

IGEM ASHESIGHANA
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A PATENTING GUIDE FOR AFRICAN IGEM TEAMS



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Goal of this document

This document aims to help your iGEM team understand what the patenting process is like in Africa and the important aspects. If you think it is time to patent your iGEM invention, it is very important to understand the requirements for patenting from the beginning. This can save you time and money and prevent mistakes that could invalidate your patent application. Therefore, the iGEM team at Ashesi has written this patenting guide for future African iGEM teams to save them the time it would take to delve into deep research. This document consists of two parts. First and foremost, we present the overarching ideas and aspects that must be considered when applying for a patent in Africa. Second, we describe the formal process of a patent application using Ghana as a case study.

Introduction to Intellectual Property

Intellectual property (IP) refers to creations of the mind, such as inventions; literary and artistic works; designs; and symbols, names, and images used in commerce.

IP is protected in law by, for example, patents, copyrights, and trademarks, which enable people to earn recognition or financial benefit from what they invent or create. The IP system aims to foster an environment in which creativity and innovation can flourish by striking the right balance between the interests of innovators and the wider public interest.

There are various types of IP rights, including:

1. Patents
2. Copyrights
3. Trademarks
4. Industrial designs
5. Geographical indications
6. Trade secrets

Below is a brief description of each of these IP rights

1. Patents: A patent is an exclusive right granted for an invention. Generally speaking, a patent provides the patent owner with the right to decide how - or whether - the invention can be used by others.
2. Copyrights: Copyright is a legal term used to describe the rights that creators have over their literary and artistic works. Works covered by copyright range from books, music, paintings, sculpture, and films to computer programs, databases, advertisements, maps, and technical drawings.
3. Trademarks: Trademark is a sign or symbol capable of distinguishing the goods or services of one enterprise from those of other enterprises. Example includes logos
4. Industrial designs: An industrial design constitutes the ornamental or aesthetic aspect of an article. A design may consist of three-dimensional features, such as the shape or surface of an article, or of two-dimensional features, such as patterns, lines, or color.
5. Geographical indications: Geographical indications and appellations of origin are signs used on goods that have a specific geographical origin and possess qualities, a

reputation, or characteristics that are essentially attributable to that place of origin. Most commonly, a geographical indication includes the name of the place of origin of the goods.

6. Trade secrets: Trade secrets are IP rights on confidential information that may be sold or licensed.

In the chapters that follow, we will discuss in detail patents, how to acquire them, and what the process for licensing a patent looks like.

What is a patent?

A patent is a set of exclusive rights granted to the inventors of a non-obvious solution to a technical problem. Once a patent is granted, the holder has the exclusive rights to the commercial benefits of the invention, usually for 20 years from the filing date, depending on where the patent was filed.

Important considerations.

Before applying for a patent, teams must ensure that three boxes are checked. These are:

- Novelty check
- Inventive step
- Industrial Applicability

Now, we will go through these individually to fully understand what each checkpoint truly means to the team that wants to patent their idea.

Novelty Check

In this section, we focus on this very important part of the patenting process. This forms part of the very first step a team can take towards applying for a patent. This aspect checks how new your idea or project is. Patents are only awarded to ideas and inventions that are new in every way. So, before starting the process, ensure that enough research has been done. A novelty search can be done using databases like Google Patents and the WIPO Patents and Trademark Database. Your invention should not have been publicly disclosed anywhere in the world before the date you file. These include presentations at conferences (Grand Jamboree), social media, journal articles, etc. However, when applying for a patent after publicly disclosing your invention, some regions have grace periods that allow you to file a patent even after disclosure. Unfortunately, in the African context, there are no grace periods. The good news is that the USA has a 12-month grace period that allows iGEM teams to still be able to apply for a patent even after they have disclosed their invention to the general public

Inventive step

This is another important aspect of the patenting process. This might sound strange, but it simply means your invention must go beyond what a person skilled in the field would do based on common knowledge or minor logical extensions of current technologies. This

means the invention cannot simply be a predictable modification, combination, or optimization of existing solutions unless it results in a surprising technical effect or solves a problem in a novel way (one that has not been done before), which I assume is the ground on which many iGEM solutions are built.

Patent examiners assess this by comparing the invention to prior art and determining whether the filed invention or idea would have been logically deducible by someone with ordinary expertise.

In the context of iGEM, this often involves demonstrating how the invention overcomes unique challenges such as affordability, infrastructure limitations, or environmental conditions using an approach that experts in the field would not have anticipated (basically the surprise element of your design).

Industrial applicability

Now we will discuss the last and final. For an invention to qualify for a patent, it must be industrially applicable, meaning it can be made or used in any kind of industry, including agriculture, health, manufacturing, energy, and even environmental management. The utility of the invention must be practical, specific, and reproducible, not just theoretical.

Under Article 57 of the European Patent Convention (EPC), an invention is considered industrially applicable if it “can be made or used in any kind of industry, including agriculture.” Similarly, in U.S. law, a patentable invention must be “new and useful,” requiring at least one demonstrable, credible use. For iGEM projects, this criterion is not difficult to meet, provided the invention has a clear, working function that tangibly addresses a problem.

Furthermore, some jurisdictions, such as ARIPO, OAPI, and individual African national patent offices (e.g., Ghana’s Registrar-General’s Department), also require that the claimed usefulness be sufficiently disclosed. This means the patent application must include enough detail to allow a skilled person to implement the invention without undue experimentation.

Institutional influence

After understanding these key areas of the application process. It is now time to look within your institution to understand the intellectual property terms and conditions. This will be particularly helpful as some institutions can fund the application based on their budget and readiness.

Most iGEM projects and solutions are usually done in institutions, either high school, undergraduate, or postgraduate institutions; hence, involving your institution in the process is very crucial.

In many African countries, including Ghana, universities are increasingly recognizing the importance of intellectual property (IP) in fostering innovation and building practical

solutions based on the academic research done by students and faculty. As such, student-led innovations, particularly those developed through university programs, competitions like iGEM, or under faculty supervision, may be subject to university IP policies. These policies determine who owns the rights to inventions, how revenues are shared, and whether the institution will support patenting or commercialization. So ensure that you keep your school in the loop when exploring this space.

In Ghana, the legal framework guiding intellectual property is governed by the Patents Act, 2003 (Act 657) and administered by the Registrar-General's Department. However, the way universities interpret and implement these laws varies by institution. For example, public universities like the University of Ghana (UG), KNUST, and the University of Cape Coast (UCC) typically maintain IP policies that allow them to claim full or partial ownership of student inventions, particularly when:

- The invention was developed using university resources (labs, equipment, funding),
- It involved university employees or supervisors, or
- It was created under a university-funded project or competition.

Private universities like ours, Ashesi University, also have formal policies regarding student IP. Ashesi encourages entrepreneurship and innovation; hence, the institution has no claims over their inventions, particularly if the work was done as part of a capstone, incubator, or iGEM project. You should check with your institution to understand their IP policies as this differs from school to school.

In most Ghanaian institutions, the Technology Transfer Office (TTO) or its functional equivalent plays a key role in advising inventors, facilitating patent filings, and negotiating revenue-sharing or licensing agreements. These offices are still developing across Africa, so processes may be informal or vary depending on who you speak to. That said, universities are often willing to support students by co-funding patent applications, offering legal assistance, or providing access to incubators or startup support in exchange for shared rights.

To save yourself from the back and forth of this process, it is important for student inventors, especially iGEM teams, to:

- Ask early about their university's IP policy.
- Request a written statement or policy document outlining ownership terms.
- Clarify who will be named inventor versus who will own the patent (these are not the same).
- Discuss revenue-sharing arrangements (e.g., 60/40 or 70/30 splits in favor of the inventor are common globally).

In the African context, where institutional IP frameworks are still evolving, transparency, written agreements, and early communication are your best tools to protect your innovation while benefiting from the university's resources and support systems available to you.

Financing a Patent

Patents are expensive (they don't come cheap at all), and before filing one, it is important to think critically about how the costs, especially at the early stages, will be covered. In Ghana and across Africa, innovators often face financial constraints that make patenting seem out of reach. However, with careful planning, collaboration, and local resource-mapping, there are viable options to explore. Below are practical financing avenues adapted for the African context:

- **Your team.**
It is very important to first of all look within the team to see how resources can be pooled together to fund the cost of applying for a patent. This might not be expected, but we should keep in mind that patents are investments, and there's no guarantee of financial return, especially early on. Therefore, patenting your invention should be a holistic process that involves all the team members.
- **Corporate sponsorships**
Teams should explore companies whose CSR and sponsorship opportunities align with their invention to apply for funding to support the team in the process. While applying for some of these sponsorships and funding, teams must be careful not to disclose vital information that may harm their chances of successfully filing a patent
- **University funding support**
Once again, keep your university involved in the process, as they often have funds allotted to student IP and stuff relating to patenting. Your university is a great resource; don't keep them out.

The patenting process and costs

The patenting process involves multiple stages, each with very different legal, financial, and strategic considerations that must be paid close attention to since a single mistake can cause one to have to start all over again or go through several back-and-forth actions with the IP offices. For iGEM teams in Africa, especially in Ghana, navigating this process is further complicated by limited funding, local IP infrastructure gaps, and the absence of a grace period under most African patent regimes. However, all hope is not lost; African innovators can file for a provisional patent in the United States, which offers a 12-month grace period after public disclosure. Understanding and taking full advantage of this feature can be crucial to saving your invention from being invalidated due to early wiki posts, presentations, or press mentions. We will, however, highlight the other options available.

National (or Provisional) Application - First Filing

This is your first formal step, sometimes called the priority application, in establishing ownership of your invention. Filing can be made:

- As a national patent in Ghana via the Registrar-General's Department
- As a regional patent through ARIPO
- Or (most strategically) as a U.S. provisional application, which is low-cost and gives you 12 months of legal protection, even after public disclosure.

This is very important because most African countries do not allow a grace period we spoke about earlier. If you have already disclosed your invention (e.g., on your iGEM wiki, at a competition, or online), you have likely lost your ability to patent it in Ghana or ARIPO (the African regional IP office). However, if you file a U.S. provisional patent within 12 months of that disclosure, you can still claim ownership and pursue global protection later.

U.S. Provisional Patent Application

The US provisional patent application costs anywhere between \$75–\$300 if you are filing for the patent by yourself, or approximately between \$1,000–\$3,000 when the services of a qualified attorney are used (which in most cases). The benefit of applying for a US provisional patent application is that it establishes a priority date and preserves your rights after public disclosure, and it is valid for 12 months, giving you time to test, fundraise, or refine your invention before filing. You can apply using the link:

After this step, you must file either:

- A PCT application (for international coverage), or
- A U.S. non-provisional application (for full U.S. protection)

We will first go through the PCT application.

PCT Route – International Phase

The Patent Cooperation Treaty (PCT) lets you file one global patent application and later choose where to turn it into individual national patents. Over 150 countries participate—including Ghana (via ARIPO) and Nigeria (directly).

After filing a U.S. provisional, you must file a PCT application within 12 months to maintain global rights. This is when costs begin to scale, so it's wise to do this only if you have secured funding, investors, or serious commercial interest.

PCT Application Includes:

- Filing through WIPO with legal representation
- International Search Report (at 16 months from initial filing), which tells you if similar inventions exist (this ties down to the novelty search)
- Publication at 18 months, your invention is publicly visible unless withdrawn
- Preliminary Examination (optional but strategic), allowing you to strengthen your application

The cost runs up to about \$4,000–\$10,000, depending on attorney fees and complexity

National Phase – Regional or Country-Level Protection

By 30 months after your initial filing, you must decide which countries or regions (e.g., Ghana, ARIPO, South Africa, U.S., Europe) you want your patent validated in. This is where the real costs kick in, because each country has:

- Filing and examination fees
- Translation or attorney costs
- Ongoing maintenance (renewal) fees

For many African iGEM teams, this phase is feasible only if a university, startup, investor, or partner is actively supporting the commercialization of the invention.

Total cost at this phase: Up to \$20,000–\$100,000 globally, especially if you're filing in several countries.

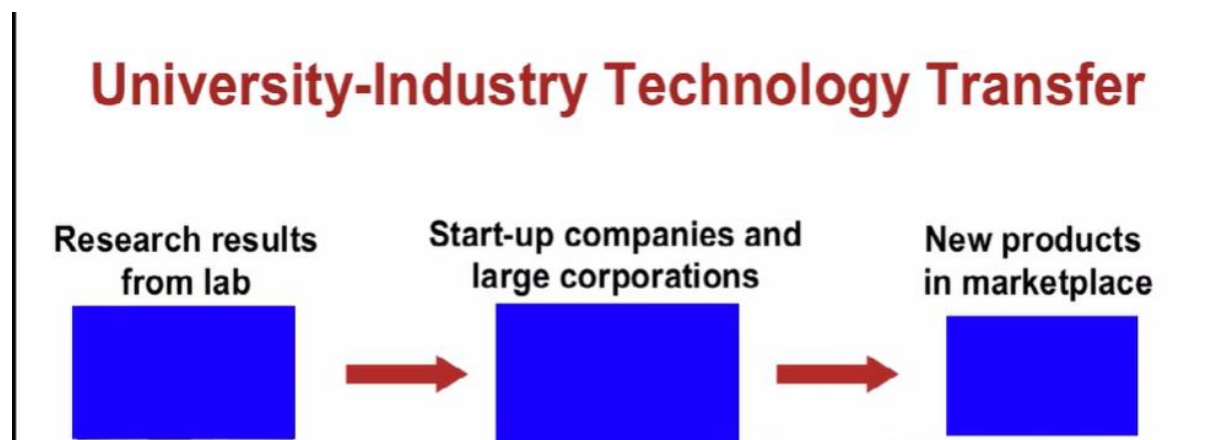
Patent Application Process Timeline



Technology Transfer

Technology transfer, also known as the transfer of technology (TOT), is the next stage of commercialization following the acquisition of a patent.

The mission of technology transfer is to promote the transfer of technology from the university to industry for the benefit of society and its use, while also generating unrestricted income obtained from royalties that industries would pay to the schools



Mechanisms for Technology Transfer

1. Graduated students
2. Publications
3. Seminars, conferences
4. Faculty consulting
5. Industry-sponsored research
6. Industry affiliate programs
7. IP licensing

What can be transferred?

Below is a list of Intellectual Property that can be transferred

1. Patents
2. Copyrightable material
3. Software
4. Biological material

Process for technology transfer

We have come to understand that patents can be transferred through the TTO (technology transfer office) or its equivalent. We have now outlined what the process is in simple, actionable steps.

The process simplified

1. Invention is made
2. You write down the full invention (this is called an invention disclosure) and it is often submitted to the university's TTO
3. You then decide whether to patent or not (the school's TTO determines if the invention is patentable)
4. Because we want to file a patent, we will then apply for a US provisional patent, since that gives us the 12-month grace period after the presentation at the grand jamboree
5. Now this is where the tech transfer happens (after the patent has been filed and obtained or in some instances while a patent application is pending (before grant), often under confidentiality agreements. This can speed up commercialization.)
6. You have to think about who is going to use this invention, our potential clients, so that we can sell the technology to them, which would be done by your team's entrepreneurship team
7. Once you have gotten someone interested in the idea, you can license the invention to them so that you get royalties in turn. Agreements are written out and signed. This is done with the help of an IP attorney outsourced or provided by the school.