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Open Source Hardware Guidelines

NO. 1: IP RIGHTS AND OSH

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This Guideline has been prepared by the Bucerius Law School Center for transnational IP, Media and Technology Law and Policy (Hamburg) as part of the project “Fab City Hamburg”. Its aim is to provide basic guidance for technical personnel relating to the use of intellectual property rights (IP rights) in the context of open source hardware (OSH) projects. This research is funded by dtec.bw – Digitalization and Technology Research Center of the Bundeswehr which we gratefully acknowledge. dtec.bw is funded by the European Union – NextGenerationEU.

Disclaimer: The content of this Guideline is academic in nature and is not intended to constitute or substitute for legal advice. The considerations discussed are subject to the specifics of each individual case, and legal assessments may vary depending on the laws of different jurisdictions.

Content

A. What is the purpose of this Guideline? 1
B. General questions regarding IP law 2
C. General questions regarding OSH and IP 6
D. IP rights 11
I. Overview 11
II. Individual IP rights 13
1. Patents 13
2. Utility Models 17
3. Copyrights 19
4. Design Rights 24
5. Trademarks 28
6. Trade Secrets 31

A. What is the purpose of this Guideline?

This Guideline provides a foundational overview for developers on navigating Intellectual Property Rights (IP rights) when working on an Open Source Hardware (OSH) project. It explains how developers can establish a "freedom to operate" by avoiding infringements on existing IP rights while securing appropriate legal protection for their own projects. By ensuring this freedom, developers can confidently share their OSH projects without fear of interference from third parties. Additionally, the Guideline highlights how IP rights can be strategically leveraged to safeguard and maintain the openness of OSH projects, thereby enhancing a developer's freedom to operate. *Section D*. addresses key questions that may arise in connection with various types of IP rights.

The Guideline further aims to familiarize readers with the existing legal framework and clarify the distinctions between different IP rights. A basic understanding of these legal principles, risks, and opportunities will benefit both developers and users engaged in OSH-related projects.

B. General questions regarding IP law

What protection do IP rights offer?

IP rights generally provide exclusive control over the protected subject matter. This enables the rightsholder to prevent others from manufacturing, using, distributing, copying, selling, or offering the protected material for sale (the *exclusionary dimension [In German: Negative Dimension]*). Conversely, IP rights also allow the owner to grant permission for others to use the protected subject matter, which, in the context of Open Source Software (OSS) and Open Source Hardware (OSH), facilitates maintaining the openness of a project (the *open dimension [In German: Positive Dimension]*). This open dimension is essential for fostering the "IP left effect" (refer to *Guideline No. 2 on Licensing* for further details). In addition to granting exploitation rights, certain IP rights, such as copyrights, may also confer moral rights (see *Section D*.).

The primary types of IP rights and their corresponding protective measures relevant to OSH projects include:

Patents: Protect functional inventions, granting the exclusive right to create, sell, or use the invention. Patents are critical for safeguarding hardware components in OSH projects.

Utility Models: Similar to patents but with lower requirements and a shorter duration. Utility models protect technical inventions and are faster and less expensive to obtain than patents.

Copyright: Automatically protects creative works such as software code, documentation, or design features upon creation. Copyright safeguards specific expressions (e.g., code) but does not protect the underlying concepts or ideas.

Design Rights: Protect the aesthetic or ornamental aspects of products. They confer exclusive rights to use a design and prohibit unauthorized copying, usually through registration.

Trademarks: Protect distinctive signs, such as logos or brand names, which identify goods or services. Trademarks help maintain the reputation and quality of OSH projects by safeguarding their branding.

Trade Secrets: Protect commercially valuable and confidential information, such as proprietary processes or formulas. Trade secrets do not require registration but must be actively kept confidential.

Each of these IP rights can play a vital role in protecting your OSH project from unauthorized use, copying, or exploitation, while simultaneously ensuring openness and preserving freedom to operate within the legal framework. However, these same IP rights may also belong to third parties, highlighting the dual nature of their application. They form the foundation for establishing freedom to operate by balancing protection and accessibility.

This Guideline provides detailed information on the requirements for obtaining protection, the scope of individual IP rights, and the contexts in which they may apply. For further information, please refer to *Section D*.

What is the territorial scope of IP protection?

IP rights are generally restricted in their territorial scope, following the **principle of territoriality**. For example, a German patent is typically only valid within Germany and provides protection exclusively against infringements occurring within German territory. However, certain exceptions to this principle may apply. For more details on these exceptions, please refer to *Section D*.

How many IP Rights can apply at the same time?

It is important to note that a single product or project can be simultaneously protected by multiple IP rights. Each IP right has its own distinct scope, duration of protection, and legal consequences in cases of infringement. For example, a specific hardware design might be protected under copyright and/or design rights, while the logo displayed on it could be safeguarded as a trademark. Additionally, the technical functionality of the hardware might be eligible for patent protection.

What is the duration of protection?

The duration of IP protection hinges on two key questions: **when does protection begin, and when does it end?** Understanding the events or actions that trigger or terminate protection is essential.

Some IP rights arise automatically, without requiring application or registration. For instance, **copyright** protection is established at the moment a work is created. Other IP rights, such as **patents**, require registration and provide no protection until the registration process is

complete. In certain cases, however, the date of creation or filing for registration may take precedence over the actual registration date, granting priority in disputes.

The duration of protection varies across different IP rights:

> **Fixed Durations:** Some IP rights have an absolute duration starting from the date of protection. For example, **patents** generally last for 20 years.
>
> **Flexible Durations:** Other IP rights are tied to specific circumstances. For example, **copyright** protection extends for the lifetime of the author plus an additional 70 years in most jurisdictions.

It is also important to note that the normal duration of protection can be interrupted or terminated by specific acts or omissions. For **trademarks**, the rightsholder must prove usage within a specified period, typically five years, to maintain protection. For registered IP rights, such as **patents** or **design rights**, maintenance fees must be paid on time to avoid forfeiture of protection. To ensure continuous protection, it is critical to monitor and fulfill all required actions associated with each IP right. Neglecting such actions can lead to the premature loss of protection, which may have serious implications in disputes with third parties. Rights that were assumed to exist might no longer be enforceable due to the rightsholder's failure to meet these obligations.

What legal consequences does infringement of IP rights have?

Understanding the legal consequences of infringing IP rights is critical for ensuring freedom to operate. Developers must be aware both of how to enforce their own rights and of the potential repercussions of infringing on a third party's rights. Despite thorough preparation and research, inadvertent infringement or claims of infringement by a third party may still occur.

Possible legal consequences of infringement include:

> **Cease and Desist Orders:** Courts may require the infringer to immediately stop using, manufacturing, or distributing the infringing product or project.
>
> **Claims for Damages:** The rightsholder may seek compensation for losses incurred, which could include legal costs, lost profits, or other financial harm caused by the infringement.

Product Recalls or Destruction: Courts may order the recall or destruction of infringing goods and associated materials.

The calculation of damages varies by jurisdiction but typically relies on three key approaches (e. g., sec. 97 para. 2 UrhG):

1. **Hypothetical License Fee:** Estimating the amount the infringer would have paid for a legitimate license to use the protected material.

2. **Actual Damages:** Assessing the financial losses suffered directly by the rightsholder.

3. **Infringer's Profits:** Calculating and reclaiming the profits gained by the infringer through the unauthorized use of the protected material.

Being aware of these potential outcomes underscores the importance of diligent research and compliance with IP laws to minimize risks and ensure lawful development and distribution of products or projects.

C. General questions regarding OSH and IP

Why do I, as an OSH developer, need to be aware of IP rights?

As an OSH developer, understanding IP rights is critical for ensuring **freedom to operate** and avoiding potential legal conflicts. Awareness of IP rights helps you:

> **Avoid Infringement:** By understanding existing patents, copyrights, trademarks, and other IP protections, you can steer clear of infringing third party rights. This minimizes the risk of legal disputes that could delay or jeopardize your project.
>
> **Develop with Confidence:** Knowledge of IP rights enables you to share your work without fear of interference from third parties, ensuring you maintain control over your project's direction.

Additionally, IP rights are crucial for **safeguarding the openness** of your OSH project:

> **Protect Your Innovations:** IP rights allow you to secure your work against unauthorized copying or exploitation.
>
> **Ensure Open Source Integrity:** By leveraging IP strategically, you can prevent misuse and enforce open source licensing conditions, ensuring that your project remains accessible and open to the community.

Being informed about IP rights empowers you to contribute to the OSH ecosystem while preserving the integrity, openness, and legal protection of your work.

What do I need to know about private use of OSH?

If you intend to use OSH for purely private purposes, such as for yourself, your family, or close friends, you may not need to observe IP-related restrictions. Most national laws provide exceptions for private use under certain conditions.

Private use is typically distinguished from commercial use and is generally limited to your personal sphere, such as family and close friends. Commercial use, by contrast, involves utilizing IP-protected materials as part of a for-profit enterprise. Generally, private use may be permissible if you do not intend to earn money from the activity and if the usage remains within a private context, avoiding broader distribution or public sharing.

Even when not used commercially, national laws may impose restrictions on private use, such as limits on the scope or extent of utilization. For instance, the number of copies you can make of a protected work may be restricted.

It is crucial to differentiate between private use and non-commercial use. **Private use** is strictly personal and confined to a limited circle (e.g., family or close friends). **Non-commercial use**, while not profit-driven, often involves a broader audience or distribution and may still fall outside the scope of private use exceptions. For example, creating a 3D printer for yourself would likely qualify as private use. However, offering to make the same 3D printer for anyone who requests it, whether at cost or without charge, might be considered non-commercial but not private, potentially infringing IP rights.

To summarize, while private use of OSH may often be exempt from IP restrictions, the specific conditions depend on national laws. Developers should ensure their use aligns with these laws to avoid unintended violations.

What do I need to know when publishing OSH?

If your primary objective is to publish OSH without concern for its subsequent use, registering IP rights may not be necessary. In such cases, the following points should be kept in mind.

Defensive Publishing: This approach involves making the functional aspects of your OSH project publicly available, effectively placing them in the public domain. By doing so, you reduce the likelihood of others appropriating your work. However, the scope of Defensive Publishing is limited to the current functional state of the OSH at the time of publication. Future modifications or developments will not be covered. To enable others to use your work, technical documentation must typically be released under a free or open license. For more information, refer to *Section D. 2. 1. – Patents*.

Third Party IP Rights: It is essential to respect third party IP rights when publishing information, designs, or technical details. Unauthorized publication of protected materials may result in legal repercussions. Even if you choose not to enforce IP rights for your work, you must remain vigilant about potential conflicts with existing third party rights.

What do I need to know when doing business with OSH?

If OSH forms a core part of your business assets, it is essential to establish a clear IP strategy. This strategy should address:

1. **Registration and Use of Rights:** Determine which aspects of the project will be protected by IP rights, such as patents, trademarks, or design rights. Decide what portions of the project will remain open source and select appropriate licenses. Plan how to manage third-party IP rights effectively.

2. **Lifecycle Planning:** Your strategy should cover actions taken before, during, and after the project's development.

For instance, initially developing the project under the protection of trade secrets can safeguard early innovations. Later, applying for patents can provide greater control over the dissemination and use of OSH after it is made public. Trademark protection for goods or services associated with the OSH can help establish and protect your brand. For further details on specific IP rights, refer to *Section D*.

Whether managing third-party IP or defining the terms under which others can use your work, license agreements are crucial. Refer to *Guideline No. 2 on Licensing* for detailed recommendations.

OSH business models often operate in commercial or professional domains. In such cases, exceptions to liability typically available for non-commercial, altruistic activities may not apply. For additional information, see the *Guideline No. 3 on Liability*.

Lastly, one important aspect should be highlighted. Building a complex product that in part contains OSH and a part or parts that you want to keep proprietary could be very difficult from a legal point of view. In the end you should be prepared for the possibility that the whole project becomes OSH and you have to adhere to the use or licensing conditions of the OSH you integrated into the project. Whether or not a project containing OSH and other parts can be considered OSH in total, may depend on how much of it was OSH in the first place in terms of quantity of OSH components as well as how the components work together.

Lastly, one important aspect should be highlighted. Integrating OSH with proprietary components in a single product can present significant legal challenges. For example, there is the risk of complete OSH classification. If a product includes OSH and proprietary parts, the entire project may be classified as OSH, requiring compliance with associated licensing terms. This determination often depends on the quantity of OSH components relative to proprietary ones and the functional interplay between OSH and proprietary elements.

It is crucial to carefully plan your IP strategy and licensing approach to mitigate risks, ensure compliance, and align with your business goals. By doing so, you can successfully leverage OSH within your business while protecting your proprietary interests.

How can I use IP rights to keep my project open?

As IP rights confer exclusive control to their owners, developers and proprietors of OSH can regulate who may use their OSH-related IP. This ability allows them to prohibit third parties from using their IP (*exclusionary dimension*), which serves to safeguard the openness of the project against entities that may seek to restrict or commercialize it in a manner that undermines its open nature. Simultaneously, the IP owner can choose to publicly share their OSH, thereby embracing the *open dimension* of IP rights. This decision is fundamental for ensuring and sustaining the openness of the project. Despite holding exclusive rights, the owner can actively choose to allow others to use the IP, refraining from legal action in favor of promoting collaborative development. The terms under which the OSH can be used and shared are typically defined through licenses, allowing the owner to maintain control over how the project is utilized. For further guidance, please refer to *Section D* and the *Guideline No. 2 on Licensing*.

How do I avoid infringing third party´s IP rights?

A crucial aspect to consider is the impact of third party rights on your project. Freedom to operate encompasses not only the opportunities provided by your own IP rights but also the limitations imposed by the rights of others. Therefore, it is essential to proactively prevent potential infringements and avoid the associated legal consequences. To achieve this, comprehensive IP research must be conducted prior to publishing your OSH project, and this research should be maintained throughout the project's lifecycle. Key tools for this process include internet searches, market research, and IP databases. Particular attention should be given to the territorial scope of IP rights and the fact that some rights may exist even without formal registration.

It is also important to consider licensing options. This does not refer to issuing licenses for your own IP to third parties in order to open up the project (as mentioned previously), but rather to licensing third party protected materials that are necessary for your OSH project. Such licensing ensures that your work remains free from infringement and allows for the lawful use of external IP. For more detailed information, please refer to the section on individual IP rights in *Section D*.

What is the advantage of Fab Labs from an IP perspective?

Fab Labs not only provide a physical space for collaboration and idea exchange but can also act as a central hub for the IP rights of various OSH developers and owners. These spaces allow for the collection, comparison, and sharing of existing IP rights and legal experiences and skills. By doing so, Fab Labs create a valuable resource where developers can gain a comprehensive understanding of freely accessible IP, enabling them to build upon these open and shared resources without concern for potential third party infringements. Moreover, collaboration within Fab Labs facilitates the collective defense against unauthorized use, ensuring that the appropriate level of openness is maintained. Distributing the responsibility of ensuring that third party rights are not violated among multiple individuals can also improve efficiency. This division of labor ultimately results in more effective workflows and contributes to a broader sense of freedom to operate within the legal framework.

D. IP rights

I. Overview

The table below provides an overview of the relevant IP rights, which will be discussed in greater detail in the following *Section*. Please note that most of the information presented pertains solely to German law.

IP Right	**Registration needed?**	**Duration**	**Requirements**	**Pages**
Patent	Yes	20 years	1. Patentable Subject Matter 2. Novelty 3. Non-obviousness or inventive step 4. Usefulness or industrial application	13–16
Utility Model	Yes	10 years	Comparable to patents, but not examined during the registration process	17–18
Copyright	No	Creator´s lifetime and an additional 70 years	1. The work must be the result of human creation 2. The work must be in a form that is perceivable to humans 3. The work must be influenced by the creator's spirit 4. The work must meet a minimum standard of creative quality	19–23
Design Right	Yes Exception: the EU unregistered design right (enforceable in Germany)	Up to 25 years from the date of filing Exception: 3 years for unregistered EU design right (enforceable in Germany)	1. Novelty 2. Originality or individual character	24–27
Trademark	Yes	Registration is renewable for indefinite amount of time, as long as mark is in use	1. Distinguishable sign 2. No violation of absolute grounds for refusal	28–30

Trade Secret	No	Lasts for an indefinite amount of time	1. Information must be secret in the sense that it is not commonly known 2. Information must have commercial value because it is secret 3. Information must be subject to reasonable steps to keep it secret	31–32

II. Individual IP rights

This *Section* offers a deeper exploration of the individual IP rights. Some of the questions already introduced will be revisited, further discussed, and supplemented with additional considerations specific to each type of IP right.

1. Patents

What is a patent and how is it obtained?

Patents are exclusive IP rights that protect functional inventions, distinguishing them from aesthetic creations, which are generally not covered by patents. Although requirements may vary by jurisdiction, the general criteria for patentability include:

(1) Constituting **patentable subject matter**,

(2) being **new**,

(3) being **non-obvious** or displaying an **inventive step** and

(4) being **useful** or capable of **industrial application**.

Patent protection can only be obtained through registration with the competent patent office. Patents are territorial rights, meaning their effect is limited to the territory in which they are registered. Consequently, patents are granted as national rights and must be enforced separately in each country. An exception to this is the European Unitary Patent, which allows for enforcement across multiple European countries through a single legal proceeding. If granted, a patent is valid for a term of 20 years.

Patents grant the exclusive right to make, offer for sale, sell, license, use, import, or process the patented invention for specified purposes (see, for example, Sec. 9 PatG). While the grant of a patent allows the inventor to monetize the invention, it also requires the inventor to disclose the details of the invention to the public as part of the patent application process. This disclosure benefits the public by enabling third parties to "invent around" the patented solution and stay informed of the latest developments in their field.

Why do I need to be aware of patents?

Patents can be a double-edged sword for OSH projects. On the one hand, they provide the patent holder with the ability to develop and distribute their OSH project with exclusive rights. On the other hand, OSH projects that are subject to patent claims by third parties may face potential patent infringement liabilities.

Can I use patents to keep my project open?

In an OSH project, patents are typically used to protect the hardware. They enable OSH projects to license their hardware under a "patent left" license, ensuring that the project remains open for others to use, distribute, further develop, or even tinker with. In this way, patents can play a crucial role in establishing the open-source nature of a project, allowing creators to retain control over their inventions while promoting collaboration and innovation within the community.

In contrast, the patentability of software is a more complex issue and largely depends on the jurisdiction in which patent protection is sought. Some countries deny patent protection for software as such, citing the lack of technical character. However, other jurisdictions may allow patenting the underlying algorithm, i.e., the function of the software code, if it demonstrates technical character. As a general rule, a software-related invention with integrated hardware components (e.g., a hardware product that includes firmware) is more likely to be patentable. Even if patent protection is denied, software is typically protected by copyright. Therefore, copyright can provide a form of protection for the software portion of an OSH project. However, it is important to note that copyright protection generally covers only the literal code of the software and not the underlying concept or functionality. This limitation presents a significant drawback when using copyright as the primary means of protection for software.

Another fundamental principle of patent law is that the person who first publishes their work holds a priority right, even if they have not yet filed a formal patent application. This means that a later patent application by another individual cannot invalidate prior art and may be precluded by it. This principle can be advantageous for OSH projects if the original creator holds priority, but it can also work against them if a third party has prior art status.

How do I avoid infringing on third party's patents?

To avoid infringing on third party patents, it is crucial to ensure that no actions, such as making, selling, using, or importing a product, are covered by the claims of an existing patent without the owner's permission. Infringement can also occur indirectly if you supply another person with the means to infringe a patent. Therefore, careful oversight is required at every stage of

an OSH project, and ongoing vigilance is essential. Since patents must be registered, monitoring them is relatively straightforward. However, given that patents are territorial, OSH projects operating across different countries must be aware of patents registered in each relevant jurisdiction. A thorough and continuous search for potential patent conflicts is crucial. If in doubt, it is advisable to reach out to patent holders to discuss potential issues. If a third party's patent is essential to an OSH project, negotiating a license agreement is a prudent step to avoid infringement.

What is defensive publishing?

Defensive publishing is a strategy aimed at preempting third party patenting efforts within a specific technological domain. By publicly disclosing an invention, you effectively place it into the public domain. Once published, the invention becomes "prior art," which prevents others from patenting similar ideas, as it destroys the novelty required for patentability in the field. This strategy offers two key benefits: it enables OSH developers to maintain freedom to operate within their technological space, and it ensures that the public benefits from a patent-free environment.

For a defensive publication to be effective, it should cover as broad a scope as possible, ensuring that third parties cannot patent variations or alternatives. Additionally, the publication method must be sufficiently widespread, and the content must be clear and comprehensible, so that patent examiners can easily access and understand it.

In this context, two other concepts are worth noting: First, **patent pledges** are unilateral commitments made by a patentee to limit or forgo enforcement of their patent rights. Second, **Open Patent Agreements (OPAs)** are another defensive measure, typically involving royalty-free licenses, which help protect against patent disputes.

Where can I find further information?

If you require more information or if you are considering obtaining a patent for your project, a good starting point is usually the website of your local IP office. For example, the **European Patent Office (EPO)** and the **German Patent and Trademark Office (DPMA)** offer comprehensive resources about the patent application process. Both offices also provide basic search tools to help you identify already registered and potentially similar patents.

For the **EPO**, you can visit the following links: https://www.epo.org/applying.html and https://worldwide.espacenet.com/

For the **German DPMA**, you can access the following: https://www.dpma.de/english/patents/examination_and_grant/index.html and https://register.dpma.de/DPMAregister/pat/basis

2. Utility Models

What is a utility model and how is it obtained?

Utility models are similar to patents in that they protect technical inventions through an exclusive right, but they are essentially a simplified version of patents. They prevent third parties from commercially exploiting the invention. The requirements for utility models are generally less stringent than those for patents, which means their scope of protection is also narrower. While utility models can only be described in broad terms due to the lack of an international framework, they generally need to meet the same basic eligibility criteria as patents.

Like patents, utility models must be registered in order to provide legal protection against infringement. However, in Germany, the registration process for utility models does not involve an examination of whether the requirements for patentability (such as novelty and inventive step) are met. As a result, there is a greater risk that utility models might be challenged or invalidated, but the registration process is faster and less expensive than that for patents. Utility models are territorial, meaning their protection is limited to the country in which they are registered (for example, a German utility model only offers protection within Germany). In addition, utility models typically have a shorter lifespan compared to patents (for example, in Germany, they are limited to a maximum of 10 years).

Utility models provide the exclusive right to use, transfer, or license the invention, effectively allowing the owner to monopolize certain inventions. However, this comes with the requirement to disclose the details of the utility model, which enables others in the field to find alternative solutions and stay informed about the latest developments.

Why do I need to be aware of utility models?

Utility models can offer similar advantages to OSH projects as patents, providing exclusive rights which protect technical inventions. However, compared to patent applications, the requirements for utility models are typically less stringent, and the registration process is generally faster and more cost-effective. On the downside, utility models do not offer the same level of protection as patents and are typically limited in terms of their lifespan.

It is important to note that utility models are not necessarily an alternative to patent protection; they can serve as a complementary option. Since patent applications can take a considerable amount of time to be granted, it may be beneficial to file for a utility model based on the original patent application. This allows the inventor to have an enforceable right during the period

between the initial patent application and the final patent registration (referred to as an "abgezweigtes Gebrauchsmuster," or a "diverted utility model"). This strategy ensures some protection while waiting for the full patent process to be completed.

Can I use utility models to keep my project open?

A utility model can be used to ensure openness in a similar way as a patent. By obtaining the exclusive rights to a utility model, you can decide who is allowed to use your work (*open dimension*) or prohibit others from the use (*exclusionary dimension*). While utility models do not offer the same level of protection as patents, particularly in terms of excluding computer programs or processes, and their duration is generally shorter, the exclusionary power of a utility model still enables you to control its use. This allows you to keep your project accessible and open to others, while maintaining a degree of control over its commercialization or further development.

How do I avoid infringing on third party's utility models?

Similar to patents, it is essential to conduct thorough research before and during the OSH project to determine whether a third party already holds exclusive rights to certain IP. In cases where your project cannot avoid utilizing protected IP, license agreements provide a valuable solution. These agreements allow you to legally use third party IP while respecting their rights, ensuring that you can proceed with your project without infringing on existing patents or utility models.

Where can I find further information?

If you want more information or are considering obtaining a utility model for your project, a good starting point is the website of your local IP office. For example, the **German Patent and Trademark Office (DPMA)** offers an overview of the application process and provides a basic search tool to help you identify registered and potentially comparable utility models. You can access this information on the following links: https://www.dpma.de/english/utility_models/application/index.html and https://register.dpma.de/DPMAregister/pat/basis.

3. Copyrights

What is a copyright and how is it obtained?

Copyright protects creative works from reproduction or unauthorized publication, among other uses. However, copyright only applies to creative elements and does not extend to purely technical features, which may instead be eligible for patent or utility model protection. A foundational principle of copyright is that it protects the original, tangible expression of an idea but not the abstract idea itself, such as procedures, methods of operation, or mathematical concepts (see Art. 9 para. 2 of the Berne Convention). For instance, the painted image on a canvas would be protected, but the mere idea or the concept of creating such an image would not. Using German Copyright Law as an example, a work must qualify as a personal intellectual creation to be eligible for copyright protection. Four key criteria typically apply:

> **(1) Human Creation**: The work must be created by a human; machine-generated works do not qualify.
>
> **(2) Perceptibility**: The work must exist in a form that can be perceived by humans. Concepts or ideas are not protected.
>
> **(3) Personal Influence**: The work must reflect the creator's intellectual effort, as purely mechanical or thoughtless tasks do not qualify.
>
> **(4) Creative Quality**: A minimal level of creativity is required, although this threshold is relatively low. For example, filling out a government form would not qualify as copyrightable work, as it lacks personal creative input.

Overall, the scope of copyrightable works is broad, making copyright a "catch-all" IP right for many types of creative outputs.

Unlike other IP rights, copyright does not require registration or formal application. Protection is automatic upon the creation of the qualifying work (see Art. 5 para. 2 of the Berne Convention). The duration of copyright typically lasts for the creator's lifetime plus a minimum of 50 years after their death (Art. 7 para. 1 of the Berne Convention). In Germany, the protection period is extended to 70 years posthumously.

Copyright provides a dual structure of rights: **economic rights** and **moral rights**, each addressing distinct aspects of a creator's relationship to their work.

Economic rights govern the commercial exploitation of copyrighted works, offering protection from unauthorized reproduction, publication, or distribution without the creator's consent. These rights also allow the copyright owner to monetize their work, for example, through licensing agreements (see Art. 9 para. 1 [4] of the Berne Convention). Common examples include:

Reproduction Rights: Controlling the copying of the work.

Distribution Rights: Managing the sale or dissemination of the work.

Performance and Display Rights: Allowing or prohibiting public performance or exhibition.

Adaptation Rights: Governing derivative works based on the original (e.g., film adaptations of a book).

Moral rights protect the personal and reputational relationship between the creator and their work, ensuring respect for the creator’s connection to their creation (see Art. 6 para. 1 [4] of the Berne Convention). Important moral rights include:

Right of Attribution: The creator can claim authorship and prevent others from taking credit for the work.

Right of Integrity: Protects against distortions, mutilations, or other modifications of the work that could harm the creator’s reputation.

Disclosure Rights: In some jurisdictions, the creator has the right to decide when or if a work should be made public.

While the examples above highlight common rights, the scope of copyright protection can vary widely depending on the jurisdiction. Some legal systems offer additional claims, such as the right to withdraw a work from circulation.

Why do I need to be aware of copyright?

Copyright is a straightforward and durable option for protecting eligible works. Since it arises automatically without the need for registration and provides protection for an extended period

(often the life of the author plus 50-70 years), it is a highly accessible, cost-efficient and effective tool for safeguarding creative outputs. It can protect a wide range of creative elements within OSH projects, including software code, designs, documentation, and other expressions of ideas. In addition, it offers comprehensive protection as it covers both economic rights (allowing monetization and control of reproduction or distribution) and moral rights (ensuring proper attribution and safeguarding the creator's reputation).

What part of my OSH project can be copyright protected?

Copyright has multiple applications in the context of an OSH project, despite its limitations regarding purely functional or technical elements. Here's how it can be relevant:

Design Features of Hardware: While the functional aspects of hardware are not protected under copyright, ornamental or creative design features may qualify. For instance, aesthetic elements or unique shapes incorporated into hardware can be copyrighted if they meet the originality requirement.

Software: Copyright applies to written code, firmware, and other software components, safeguarding the specific expression of these works. However, it does not extend to the underlying concepts, algorithms, or interactions between the code and hardware.

Documentation: Manuals, guides, schematics, and other forms of documentation can be copyrighted if they display originality. Highly creative and unique documentation is more likely to qualify for protection.

Branding: While simple text or basic names are not typically covered by copyright, logos or graphical branding elements with creative flair may be. In such cases, copyright protection can complement trademark protection for the same logo or design.

In OSH projects, copyright serves as a versatile tool for safeguarding creative aspects, from design elements to software and branding, ensuring control over their use and fostering openness within the community.

Can I use copyright to keep my project open?

Copyright is a foundational and practical tool for OSH projects, providing automatic protection to eligible creative works without the need for registration. This allows creators to use licensing mechanisms to control how third parties can interact with their works.

By leveraging copyright, openess can be maintained. Creators can require that users of copyrighted materials adhere to open-source principles, such as keeping derivative works open for further modification, use, and distribution. The specific licensing terms can range from permissive (minimal restrictions) to copyleft (requiring derivatives to also remain open). Copyright is pivotal in creating and maintaining open-source projects, as it enables the control of distribution and modification conditions, ensuring the project remains accessible and collaborative. Refer to *Guideline No. 2 on Licensing* for further information.

For OSH projects, copyright is likely the most comprehensive form of IP protection, covering diverse elements from design and documentation to software and branding, while also being integral to enabling and enforcing open-source principles.

How do I avoid infringing on third party's copyrights?

Copyright infringement can occur in numerous ways, and OSH developers must exercise care to avoid potential legal issues. Actions such as modifying, distributing, copying, publicly displaying, or adapting a work without the copyright holder's consent can constitute infringement. Without permission, the following activities might infringe on copyright: Modifying, reproducing, or distributing the work; issuing copies or lending/renting to the public; public performances, displays, or adaptations; communicating the work to the public, including online sharing. Limited exceptions exist, but these are narrowly defined and vary by jurisdiction. For example, in Germany, para. 44a et seq. UrhG outlines specific scenarios such as quotation, parody, pastiche, private use or certain uses for education and research. Applying these exceptions should be done with caution.

To mitigate risks of infringement, it is important to conduct thorough research on potentially conflicting copyright before and during the OSH project duration. Since copyright is automatic and doesn't require registration, copyrighted works may not always display a © mark. This makes identifying protected works challenging. If uncertain about potential conflicts, consulting an IP lawyer can help clarify your project's position. Engaging with other creators can resolve potential conflicts early and may foster collaboration. If a third party's copyrighted work is essential to your project, consider negotiating a license agreement. Licensing provides legal clarity and ensures the project's continuity without risking infringement.

Where can I find further information?

There is no centralized database for existing copyrights, as copyright protection arises automatically upon creation of a work and does not require registration. However, useful resources for understanding copyright and its application in Germany include the **German**

Patent and Trademark Office (DPMA) as well as the **Federal Ministry of Justice (BMJ)**. They provide concise explanations about copyright and related rights and offer information on copyright laws and updates on legislative developments. Details are available on their official pages.

For the **DPMA** refer to the following websites: https://www.dpma.de/service/schutzrechte_kurz_erklaert/urheberrecht/index.html and https://www.dpma.de/dpma/wir_ueber_uns/weitere_aufgaben/verwertungsges_urheberrecht/index.html

For the **BMJ** refer to the following website: https://www.bmj.de/DE/themen/wirtschaft_finanzen/rechtschutz_urheberrecht/urheberrecht/urheberrecht_node.html

4. Design Rights

What are design rights and how are they obtained?

Design rights offer essential protection for the aesthetic or ornamental aspects of products, helping creators safeguard their work against unauthorized copying or imitation. Art. 25 TRIPS provides an international minimum standard for design protection. To be eligible for protection, designers must be **novel** and **original** which means that it must be significantly distinct from existing designs (prior art). Designs driven by technical or functional considerations are generally ineligible for protection.

Most jurisdictions, including Germany (via DPMA), require registration for design protection. In certain jurisdictions, such as the EU, unregistered design rights can arise automatically from the first public disclosure, though these rights are limited in duration (e.g., three years for EU unregistered designs). Protection is limited to the jurisdiction where the design is registered or disclosed (e.g., Germany for German design rights, EU for European design rights). Registered design rights typically last up to 25 years, subject to renewal.

Rightsholders can prohibit others from using identical or similar designs. They can monetize their rights by licensing or selling their design rights. These exclusive rights empower the holder to maintain control over the use and monetization of their designs, ensuring fair compensation for their creativity and effort. Design rights are thus crucial tools for creators in both commercial and OSH contexts.

Why do I need to be aware of design rights?

Design rights are indeed significant in the hardware development and distribution process, especially for OSH projects. They are a sign of originality and can highlight the unique aesthetic qualities of a hardware project, enhancing its market appeal and differentiating it from competitors. Protecting a design can confer prestige and acknowledge the creator's effort, aligning with branding and marketing objectives.

Unregistered design rights (where applicable, such as in the EU) allow creators to gain protection automatically upon public disclosure, making it an attractive option for those seeking simpler processes. They provide an accessible entry point into IP protection, especially for small creators or OSH communities. However, the ease of acquiring unregistered design rights can lead to unintentional infringement by OSH projects, as these rights might not always be visible or documented in publicly accessible databases. In addition, the scope and recognition

of unregistered design rights vary across regions, complicating international hardware distribution.

In the context of an IP strategy, design rights often act as a supportive or complementary layer of protection alongside other IP types, such as patents (for functional features) and copyrights (for creative documentation or branding).

In summary, while design rights offer valuable advantages, they require careful consideration to navigate their complexities, especially in OSH contexts. When leveraged effectively, they can serve as both a shield and a sword in the realm of intellectual property.

Can I use design rights to keep my project open?

Design rights are a versatile tool for addressing the aesthetic aspects of hardware in OSH projects, with specific strategic benefits and practical applications. Design rights protect the visual design of hardware components, such as shapes, patterns, or ornamentation, but do not extend to functional aspects. This limitation aligns with OSH principles, where functionality is shared openly, but aesthetic uniqueness can still be protected.

Owners of design rights can license their designs under conditions that maintain openness, ensuring others can copy, use, or modify the design while adhering to agreed-upon terms (*open dimension*). This mechanism mirrors the approach used with patents or copyrights, fostering collaboration while preserving recognition and control.

For OSH projects, unregistered design rights can be valuable when time-sensitive protection is needed, such as during early development or market introduction phases. They also offer a defensive mechanism if a competitor challenges the project with infringement claims, providing a legal basis to counteract such actions. If an OSH project faces allegations of design infringement, investigating whether unregistered or registered design rights apply can offer a pathway for defense. Proper documentation of the project's development process can further substantiate claims of originality or legitimate use.

Design rights can also deter competitors from exploiting an OSH project's unique designs without authorization (*exclusionary dimension*). In cases in which proprietary technology is repurposed unfairly, design rights (alongside other IP tools) provide a means to enforce boundaries.

Design rights, whether registered or unregistered, offer OSH projects a dual advantage: safeguarding their aesthetic contributions while supporting an open yet controlled ecosystem. By leveraging these rights effectively, projects can protect their identity and innovation while fostering a collaborative environment.

How do I avoid infringing on third party's design rights?

Before publicizing your design in an OSH project, it is crucial to conduct thorough research to avoid potential conflicts with existing designs or IP rights. This can be done through design databases provided by IP offices (e.g., eSearch, EUIPO for European designs, or the German DPMA for German designs). Be mindful that unregistered designs can still be protected in some jurisdictions, such as the EU, and thus should not be overlooked in your research. Even if these designs are not officially registered, they may still be protected through prior use. If you find similar designs to your own, consider how your design differs in terms of functionality, appearance, or application, and whether it might be considered an infringement.

If your research shows that a similar design is already in use, you may want to consider modifying your design to avoid any conflict. Even small changes to the design could be enough to differentiate it from existing designs and reduce the risk of infringement claims. If you wish to use an existing design or if your design is similar to a registered one, it is possible to reach out to the design holder to negotiate a license agreement. A license agreement would allow you to use the design under mutually agreed terms, such as royalty payments, usage restrictions, or any other specific conditions. This approach provides a legal way to use an existing design while respecting intellectual property rights. Refer to *Guideline No. 2 on Licensing* for further information.

Unauthorized use of a protected design can result in infringement, which could lead to legal disputes, including claims for damages or cease-and-desist orders. It is essential to confirm that your design does not overlap with an already protected one to minimize such risks. If you are unsure about the status of a design or how to approach an existing design holder, it is highly recommended to consult with an IP lawyer. They can help you assess the potential risks and guide you through the process of either modifying your design or drafting a license agreement.

It is useful to keep thorough records of your design process, including sketches, prototypes, and any drafts. These records can be invaluable if you need to prove the originality of your design in case of a dispute.

Incorporating a proactive approach to researching existing designs and securing necessary licenses can help you avoid legal conflicts and enhance the success of your OSH project. Whether you choose to modify your design or negotiate a license agreement, the key is to ensure that your design is clear of any infringement on existing intellectual property rights.

Where can I find further information?

If you want more information or are looking to obtain design rights for your project, it's a good idea to start with the official website of your local **Patent and Trademark Office (PTO)**. These offices often provide resources and tools to help you understand the application process and check for any existing designs that may conflict with your own.

For **EUIPO** refer to: https://euipo-europa.eu/ohimportal/en/web/guest/designs and https://euipo.europa.eu/eSearch/#basic/

For the **German DPMA r**efer to: https://www.dpma.de/english/designs/index.html and https://register.dpma.de/DPMAregister/Uebersicht?lang=en

5. Trademarks

What is a trademark and how is it obtained?

Trademarks are essential for distinguishing the goods or services of one enterprise from another. They can take many forms, not limited to words or logos, and can include shapes (e.g., 3D shapes or packaging), colors (e.g., Telekom magenta), scents, sounds, or trade dress (the overall look of a product or its packaging). For a trademark to be eligible for registration, it must fulfill certain criteria:

> **(1) Distinctiveness**: The mark should be capable of distinguishing the goods or services of the owner from those of others.
>
> **(2) Non-descriptive**: The mark should not merely describe the properties or qualities of the product (e.g., "apple" for apples or "sweet" for candy).
>
> **(3) Non-deceptive**: The mark should not mislead consumers about the nature, quality, or origin of the goods or services.
>
> **(4) No conflicts**: It must not conflict with other registered trademarks.

Requirements (2)-(4) pose absolute grounds of refusal. In German law, the absolute grounds for refusal are set out in sec. 8 MarkenG.

To protect your trademark, you must register it with the relevant Trademark Office (such as the EUIPO for European trademarks or the DPMA for German trademarks). Once granted, trademark protection is territorial, meaning that it applies only within the country or region where it is registered (e.g., an EU trademark applies within the EU). Trademarks can be renewed indefinitely, provided they are in active use. If a trademark is not used within a set period (usually 5 years), it may become vulnerable to cancellation due to non-use.

Trademark registrations confer the exclusive right to use the registered sign. In this context, exclusivity encompasses the right to prohibit third parties from using identical or confusingly similar signs (e.g., sec. 16 para. 1 TRIPS). This also entails the right to transfer the trademark for money or the right to license the use of the trademark. Trademarks must be registered within specific Nice Classes, which categorize goods and services according to their nature. The key point here is that the exclusive rights conferred by a trademark registration only extend to the specific goods or services listed within those registered classes.

Why do I need to be aware of trademarks?

It is important to note that obtaining trademarks is relatively inexpensive. For example, the cost of registering a German trademark may be as low as €290 in fees, while registration for a European Union trademark may cost approximately €850. While trademarks do not directly prevent the misuse of hardware or software, they serve an important role in protecting the goodwill associated with your project and ensuring that a consistent standard of quality is maintained if others are using your OSH.

According to sec. 14 para. 2 MarkenG, trademark infringement can occur under the following three scenarios:

(1) The use of an identical sign for identical goods or services.

(2) The use of an identical or similar sign for identical or similar goods or services, where there is a likelihood of confusion among the relevant public.

(3) The use of an identical or similar sign when the trademark being infringed is well-known, and the use of the sign unfairly takes advantage of, or harms, the distinctive character or reputation of the well-known trademark without justifiable reason.

Another aspect regards the registration process. Trademarks must be registered for certain classes of products and services (Nice classes). Similar signs might be sufficiently distinctive, if they are registered for different classes of products and services.

Can I use trademarks to keep my project open?

Trademarks are particularly valuable for protecting the branding of OSH projects, such as logos, names, or the overall appearance of a product. While trademarks do not prevent third parties from copying the product itself or its functionalities, they play a crucial role in maintaining a consistent standard of quality throughout the OSH project.

An illustrative example of this is the open-source circuit board manufacturer, Arduino. The company sells both pre-assembled circuit boards and do-it-yourself kits, while also offering educational resources on topics like configuration, coding, and usage for free. By securing its brand name through trademark protection, Arduino ensures a consistent level of quality. This allows the company to prevent unauthorized use of its name and to clearly differentiate between pre-assembled components, tested to meet their quality standards, and user-

assembled parts, which may not adhere to the same standards. Certification marks, such as the TÜV mark, the Blue Angel, or the CE mark, serve similar purposes by indicating compliance with specific quality or safety standards.

How do I avoid infringing on third party's trademarks?

A trademark owner should actively monitor new trademark applications published by the relevant trademark office and oppose any signs that may infringe upon their registered trademark. Similarly, your own trademark application could be subject to opposition if another party believes that your trademark is too similar to theirs. Therefore, it is essential to conduct a thorough trademark search before proceeding with the registration of your trademark.

To avoid potential conflicts, one option is to reach out to the owners of similar trademarks. You may negotiate a delimitation (or concurrent use) agreement, allowing both parties to use the same trademark but for different goods or services. If it is crucial for you to retain the trademark and no such agreement can be reached, licensing the trademark from a third party is another possibility, though it could be costly. Alternatively, the simplest approach might be to create a new, distinctive trademark. Particularly, embellished figurative marks are often easier to defend as unique and may offer better protection against conflicts.

Where can I find further information?

If you want more information or are considering obtaining trademarks for your project, a good first step is to visit the website of the relevant local IP office. For instance, the **EUIPO (European Union Intellectual Property Office)** and the **German DPMA (German Patent and Trademark Office)** provide comprehensive information about the application process and offer basic search tools to help you identify already registered and potentially similar marks. You can access these resources at the following links:

EUIPO: https://euipo.europa.eu/ohimportal/en/trade-marks; you can access the eSearch via https://euipo.europa.eu/eSearch/#basic/ where you can research for already registered or pending trademarks

DPMA: https://www.dpma.de/english/trade_marks/index.html; you can access the German trademark register here https://register.dpma.de/DPMAregister/Uebersicht?lang=en

6. Trade Secrets

What is a trade secret and how is it obtained?

Trade secrets protect valuable and confidential information from unlawful acquisition by third parties. To qualify for protection, trade secrets must generally meet three key criteria:

(1) Secrecy: The information must not be widely known or easily accessible.

(2) Commercial Value: The information must hold economic value because it is secret.

(3) Reasonable Efforts to Maintain Secrecy: The information must be subject to reasonable measures to keep it confidential.

This broad scope means that trade secrets can protect a wide range of information, including that which might otherwise fall outside the protection offered by other IP rights. This gives trade secrets the flexibility to step in and provide protection for subjects that are usually not covered under any other IP regime.

Trade secret protection arises automatically, so there is no need for formal registration. It can last indefinitely, as long as the information remains secret.

However, trade secrets are not exclusive rights, meaning they do not prevent a third party from independently discovering or developing the same information. Protection is limited to preventing the unlawful acquisition, use, or disclosure of the information. If a third party has already disclosed the trade secret, the owner may pursue damages for the loss caused by the unauthorized disclosure. Additionally, trade secrets can be licensed, providing opportunities for monetization.

Why do I need to be aware of trade secrets?

Trade secrets protect valuable information that you or a third party wish to keep confidential. However, once this information is disclosed to the public, the protection is irrevocably lost. Therefore, it is crucial to clearly identify and define what constitutes secret information and what does not. This becomes even more important when engaging with third parties, as failure to maintain confidentiality can lead to costly legal consequences.

One of the advantages of trade secrets is that they do not require registration and are not subject to a fixed duration of protection. As long as the information remains confidential,

protection can last indefinitely, making trade secrets an easy-to-use and long-lasting option for safeguarding valuable information.

Can I use trade secrets to keep my project open?

At first glance, the practice of keeping trade secrets may appear to contradict the openness typically promoted by open-source principles. However, trade secrets can still play a valuable role in the development and rollout of an OSH project. They can provide protection for aspects of the project that are not immediately covered by patents, designs, or trademarks, and help safeguard sensitive information while preparing applications for formal IP rights. Once the project is made public or once the IP rights are granted and published, trade secret protection automatically ceases.

If certain elements of the project can be kept secret even after publication (for instance, a proprietary manufacturing process or information that cannot be easily deduced through reverse engineering), maintaining trade secret protection can be a strategic way to keep the process open. This approach prevents competitors, particularly those with solely commercial interests, from copying and selling the product, thus reinforcing the core principles of OSH.

Additionally, because trade secrets are not time-limited as long as the information remains confidential, they offer the potential for long-term protection. This contributes to the ideal of a circular economy, fostering sustainable and secure development of future OSH projects.

How do I avoid infringing on third party's trade secrets?

Always ensure that you trace the origins of the information you use. If you incorporate technical or other data that was shared with you in confidence, it could potentially involve trade secrets. Exercise particular caution when using information that was not obtained from publicly available sources. When collaborating with a third party, clear communication is crucial. It is essential to define what information each party considers to be confidential. Non-disclosure agreements (NDAs) are valuable legal tools for outlining these boundaries and specifying the potential consequences of disclosing confidential information. In legal proceedings, such contracts can be instrumental in establishing the burden of proof.

Where can I find further information?

For further information on trade secrets, you can refer to the following websites: https://europa.eu/youreurope/business/running-business/intellectual-property/trade-secrets/index_de.htm (**EU**) or https://www.wipo.int/web/trade-secrets (**WIPO**)