-obvious invention. Trade secret law enables the owner of valuable commercial information that provides a competitive advantage to prevent others from using that information. To exercise this right, the owner must demonstrate that the information was improperly acquired or disclosed to a competitor, and reasonable measures were taken to keep it confidential.

In the context of this course, it is assumed that the likelihood of the architect, engineer, and surveyor to encounter trademark or trade secret issues in their day-to-day practice is relatively low. Importantly, the work products of all three professions often fall into the pictorial, graphical, and textual categories, which are typically protected by copyright. Therefore, copyright will be the main focus of this course, as it is the common form of intellectual property right shared by these professions, and it will be discussed extensively later. However, engineers may be involved with chemical or manufacturing processes, or inventions, which require the use of patents as a form of intellectual property protection.

Patents



The U.S. Patent and Trademark Office (USPTO), an administrative branch of the U.S. Department of Commerce, is responsible for issuing patents. Patent Law can be found in Title 35 of the United States Code. The aim of patent law is to encourage innovation by offering inventors legal rights that safeguard their ideas from being misused by others. This system can create a motivation for rivals to enhance their own offerings, giving them a competitive edge.

USPTO's online platform offers access to the Manual of Patent Examining Procedure (MPEP), a voluminous document spread across several chapters, providing exhaustive details about the patent application process. Utilizing the search function on a digital platform such as a word processor or Acrobat Reader proves beneficial in navigating through the vast contents of the MPEP.

The digital resources provided by the USPTO extend to include the United States Code (USC) Title 35, encompassing patent laws, and the Code of Federal Regulations (CFR) Title 37, outlining the patent rules. Together with the MPEP, these resources offer comprehensive insights into the world of patents. Despite the MPEP serving as a practical summary of the 35 USC and 37 CFR, it is considered legally subordinate if discrepancies manifest between the MPEP and the legal documents.

Regarding the types of patents, three main categories are identified:

1. Utility patents: These patents cover processes, machines, compositions of matter, and improvements thereof. However, it is worth noting that utility patents can also apply to inventions related to computer hardware, software algorithms, and other technological advancements.
2. Design patents: These patents cover the nonfunctional aspects of a functional manufactured article. An example of a *design* would be a completely new product package shape that in and of itself does not improve functionality or containment efficiency. Design patents can also be applicable to digital designs, such as icons, user interfaces, and graphical elements.
3. Plant patents: These patents cover asexually or sexually reproduced plants and flowers that are both novel and non-obvious.

Items of intellectual property which the engineer could encounter that should be considered for patent protection would include:

- biological and chemical inventions and formulations;
- computer hardware;
- containers and packaging;
- cosmetic formulations;
- electrical and electronic inventions;
- fabric;
- food formulations and inventions;
- hardware and houseware;
- machines or parts thereof;
- manufacturing processes;
- mechanical inventions;
- medical accessories and devices;
- photographic processes;
- recreational gear and sporting goods equipment;
- toys.

In recent years there has been an increasing emphasis on patenting inventions related to things digital. The USPTO has been granting patents for computer hardware, software algorithms, internet-based processes, and other innovations in the field of information technology. This includes inventions such as computer programs, mobile applications, artificial intelligence systems, blockchain technologies, and virtual reality devices. Furthermore, the rise of digital content has introduced new challenges and opportunities for intellectual property protection. Copyright law, rather than patent law, is the primary means of safeguarding digital content, including text, images, audio, and video files.

The process of obtaining a patent has changed with the advent of online filing systems and the implementation of the aforementioned *America Invents Act*. It was passed to improve patent quality, eliminate patent litigation abuses, and harmonize U.S. patent law with other countries. As mentioned, changes due to the AIA include online filing systems and fees for patent applications. Additionally, the AIA made patentable inventions related to e-commerce, social media, and other online services.

Patent or Protect and Maintain a Trade Secret?

When deciding whether to patent or maintain technology as a trade secret, there are several important considerations to keep in mind. One factor to consider is the cost of protection - patenting a single invention worldwide can be expensive, so it's important to ensure that each patent has real value in deterring competitors and being enforceable. Another factor is the importance of the innovation to the business - if it is critical and could be easily reverse engineered, patent protection may be necessary. Detectability is also important - if the technology can be easily discovered or copied, patent protection may be more effective. Lastly, secrecy is a key factor to consider - if the technology can be kept confidential and there is a risk of unauthorized use, trade secret protection may be a more viable option. Ultimately, the decision to patent or maintain technology as a trade secret should be based on a holistic intellectual property strategy that aligns with the business's goals and resources.



Additional information regarding patents and the method to file for a patent can be obtained from:

Commissioner of Patents and Trademarks
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
Telephone: 800-786-9199 or 571-272-1000
TTY: 800-877-8339 (for hearing impaired)
Website: <https://www.uspto.gov>

Copyright

The exclusive source of copyright law in the United States is found in Title 17 of the United States Code, Section 101 *et seq.*, commonly referred to as the Copyright Act of 1976. This act has been periodically amended since its enactment. One important amendment, made in 1990, added protection for design expression in completed buildings, which is particularly relevant to architects and engineers. Prior to the passage of the Architectural Works Copyright Protection Act, only drawings were eligible for protection as pictorial or graphic works, while building designs lacked any specific protection. However, with the amended 1990 Title 17, United States Code, at §101:

An architectural work is defined as the design of a building, as embodied in any tangible medium of expression, including a building, architectural plans, or drawings. This encompasses the overall form of the building, as well as the arrangement and composition of spaces and elements in the design, excluding individual standard features.



In simpler terms, this means that the physical building itself can be protected by copyright. There have been significant developments in the digital landscape, including the advent of digital technologies, the internet, software code, digital content and data. These advancements have expanded the scope of copyright protection to include various digital forms. Alongside architectural drawings and renderings, copyright can extend to the arrangement of facts, artwork, blueprints, buildings, charts, computer software, databases, engineering plans, flowcharts, forms, interior designs, landscape designs, lectures, maps, models, photographs, plot plans, procedures, project designs, record books, reports, schedules, scientific treatises, structural plans, and technical drawings. It is worth noting that this list is not exhaus-

sive, as copyright protection can extend to other forms of digital expression as well.

Several categories of items are generally considered non-copyrightable. In addition to most of the categories previously discussed and listed under the topics of trademarks and patents are:

- facts;
- chemical formulas;
- furniture design;
- mathematical algorithms;
- symbols.

However, it is important to note that certain elements within these categories may be still eligible for copyright protection.

Term of Copyright

It is crucial to understand the duration of copyright protection where you intend to create or use copyrighted material. The duration of copyright protection varies from country to country and is subject to specific time periods. In the U.S., copyright protection lasts for the life of the creator plus 70 years. After that, the work becomes part of the public domain, and anyone can use it without permission.

In other countries, the duration of copyright may differ. For instance, in Canada, copyright protection lasts for the creator's life plus 50 years, while in the UK, it lasts for the creator's life plus 70 years.

The Berne Convention, an international agreement, sets the minimum standards for copyright protection worldwide. However, each country is free to have its copyright laws, and some countries have longer or shorter time periods than the minimum requirement.

Copyright Registration of Documents

Should a design professional formally apply for copyright registration of instruments of service? It depends. Copyright protection automatically attaches to any technical document of authorship when it is written, prepared, compiled, drawn or drafted in a tangible medium of expression. Although no longer used, in the past this was referred to as *common-law copyright*.

Two additional and independent steps to insure protection are the attachment of a correct notice of copyright to the document and the formal registration of the document with the U.S. Copyright Office. The copyright notice is optional and is not legally required. While the registration process is relatively simple and inexpensive, with the ability to make application online, virtually no design practitioner undertakes formal registration. (Preprinted forms, with instructions, are still provided by the U.S. Copyright Office.) Instead, architects, engineers, and surveyors have long attached notes and statements to their drawings forewarning potential unauthorized users to beware of illegal activity. While these inserted statements are impressive and may serve a useful utility, they are not usually proper copyright notices because they do not contain the prescribed symbol ©, date, the word *Copyright*, or claimant's name. Two typical examples of such statements are reproduced below:



No part of this drawing may be reproduced by photocopying, recording or by any other means, or stored, processed or transmitted in or by any computer or other systems without the prior written permission of Joe Surveyor, PLS. Copies of this plan without an original signature and impression seal are not valid.

These drawings and specifications are the property of the architectural firm of Acme, Jones, Smith & Associates, P.A. They are not to be printed, photographed, copied, loaned or used without permission of an authorized representative of the firm.

In case of infringement, the owner of unregistered instruments of service may not file a legitimate court action for remedy. This notwithstanding, in instances where the copyright is not registered, and litigation becomes necessary, the owner of the instrument(s) of service is not prohibited from taking such action after the infringement, understanding that delays will result while the formal registration process is being undertaken.



If the design professional's situation warrants registration, each instrument of service will need to be carefully examined to determine if it falls into the graphical or textual category. Quoting directly from 17 USC §101, pictorial and graphical works include *two-dimensional and three dimensional works of fine, graphic, and applied art, photographs, prints and art reproductions, maps, globes, charts, diagrams, models, and technical drawings, including architectural plans.* To register pictorial and

graphic works with the U.S. Copyright Office, the registrant would use Form VA, *Visual Arts*. According to 17 USC §101 literary works are *works, other than audiovisual works, expressed in words, numbers, or other verbal or numerical symbols or indicia, regardless of the nature of the material objects, such as books, periodicals, manuscripts, phonorecords, film, tapes, disks, or cards, in which they are embodied.* Because there exists no specific right for the coverage of architectural and engineering specifications, procedures, and instructions, they must be legally concluded to be a form of literary work. Consequently, were it to become desirable to register such an instrument of service, the copyright claimant would use the government form TX for a non-dramatic literary work. All of the U.S. Copyright Office forms can be viewed at the website listed below.

Instruments of service that may fall across both categories, e.g. charts or schedules, should be handled based on the *means of expression* test. If the primary means of expression were lines and figures then the instrument would be registered as a graphic work. If the primary means of expression were through words and text, then the instrument would be registered as a literary work.

Additional information regarding copyrights and the method to register instruments of service can be obtained from:

Library of Congress
Copyright Office
101 Independence Avenue, S.E.
Washington, D.C. 20559-6000
Information line: (202) 707-3000
Website: <http://www.copyright.gov>

Retaining Ownership through Contract Language

The rise of digital cloud storage of documents has made it easier to manage and control ownership of instruments of service. That said, contract language is still crucial for establishing legal duties and rights, and it should reflect technological advancements.

Two important intellectual property concerns for architects, engineers, and surveyors are the associated professional risks and liabilities of managing ownership and control of hard-copy and digital documents. With the loss of ownership and control comes heightened risk and lia-

bility. In the absence of an agreement to the contrary, documents that are not even formally registered are the property of the architect, engineer, or surveyor. Ownership transfer (see below) to a client allows for the reuse of documents, with or without modifications, on any other project, including those for which their use may not be appropriate.

For the technical professional, the single best method to mitigate loss and retain control of intellectual property is not through formal copyright registration, but rather through correct and proper contract language. Contract language establishes legal duties and rights and design professionals are encouraged to have agreements reviewed by competent legal counsel familiar with the latest intellectual property laws and digital technologies.

Thirty or so years ago, the following passage in a professional service agreement (contract for professional services) was not uncommon and generally accepted by the architect, engineer, or surveyor:

All technical data, evaluations, reports, drawings, and other work products, all in their original form, resulting from any services performed under this Agreement, shall become the property of the Owner and shall be delivered to the Owner upon completion of such services, whether the Project for which they are made is executed or not. The Architect (Engineer, Surveyor) may retain copies thereof for internal use and files, but shall not permit external use of such material without prior written approval of the Owner.

This type of contractual language attempting to transfer ownership rights in project design information to the client or owner is no longer prevalent. This can be attributed in part to the use of standard forms of agreement provided by the American Institute of Architects (AIA) and the Engineers Joint Contract Document Council (EJCDC). Even though the final negotiated professional service agreement may make statements insisting on the receipt of original copies of instruments of service, it must be remembered that ownership and retention of copyright is inconsequential to possession of the actual documents. Surrender of original copies of instruments of service does not, in and of itself, transfer copyright ownership. One sure way to quickly relinquish rights is to blindly accept service agreement language that refers to documents such as plans and specifications as *works made for hire*. As previously explained, under copyright law works-made-for-hire arrangements transfer the rights of the originator of the documents.



In order to provide a sample of proper contract terminology, an excerpt from the consensus standard document AIA B141-1997 *Standard Form of Agreement Between Owner and Architect with Standard Form of Architect's Services* is reproduced below:

1.3.2.1 Drawings, specifications and other documents, including those in electronic form, prepared by the Architect and the Architect's consultants are Instruments of Service for use solely with respect to this Project. The Architect and the Architect's consultants shall be deemed the authors and owners of their respective Instruments of Service and shall retain all common law, statutory and other reserved rights, including copyrights.

The reader of this course should refer to the entire subsection 1.3.2 **INSTRUMENTS OF SERVICE** of the latest version of AIA B141 to gain a complete understanding of the importance and utility of standard forms of agreement. Summarized, the subsection goes on to authorize the client to retain copies of the documents for his or her normal activities. Similar language is found at Paragraph 6.04 in consensus standard document EDCDC 1910-1 *Standard Form of Agreement Between Owner and Engineer for Professional Services*. AIA Contract Documents and information about AIA programs and services are available from:

The American Institute of Architects
1735 New York Avenue, NW
Washington, D.C. 20006-5292
AIA Information Central: (800) 242-3837
<http://www.aia.org>

Independent Contractor and Works Made for Hire

Architects, engineers, and surveyors are professionals who are engaged as independent consultants to provide services that yield tangible deliverables, such as plans, specifications, reports, and other related documents. In the evolving digital landscape where advanced technologies have gained prominence, these professionals have the ability to also create digital versions or representations of their deliverables.

In most cases, it is generally understood that architects, engineers, or surveyors operate as independent contractors, and therefore, they typically retain ownership of the intellectual property rights associated with their deliverables.

When a work is created by an employee of an architectural, engineering, or surveying firm within the scope of their employment, the firm is generally recognized as the author and owner of the resulting instrument of service. This arrangement is commonly referred to as a *work made for hire*. In many cases, the ownership of intellectual property is explicitly defined in an *employee agreement*, which formalizes the relationship between the employee and the firm.

Originality and Authorship Issues

From 17 USC §101, a compilation *is a work formed by the collection and assembling of preexisting materials or data that are selected, coordinated, or arranged in such a way the resulting work as a whole constitutes an original work of authorship*. In a broad sense, this course could possibly be considered an example of a compilation. The majority of the course content is readily available factual information that has been compiled in a creative fashion. Then what about the use of CAD symbol libraries?

Does the incorporation of downloaded copyrighted architectural or engineering details and symbols to produce a technical drawing render that portion of the document uncopyrightable? The guarded answer is no. Examples of such sources of details and symbols are Arch-Elec™, PartSpec®, PlantSpec®, and CADBlocks®, in addition to any number of major equipment man-

ufactures who provide free access to CAD equipment symbol libraries, most via the Internet. In copyright law vernacular, this is an example of an authorized use of copyrighted material to produce a compilation of original material. In other words, you have been granted the right to form a technical drawing by selecting, collecting, and assembling preexisting graphical entities in a unique way that in turn forms an original work. In essence, the copyright owner has given the user a non-exclusive unlimited license to utilize the symbol software. The phraseology used at the Web site CADRegister.com regarding this matter is:

You may make unlimited copies of the CAD drawings for the exclusive purpose of incorporation into your own drawings and designs (the "User Drawings"). You may treat the User Drawings as your own creations as long as the CAD drawings are not the primary source of value of the User Drawings.

Moreover, let us not forget your obligations as a licensed professional. Your state's licensing laws require that you exercise individual professional expertise in your work.

The Difference in a Compilation and a Derivative Work

According to copyright law, a derivative work involves preexisting material that has been creatively modified to produce an original work of authorship. For instance, a jazz musical arrangement of a Broadway American song-book tune would be considered a derivative work. However, if a design professional decides to reuse another professional's plans, caution should be taken as this may result in potential infringement if the copyright holder does not explicitly transfer the right to the borrower.

Let us consider an example where registering a compilation or derivative work could invalidate an otherwise copyrightable instrument of service. Suppose an architectural firm is commissioned to provide a total building design and retains the services of an engineering firm to efficiently accomplish the mechanical, electrical, and plumbing (M/E/P) design. The architect supplies the engineer with *shell* or envelope architectural plans in an electronic format to which the engineer can incorporate various M/E/P aspects. The architect then registers the entire assemblage of design documents for *blanket* protection, including the engineer's works. If the architect fails to list the M/E/P components as derivative work on the registration form, it implies that the entire compiled instrument is original, which could lead to copyright invalidation if ownership rights are contested by the engineer at a later date.

Right of Electronic Distribution

Design professionals and those in the surveying profession hold the authority to regulate the sharing of their work via telecommunication, which encompasses making their work available on the internet for public viewing or download. Such rights legally belong only to the holder of the copyright, who also holds the power to permit others to do the same. Should any party, for instance a client or a contractor, wish to disseminate an architectural or engineering work, or a survey digitally, they must first secure permission from the copyright owner. Therefore, entities like virtual or electronic plans rooms can function only after obtaining the necessary clearance from the copyright holder for their digital resources. Should this permission be not acquired, it

would result in a copyright infringement. Thus, when a design specialist or a surveyor is the copyright holder, they govern the digital utilization.

Intellectual Property Issues Unique to the Land Surveyor

Regarding the challenge of protecting and controlling instruments of service in relation to interpretative copyright law, surveying practice poses the greatest complexity. Unlike the work products of architects and engineers, surveyors' work is more frequently exposed to the broad general public.



The surveying profession encompasses various areas of expertise and practice. Some familiar fields include cadastre, topography, cartography, construction layout, hydrography, mineral surveying, and photogrammetry. Intellectual property forms such as charts, maps, photographs, plot plans, and relief models can potentially receive protection under copyright law. However, their eligibility for protection depends on factors like originality and creativity. Cadastral surveyors, more commonly known as land surveyors, fulfill their duties to establish the value,

extent, and ownership of properties for conveyance and taxation purposes. To this end, they face a unique challenge regarding the legal act of recordation, or placement in the public record.

Unrecorded survey plats can introduce legal uncertainty in land conveyance, even if deeds refer to them. As a result, most states mandate the recording of all plats to ensure clarity and accessibility. However, recording plats relinquish the surveyor's control over their instrument of service. It is important to note that recording a plan, plat, or any other document in a government office, such as the register of deeds, does not transfer copyright ownership. Although public record and public domain are sometimes confused, they have distinct meanings.

Troublesome areas of interpretation regarding the surveyor's instruments of service are frequently their originality and creativity, both aspects being important tests of copyrightability. While most instruments of service are clearly copyrightable, retracement surveys and topographic maps fall into question. In the case of the retracement survey, the surveyor is merely recovering and verifying previously established information, hence the possible failure of the originality test. In the case of the topographic map, it could be concluded that the contour lines presented on these particular maps, and thus the maps themselves, are merely a compilation of facts. The reader of this course will recall that facts are not copyrightable because they lack creativity. The interpretations of these specific areas are left by this author to others.

Mitigating Digital and Online Copyright Infringement

To ensure the protection of copyrighted materials, the responsibility falls on the copyright holder, especially in situations like the one just mentioned above. While there are copyright

laws in place, they may not always be enforced unless the infringement is huge or results in significant financial harm. In most cases, violations of copyright laws are not overtly visible or do not result in significant financial damage, which makes pursuing legal action a less feasible option. Nonetheless, there are numerous technological measures that can be implemented to minimize copyright violations and make it more pragmatic to safeguard intellectual property:

- Utilizing software like Nitro PDF Pro[®] can produce a graphic file that is viewable and printable, but not directly applicable for computer aided design or drafting purposes;
- An architectural or engineering drawing, survey map, or plot plan, can be secured, *i.e.*, its various layers can be combined into a single layer, diminishing the practicality of a copy of the document;
- Data or content available for download from a professional's website, file transfer protocol (FTP), or any other public site, can be secured with a password;
- Including a message in an e-mail, any detachable storage device, and within the file itself, notifying the user that the content is copyright protected and unauthorized copying is not permitted without prior consent.

While this list is not comprehensive, it does bring attention to a few fundamental measures. These steps, whether taken alone or together, may not entirely prevent copyright violations. However, raising awareness about these violations can be incredibly beneficial for designers and surveyors in protecting their work over time.

Cybersecurity and the Protection of Sensitive Data

Data theft poses a significant cybersecurity risk due to its extensive impact. While normally unlikely, cybercriminals targeting design or surveying firms may aim to steal or compromise sensitive data, encompassing intellectual property files, software code, and passwords, among others. The misconception held by many regarding data theft primarily revolves around data exfiltration, which involves the unauthorized transfer of information from a computer or device. However, data exfiltration represents just one form of data theft. To truly understand data theft, it is crucial to expand our perception of what it means to steal data from an organization.



Data can be removed, copied, disseminated, destroyed, or altered in ways that may not be immediately noticeable to the company. To prevent data theft, design firms, and surveying organizations should first identify all critical assets, ensuring nothing is overlooked. For example, science, technical, and engineering organizations need to list their engineering, design, and intellectual property files; usernames, passwords, and Wi-Fi credentials. This initial task typically falls on the registered principals of the firm, who collectively possess a comprehensive overview of the operation. Subsequently, individual departments can delve deeper into how data theft would impact the organization when determining the consequences of stolen or exposed information.

Furthermore, implementing the following measures can help mitigate data theft risks:

- Control data access: Grant employees the minimum access necessary to fulfill their job responsibilities. For instance, employees in the human resources department do not require access to technical or engineering files;
- Enforce strong passwords and regular updates: Require employees to create robust passwords and periodically change them;
- Monitor intra-network activity: Regularly scan the firm's network for malicious behavior, tracking data movement within the network. Effective controls will ensure that data loss or unauthorized sharing does not go unnoticed;
- Encourage employees to keep business activities and personal information private when using social media;
- Encrypt sensitive information: Use encryption for all proprietary technical data and design materials transmitted between different branches of the firm.

Rights Management Information and Digital Locks

The United States copyright law has been revised to account for digital locks, which include password protection, anti-copying technology, and rights management information like watermarks and metadata. If an individual bypasses or removes a digital lock that protects access to a work, they are liable for copyright infringement. The same applies to removing rights management information to enable copyright infringement. There are a few exceptions to these rules, such as removing digital locks for legal purposes. It is important to note that design and computer-aided drawing software, like MicroStation[®], is protected by copyright law, and thus, bypassing or removing digital locks that regulate access to it is prohibited.



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Additional Resources

The NOLO Press, which offers self-help information on a variety of legal subjects, has information on copyright law. It publishes do-it-yourself legal books and software focused on areas such as family law, immigration, employment, tenant and landlord issues, wills, trusts, and intellectual property. NOLO's publications and software encourage consumers and small business owners to handle their own legal matters when possible but recommend professional legal help for disputable or difficult matters. For detailed guidance on creating patent drawings, the book titled *How To Make Patent Drawings Yourself* published by NOLO Press serves as a valuable resource. Look for the intellectual property topic under the Legal Encyclopedia. Point your browser to <http://www.nolo.com>.

The United States Copyright Office website at <http://www.copyright.gov> provides regulations, guidelines, and links to other useful copyright websites. The website also offers the facility to fill out application forms in PDF format online and print them.

An excellent legal search engine is available at <http://www.findlaw.com>. Navigate around the website until you locate subject matter dealing with copyrights, patents, and trade secrets.

The law firm of Jeffrey R. Kuester can provide you with copyright information sources via their website at <http://www.kuesterlaw.com>.

Summary

Intellectual property covers a broad range of subjects and topics. Technical graphics, specifications, surveys, reports, and the like, are the forms of intellectual property associated with architects, engineers, and surveyors. These forms of expression, fixed in a tangible medium, are known as instruments of service. By what use to be termed copyright common law, ownership of these instruments of service is established at the time of their creation.

The technical professional must exercise the control of ownership of instruments of service in order to limit risk and liability. Simultaneously, the (professional) must also be cognizant of the ownership and rights of others with whom they may be professionally associated. The land surveyor is particularly vulnerable to loss of control of instruments of service because of existing legal precedent with regards to public records. While the surveyor may retain copyright ownership of certain instruments, this is little consolation when current public law encourages freedom of information and unlimited access and use of instruments of service placed in archives by the necessity of legal compliance.

While copyright registration is a legally forceful and relatively inexpensive means of protection, it is rarely pursued by the technical practitioner probably because is assumed somewhat cumbersome and time restrictive. The design professional can alternatively assume a proactive or passive approach to registration because copyright registration can be accomplished ex post facto. Appropriate service agreement (contract) language is of utmost importance in the retention of intellectual property ownership.