

**(Greyb Infringement Project)**

Project report submitted in partial fulfillment of the requirement for  
the degree of Bachelor of Technology

in

**Computer Science and Engineering/Information Technology**

By

(Shreya Jayant (181249))

Under the supervision

of (Dr. Vivek Sehgal)

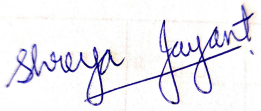
to



Department of Computer Science & Engineering and Information  
Technology **Jaypee University of Information Technology**  
**Waknaghat, Solan-173234, Himachal Pradesh**

## CANDIDATE'S DECLARATION

I hereby declare that the work presented in this report entitled “**Greyb Infringement Project**” in partial fulfillment of the requirements for the award of the degree of **Bachelor of Technology in Computer Science and Engineering** submitted in the department of Computer Science & Engineering and Information Technology, Jaypee University of Information Technology Warknaghat is an authentic record of my own work carried out over a period from February 2022 to August 2022 under the supervision of **Dr. Vivek Sehgal** (Professor and Head, Computer Science Department).  
The matter embodied in the report has not been submitted for the award of any other degree or diploma.



(Student Signature)  
Shreya Jayant,  
181249.

This is to certify that the above statement made by the candidate is true to the best of my knowledge.



Dr. Vivek Sehgal  
Professor and Head,  
Computer Science Department

Dated: 27th May, 2022



Mr. Purushottam Kumar  
Senior Research Analyst  
Operations Team, Greyb

Dated: 27th May, 2022

## ACKNOWLEDGEMENT

I would like to take this opportunity to thank and express my deep sense of gratitude to my mentor **Mr. Purushottam Kumar** for his immense support and valuable guidance without which it would not have been possible to reach this point in my career.

I am grateful to **Mr. Aadesh Srivastava** for his excellent support during our work. I would also like to thank all the team members of the team for their generous help in various ways. I am also obliged to Greyb Services for its valuable support which helped me a lot in these four months.

I would also like to thank **Dr. Vivek Sehgal** and the entire CSE department for allowing me to do this internship.

Date: 27<sup>th</sup> May 2022

Shreya Jayant  
(181249)



Date: May 23<sup>rd</sup>, 2022  
Ref. No. GB- HR/TR- 220

**TRAINING CERTIFICATE**


This is to certify that Shreya Jayant is working with our organization from Feb 9<sup>th</sup>, 2022 to till date as a Trainee – Research Analyst.

During her internship, she has been working on various project for Research Services.

Due to confidentiality concerns we are not be able to disclose the project details.

This document is confirming her internship with us.

Regards,

  
Pooja Sehgal  
Human Resources

---

**GreyB Research** Pvt. Ltd.

Quark Atrium, A-45, GF, Zone A, Industrial Area, Phase 8B, Mohali, Punjab 160059

✉ [info@greyb.com](mailto:info@greyb.com)

🌐 [www.greyb.com](http://www.greyb.com)

☎ 8427102546

## **TABLE OF CONTENTS**

TITLE PAGE	
DECLARATION	I
ACKNOWLEDGEMENT	II
PROJECT REPORT	III
TABLE OF CONTENTS	IV
LIST OF FIGURES	V
ABSTRACT	VI

### **CHAPTER 1 - INTRODUCTION**

- 1.1. Introduction
- 1.2. Necessity
- 1.3. Objectives
- 1.4. Themes
- 1.5. Greyb Services
  - 1.5.1. About the Company
  - 1.5.2. Overview of Business

### **CHAPTER 2 - LITERATURE SURVEY**

- 2.1. Patents
- 2.2. Purpose of Granting Patents
- 2.3. Reasons for the existence of Patents
- 2.4. General Patent Requirements
- 2.5. Types of Intellectual Property
- 2.6. Types of Patents Issued by the USPTO
- 2.7. Trademarks
- 2.8. Copyrights

## **CHAPTER 3 - TRAINING WORK**

- 3.1. Infringement and Prior Art
- 3.2. Types of Searches
  - 3.2.1. Novelty Search
  - 3.2.2. Clearance Search
  - 3.2.3. Landscape Search
  - 3.2.4. Validity or Invalidity Search
- 3.3. How is Prior Art used against a Patent
- 3.4. The Obviousness of an Invention
- 3.5. How to Identify Prior Art
- 3.6. Patent Search
  - 3.6.1. Why conduct a Patent Search
  - 3.6.2. The Method of Conducting a Search
  - 3.6.3. The Patent Classification System
  - 3.6.4. Databases
- 3.7. Restrictions
- 3.8. Office Actions
- 3.9. Applicant's Reply
- 3.10. Final Rejection
- 3.11. Nature of Patents and Patent Rights

## **CHAPTER 4 - PATENT PROSECUTION**

- 4.1. Elements of a Patent Application
- 4.2. General Procedure to getting a Patent
- 4.3. Claim Map

## **CHAPTER 5 - CONCLUSION AND FUTURE SCOPE**

- 5.1. Conclusions
- 5.2. Future Scope

## **LIST OF FIGURES**

**Fig 1** - Patent Figure

**Fig 2** - Research Articles

**Fig 3** - Newspaper cuttings

**Fig 4 (a)** - Claim Clause (a)

**Fig 4 (b)** - Claim Clause (b)

**Fig 4 (c)** - Claim Clause (c)

**Fig 5** - Patent Abstract and Introduction

**Table 1** - Claim Mapping

## **ABSTRACT**

When we talk about Intellectual property litigation, it is generally referred and points towards the connection between a patent applicant and the patent office in relation to a patent that the applicant has filed. Applications filed with the USPTO are reviewed by a person or a group of examiners who are experts in the field of patents (United States Patent and Trademark Office). A group of examiners is assigned to a specific application, which they then study.

The examiner examines the filed application for legal compliance as well as a search of prior patent documents held by various international Patent Offices and other publicly available literature to see if the innovation mentioned in the application can be patented.



# **CHAPTER 1 - INTRODUCTION**

## **1.1. INTRODUCTION**

The United States Patent and Trademark Office (USPTO) is a government agency in the United States. The USPTO's job is to safeguard inventions by issuing patents and registering trademarks. It safeguards the interests of inventors and enterprises when it comes to their discoveries, products, and various service identifications. Not to mention, the USPTO advises and assists the President of the United States, the Secretary of Commerce, the Department of Commerce's bureaus and offices, and other government agencies on local and international concerns involving "Intellectual Property" (or IP). By storing, classifying, and disseminating patent information, the Office aids the nation's industrial and technological growth as well as the economy.

If the innovation is non-obvious and innovative, the USPTO will analyse the application and grant it so that it can be patented. In addition, the USPTO broadcasts intellectual property office information, keeps a searchable record of US and foreign patents, and operates a research room (now widely accessible via the internet) where the public can view patent information. Public copies of all issued patents are available from the USPTO. The USPTO also publishes the Manual of Patent Examining Procedure, which educates practitioners on patent law and rules. Similar functions are performed in the case of trademarks. By securing intellectual initiatives, the USPTO seeks to maintain the United States' technical advantage, which is important to our current and future competitiveness.

## **1.2. NECESSITY**

The term "patent prosecution" refers to the connection between a patent applicant and the patent office in relation to a patent that the applicant has filed. Pre-prosecution refers to the process of negotiating with the patent office for the insurance and post-grant prosecution of a patent. Basically when we talk about pre-trial methods, there are two available.

As previously stated, the United States Patent and Trademark Office assigns an application to a group of persons in charge of a technical area related to the invention. The examining group exam is based on the sequence in which they submit their applications. This sequence will not be altered until the commissioner orders and expedited office action for a commissioner as you justify this expedited review.

The application is examined for legal compliance as well as a search of United States patents, prior foreign patent papers which are stored in the PTO, and available literature to determine whether the invention is novel and non-obvious. If an inventor files a patent for two different technologies and the patent examiner determines that they cannot coexist in a single patent, the inventor must choose between the two technologies.

If an innovation is superseded by another invention for which a patent has already been filed, the second invention might take advantage of the first patent's priority. The examiner could take it a step farther by requiring the proposal to be set to one creation of any innovation. Two thirds of proposals sent to the office and reviewed by the examiner have chance of being granted as a patent.

### 1.3. OBJECTIVES

A patent application that is not filed by the inventor is null and void, according to the law. In such a case, the applicant who falsely claims to be the inventor may face criminal prosecution.

Legal representatives, such as the estate administrator or executor, may file the application if the inventor is deceased. If the creator is mentally ill, a guardian may file the patent application on his or her behalf. If the original inventor declines or cannot be traced, the co-inventor or a person with a proprietary interest in the inventor can also file the patent application under certain events. Two persons working on the same innovation will file a patent as a team.

It is possible for two people working on the same idea to file a patent as joint inventors. If a person only contributes money to the development of an invention, they are not regarded a joint inventor and cannot be included in the application.

Small errors, such as deleting an inventor or wrongly identifying an inventor, can be addressed later, according to the USPTO. Employees of the United States Patent and Trademark Office (USPTO) are not authorized to file a patent or apply for one in any way, directly or indirectly, according to the law.

The United States Patent and Trademark Office grants the inventor's property rights. A new patent has a 20-year duration from the filing date of the application in the United States. Or in areas where the United States' patent laws apply. It may even be sooner than the filing date in exceptional circumstances. According to the statutes and the grant itself, the patent award confers "the right to exclude anybody from making, using, distribution and sale, or creating new products inside the United States, or "importing" the invention into the United States. Patents give the inventor the exclusive right to sell, import, and manufacture their creation.

#### 1.4. Themes

A general written description of the invention, at least one embodiment, and a set of claims written in a certain style are all included in most patent applications. The claims are crucial because they assist the examiner in distinguishing between the invention and the prior art. A drawing or set of drawings is typically submitted (and may be required) with a patent application in most jurisdictions to enhance understanding of the invention.

The fundamental litigative component of a patent is the search and examination phase, which leads to the desired end result.

The results of the application are put in a search report and provided to the applicant following the examiner's research.

In essence, the investigating team or assessor determines whether features of the publications described are important (novelty, inventive step, background), as well as their respective applicable claims. While the examiner does not seek a single source while preparing the search report, the majority of their results come from previously filed patents and technical publications.

## 1.5. Greyb Services

### 1.5.1. About the Company

GreyB is a research firm specializing in intellectual property that was created in 2007. The company's headquarters are in Singapore. GreyB specializes in bridging the gap between human intelligence and machine learning, and it employs this expertise to assist some of the world's most prestigious businesses. Patent searches are aided by strong systems. Conducting research and analysis on cutting-edge technologies in a range of disciplines is part of the job description. We don't just work with businesses and enterprises; we also work with law firms, R&D departments, patent attorneys and councils, IP capitalists and investors, and a variety of research institutions.

To support key business choices, our solution suite incorporates patent data, scientific publications, and market data. GreyB has a staff of more than 250 employees with technical and management skills. GreyB is in the business of connecting with innovation, and they believe that one of their most distinguishing characteristics is their employees. They are one of the world's leading technology management consulting firms.

Their knowledge and experience help them undertake in-depth information study in order to create effective IP, administration, and commercialization, as well as long-term tech-innovative projects.

### 1.5.2. Overview of Business

We establish a close company-client relationship network in order to give clients with a high star experience. One of our main priorities is quality and customer happiness. This entails retaining the client's confidence by keeping all of their provided information confidential, as well as reaching out to people outside of the project to have a better knowledge of the project's goals.

We provide a comprehensive set of IP information search services. In a range of technological domains, the business model integrates information search knowledge, technical background, and patent knowledge. IP research and analytic services, patent landscape, prior art search, infringement investigation, patent litigation, and patent drafting are some of our key areas of expertise.

## **CHAPTER 2 - LITERATURE SURVEY**

### **2.1. Patents**

A patent is an authorization given by others to prevent others from creating, selling, or exploiting an invention. An invention patent is a property right issued to the inventor by the USPTO (United States Patent and Trademark Office). As a result, it is possible to define a territorial, property, or negative right conferred by a regional or national authority.\

### **2.2. Purpose of Granting Patents**

In exchange for the government's privileges, the inventor or patent owner must provide a full description of the invention and its intended uses and applications to the government, and thus the general public. As a result, the patent system promotes technological advancement by creating a compensation structure that encourages the exchange of critical scientific and technical figures

### **2.3. Reasons for the existence of Patents**

The patent system has four main incentives: to invent in the first place; to expose the innovation after it has been produced; to invest the cash needed to develop, create, and sell the innovation; and to innovate and improve existing ideas.

When seeking for financing for low-cost research and development, patents are a great place to start (R&D). The majority of well-known corporations invest millions or billions of dollars in research & development each year. These expenditures may be greatly decreased or perhaps eliminated without patents, reducing the possibilities for scientific breakthroughs. Corporations would be significantly more careful about their R&D spending since other parties would be allowed to exploit any breakthroughs. The essential notions that sustain traditional property rights are interwoven with the second rationale.

According to the meaning of the term "patent," it "promotes and stimulates the disclosure of inventions to the general public for the common good." If their ideas were

not legally protected by patents, several innovators would want to keep them hidden. When a patent is awarded, the details of the new technology are usually made public, allowing anybody to utilize it after the patent has been granted for 20 years, or for further development by multiple people who create inventions. Also, the inventor's invention outlived the patent's term, according to the public record.

In many manufacturing areas, such as software or computer chips, where product fixed costs are high and marginal although the cost of developing a product is modest, the cost of commercializing it is higher than the cost of developing it. Companies ensured that items could not be duplicated before investing in them; without this assurance, they would not invest in the product.

These constraints push corporations and inventors to think of new ways to reach the same result with an invention without infringing on the patent, resulting in increased patents the creator can licence the rights to a patent to larger firms, which is a fascinating side effect of present patent usage.

By doing this, the creator can build up his revenue in an exponential manner by leasing their creation, and it may also allow for faster innovation because he or she is not responsible for the technology's development. As a result, the inventor's time and energy may be directed toward pure innovation, while others may be directed toward manufacturing. According to the patent laws and the grant associated to the patent, the innovation is granted "the right to exclude anybody from making, using, offering for sale, or selling" in the US or "importing" the aforementioned invention into the US.

It is awarded the right to prevent other manufacturers or inventors from making, selling, using, or the right to make, or import it. Without the support of the United States Patent and Trademark Office, the patentee is responsible for enforcing the patent.

#### 2.4. General Patent Requirements

The innovation must meet certain standards in order for the patent to be awarded, which are given below:

- Novelty: The patented innovation must be unique and must not be identical to prior art or publicly available scientific documents. i.e., previously patented or published.
- Useful: The invention does not have to replace an existing idea or product, but it must have a clear application and a good impact on society.
- Non-Clear: Any creation that is a novelty, implying that it's not obvious to anyone with knowledge of the invention's domain.

Everything is evident to an engineer. Nothing is evident to a patent attorney.

## 2.5. Types of Intellectual Property

IP can be divided into seven categories, which are described below:

1. Patents: A patent protects knowledge that is original, non-obvious, and beneficial.
2. Design: A design protects an article's outward appearance or appearance.
3. Copyright: A copyright is a legal term that refers to the protection of an idea's expression.
4. Trademark: A trademark protects a logo or slogan that sets one's idea apart from that of a competitor.
5. Trade Secret: Information that is commercially valuable is kept secret.
6. Mask work: A mask installed in a semiconductor product is protected.
7. Open Source: Open source software is software or code that is freely available to anybody.

## 2.6. Types of Patents Issued by the USPTO

- A Utility Patent can be awarded to the manufacturing or finished innovation if the invention demonstrates utility in the process. Computer ICs, Communication Apparatus, and Fiber Optics are only a few examples. They are classified as either provisional or non-provisional utility patents.
- An innovator can apply for a Design Patent for their innovation if they create a product or object with a unique, fresh design. Characters from the Star Wars franchise, the distinct appearance of clothing items, and so on are examples.

- If an innovator creates or discovers a new plant variety, they can apply for a Plant Patent.

In a nutshell, Function Patents protect an invention's utility or method, whereas Design Patents protect the appearance and aesthetics of the piece or product.

## 2.7. Trademarks

The primary function of a trademark is to distinguish a manufacturer's products from those of its competitors. A name, a slogan, a tagline, or a logo could all be examples. Service marks are similar to trademarks in that they serve the same purpose but for services rather than items. The terms 'trademarks' and 'marks' are used interchangeably to refer to both trademarks and service marks.

Trademarks can only be used to prohibit competitors from using their company's logo or content in a similar way. They cannot use trademark protection to protect someone selling the same goods as them.

Trademarks used in interstate or international commerce can be registered with the Patent and Trademark Office. The trademark registration process is also described in a companion pamphlet titled "Basic Facts about Trademarks."

## 2.8. Copyrights

Copyrights safeguard an author's "Original Works," which may or may not be published and include literary, artistic, musical, dramatic, or other similar works. The Copyright Act of 1976 gives the copyright holder the only right to generate, distribute, and sell works based on these works, replicate the works, perform the copyrighted works in public, and show this work in public. The style in which the artist expresses himself is protected by copyright, not the text itself. It does not prevent others from describing the same machine in a different way if someone explains it and copyrights it. The Library of Congress' Copyright Office registers copyrights.



## CHAPTER 3 - TRAINING WORK

### 3.1. Infringement and Prior Art

While a patent may be invalidated for a variety of reasons, the most common one is that it is not new in comparison to previously available technology. This will only happen when the claims of the creation in the proposal of the invention are not very obvious, as they are used to define the patent's scope of protection. To invalidate a patent, we hunt for papers that can be considered "prior art" in comparison to the invention's claims.

When investigating an existing patent or considering filing a patent application, it is almost always necessary to review "prior art." Prior art can be defined as the entire corpus of knowledge from the beginning of recorded knowledge to the present, in broad words. For example, in a Supreme Court case in the United States more than 50 years ago, the works of Benevento Cellini, a prominent Italian painter who died in 1571, were cited as prior art in the court decision, invalidating a patent for lost-wax. However, there was a unique circumstance that did not mirror how earlier art is usually evaluated.

Title 35 of the United States Code defines the prior art which states: "A person does not have the right to a patent unless..." This statement is followed by a list of definitions, with the most important ones listed below.

For starters, the inventor is ineligible to file a patent for their innovation if it was "known or used by others in this country, or was patented or described in a printed publication in this or a foreign nation" prior to the applicant's date of invention. If an innovation is well-known or widely used in the United States, for example, a person who develops the identical invention at a later date and time than the patent may be ineligible to seek a patent. Prior knowledge or use in another country, on the other hand, is not a bar to submitting a patent application in the United States. If a patent is published or a paper is printed before the filing date of the patent, it is invalid.

Second, a patent is invalidated if "the invention was patented or described in a printed publication in this or another country, or was in more than one year prior to the date of the patent application in the United States, in public use or for sale in this country." With one difference, this concept of past art is similar to the first. In the first situation, the question is whether prior art existed at the time of invention. When it comes to the

second scenario, the question is whether the previous art (patents or other publications) was made publicly available more than a year before the patent was filed. Many examples demonstrate the fact that many times the many cases show that when an inventor waits too long to file a patent, they discover that another applicant has already filed a patent for an identical innovation, which is more than a year before the inventor files a patent for their invention. If a patent application has been filed for more than one year, it is also prohibited. As a result, if the prior art is a patent document or any other piece of scientific literature, the scope of consideration is international, but if the prior art is not a patent document or any other piece of scientific literature, the scope of consideration is national.

The third point is that if an innovator patents their idea outside of the USPTO's (United States Patent and Trademark Office) jurisdiction, they will be denied a patent. This is also true if the patent was filed more than a year before the patent application was filed in the United States. To put it another way, if an inventor files a patent for an invention outside of the United States and then submits a patent application inside the USPTO's jurisdiction within a year of submitting the previous patent, the prior patent is not considered prior art. Similarly, even if the inventor is a day late with their application, it will be considered prior art.

There are a few additional significant obstacles to patentability that aren't obvious prior art. Obviously, if an inventor stops working on his or her creation, he or she will be unable to obtain a patent. Furthermore, if A invents something, A is the only one who may file a patent application for it. Other specialized laws may prevent an inventor from obtaining a patent due to specific conduct considered previous art.

In today's world of technological breakthroughs, it's becoming increasingly difficult to discover previous art that exposes the same claims as the invention under consideration. The earlier art, rather than being identical to the original invention, is more likely to be analogous. Under the patent, this issue is also addressed.

The technique becomes much more complicated when firms and companies are added to the mix. as it involves a team of litigators from both sides, as well as court hearings, all for a product that is now well-known to a substantial portion of the general public. So, theoretically, the obviousness of a patent's similarity to prior art can be tested by

first seeking for specific previous art, then looking for a resemblance between the two, and lastly assessing the similar checks.

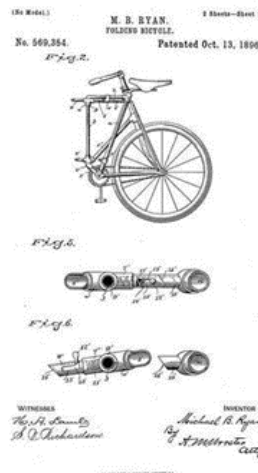


Fig. 1. Introduction to Patent

"From the mid-1970s through the mid-1980s, a network of young urban migrant men created an underground pulp fiction publishing industry in the city of Dar es Salaam. As texts that were produced in the underground economy of a city whose trajectory was increasingly charted outside of formalized planning and investment, these novellas reveal more than their narrative content alone. These texts were active components in the urban social worlds of the young men who produced them. They reveal a mode of urbanism otherwise obscured by narratives of decolonization, in which urban belonging was constituted less by national citizenship than by the construction of social networks, economic connections, and the crafting of reputations. This article argues that pulp fiction novellas of socialist era Dar es Salaam are artifacts of emergent forms of male sociability and mobility. In printing fictional stories about urban life on pilfered paper and ink, and distributing their texts through informal channels, these writers not only described urban communities, reputations, and networks, but also actually created them." (p. 210)

The first sentence introduces the **context** for this research and announces the **topic** under study.

The remaining sentences in this abstract interweave other essential information for an abstract for this article. The implied **research questions**: What do these texts mean? What is their historical and cultural significance, produced at this time, in this location, by these authors? The **argument** and the **significance** of this analysis in microcosm: these texts "reveal a mode or urbanism otherwise obscured . . ."; and "This article argues that pulp fiction novellas. . . ." This section also implies what **previous historical research** has obscured. And through the details in its argumentative claims, this section of the abstract implies the kinds of **methods** the author has used to interpret the novellas and the concepts under study (e.g., male sociability and mobility, urban communities, reputations, network. . . ).

Fig. 2. Research Papers



**Fig. 3.** Newspaper cuttings

## 3.2. Types of Searches

### 3.2.1. Novelty Search

Throughout the review process, patentability searches discover prior art that may limit innovation or non-obviousness. To find the broad spectrum of the proposal's claims in the application, a broad analytical patent search is employed that will be judged appropriate by the Patent Issuing Office, avoiding examiner constraints and the effort and monetary expense linked.

Because the PTO deals with a large number of patents every day, its searches aren't always as thorough as they should be. If an inventor relies exclusively on the patent office to conduct a prior art search and assumes that it will be successful, if they perceive it to be the gold standard, they may face future licensing issues. which may cause them to realize that their most valuable claims aren't up to par.

### 3.2.2. Clearance Search

A Clearance Search is started by a corporation that wishes to use a product or technique legally without infringing on other people's patents. A clearance search looks for patents that claim to prevent a company from making or marketing a product or executing a specific operation. Patents simply provide you the right to exclude others from practicing what you're claiming; they don't grant you the right to do so. Producing, using, or promoting a product or conducting a method frequently necessitates a clearance check since it includes exercising the claims of other people's creations avoid infringing on the patent rights of others. If the creator decides to file a patent for their innovation, a professional Clearance Search will reveal all patents that may be infringed. And will inform the inventor of any potential liabilities associated with the invention or the patent application's prepared claims.

### 3.2.3. Landscape Search

The core of a landscape search is the client's need. The information gathered is utilized to make important IP and business decisions. IP managers, consultants, and advisers do not provide the same service as agents and attorneys. Unlike agents and attorneys, however, they frequently lack the expertise to dig through the data needed to provide solid advice and answers to businesses.

In order to fully benefit from the benefits and protections given by patents, as well as to minimize unnecessary patent acquisition expenses, a company must have a plan in place to secure and manage a patent portfolio. A successful patent strategy protects low acquisition costs, economically significant discoveries, the legitimacy of the acquired patents, an understanding of the liabilities and dependencies the invention may have with respect to the patent holders, and a well-thought-out understanding of areas where research and development and patent protection would result in the most successful outcome. Each of these objectives can be met with the help of Prior Art Searches' search services.

### 3.2.4. Validity or Invalidity Search

A validity or invalidity search is frequently performed when a party wants to show the validity or invalidity of an issued patent based on novelty or obviousness grounds, such

as during litigation or to avoid costly licensing expenses. It is tied to the reason that usually the researcher needs to check and make sure the older or early work has not been left to be verified other searchers missed, validity/invalidity searches are frequently extensive and in-depth.

### 3.3. How is Prior Art used against a Patent

A patent's key feature is that it cannot be used to claim something that is obvious or already exists. To solve this difficulty, patent examiners seek for prior art, which is previous publications that imply the invention isn't original or obvious, as previously mentioned.

One of the reasons for the creation of a patent system is to recompense innovators for sharing their ideas with the public. This means that an innovation must be unique; otherwise, the developer will be rewarded for providing us with what we already have. As a result, determining the novelty (and obviousness) of an invention is an important aspect of the patent system. If the inspection reveals that the invention is not novel, the patent application is refused.

We start the patent examination by looking through all of the existing literature in the field of the invention to see whether there is anything that is similar or identical to the current invention. This search considers papers and patents that were published or filed prior to the date of the present patent's filing. Patent attorneys refer to this as "the state of the art." Resources which are found at the time of analyzing and researching are referred to as prior art. When a patent application is reviewed, the claims are scrutinized in every case.

If a previous art document, either implicitly or expressly, explains all components of a patent claim, it is regarded to anticipate that claim. The qualities of the claim must appear in the earlier art in the same composition. Unofficially, certain types of prior work are referred to as "Killer Prior Art."

### 3.4. The Obviousness of an Invention

When a claim is judged novel, it signifies that no prior art contains information that may fully explain the current claim. These previous art documents are still useful, but they work against the inventor by implying that the innovation in question is self-evident. To prove that an invention is obvious, more than one prior art document is usually required.

### 3.5. How to Identify Prior Art

In theory, any publicly available information qualifies as previous art. Older patents and scientific articles are commonly used since they are the easiest to obtain. You can use textbooks, publications, seminars, demonstrations, and exhibitions, as well as any other source of information. It's understandable that verifying what was shown or presented would be challenging.

1. **Any Publication:** Many patent offices cite earlier patents and applied patent proposals, there are no restrictions on the sort of material that can be designated prior art or the source of the document. It does not matter whether the document uses a varied language, or was published in a different country, or was viewed by anyone or not. The fact that the paper was made public prior to the patent filing is all that is required. A prior art can conceivably be a patent, an IEEE Xplore Research paper, or even a newspaper story.

2. **Any Public Material:** Prior art is only deemed prior art if it is freely accessible to the public. A multimillion-dollar conference for research papers, an uncatalogued book in the corner of a library, a newspaper story from a flop daily, and a scientist's speech are just a few examples. If the public does not violate any laws or confidentiality agreements in order to gain access to them, they are all previous art.

3. **Exhibitions of Products:** Publicly available things count as prior art even if it's impossible to figure out exactly what the object is made of or how it works. If a feature of a device was already in use before the patent was filed, it will not be considered innovative. For later filed applications, the product's sale or other disposition usually suffices to make all of its characteristics prior art. Even though the product is not yet

available for purchase, a simple advertisement illustrating the features can be considered prior art because the public has access to that information.

4. **Disclosure:** A document must also be capable of being considered previous art in order to be deemed prior art. To put it another way, the document should allow a reasonably trained ordinary person to follow the procedures and duplicate the invention. An innovation in a science fiction series could be explained without going into detail. While this will explain the essential notion of the invention, it will not allow a trained person to build it. For example, in the popular Star Trek TV series, the so-called "transporter" permits Starfleet officers to be "beamed down" to the planet's surface. However, there was never any information about how the transporter was supposed to work or how it might be manufactured. Someone might still receive a patent for a functional matter transporter that worked exactly like the one in Star Wars if they invented it today. If the fiction accurately represents the innovation, it counts as previous art, just like a technical article.

### 3.6. Patent Search

Going through early references comprises researching about innovations in the similar domains. Prior art also includes bodies of information in the particular discipline. Prior art includes pre-existing patents, scientific papers, journal articles, other publications (including books and catalogues), public advertisements, trade shows, and public use or sales wherever on the planet. As previously stated, the prior art search report assists the inventor in proving inventive and non-obvious legal requirements that are required for a successful patent filing. A patent search's main goal is to find patents that are similar to the invention in question, which will tell us whether or not the invention is patentable. A thorough patent search should provide patents that are similar.

Listing down inventors and assignees for whom the examiner finds related patents is a useful practice in patent searching. Their names can lead to items, companies, or even more publications that can help with a patent search.



### 3.6.1. Why conduct a Patent Search

Patenting takes a significant amount of time and money. Before seeking a patent, the inventor should conduct a patent search to ensure that his or her efforts to obtain a patent for their discoveries are not in vain. In spite of the creator of the patent bringing in someone from a third party to conduct the patent analysis, they would organize a preliminary search with their litigation team to ensure that the search report is built on a solid conception. Along with the perks stated above, a crucial and a significant amount of money can be saved.

Examine the results of the preceding art search to check if your idea is original before moving on to the third stage, which is applying for an actual patent.

You might expect to wait one to three years for the patent to be issued after filing the application. During this time, you can notify anyone who infringes on your notion that you have applied for a patent, but you won't be able to sue until the patent is issued. Infringement lawsuits cannot be filed until the patent has been submitted and authorized. The most vexing component of the patent application process is this.

### 3.6.2. The Method of Conducting a Search

The most basic method of conducting a search is to use keywords and Boolean operators. It was built while using easy or entry level base education in mind, but if you can understand and rummage through to understand to official language words used, you'll be reading and searching patents on the internet quite quickly and easily. It will not be sufficient to undertake a thorough (complete) search for past work utilizing only the Internet. For executing this, one should have knowledge of the intellectual property classification and categorization system, as searching in specific classes and categories rather than searching randomly might save days, if not weeks of searching.

### 3.6.3. The Patent Classification System

The patent classification system comprises of classes split by the type of technology the invention employs or facilitates, and then multiple degrees of subclasses, with additional detail in each technological class. It assists the searcher in finding patents in their field of expertise with near-perfect accuracy.

#### 3.6.4. Databases

Because of the advancements in technology, all patent libraries and paperwork are now available online, making them easy to find and read. Some of the patent databases we used in our training are listed below. PatSnap is a Derwent Innovation. Similarly there are Google Patents and E-Space Net

Even if you've learned a lot about patent searches, it's vital to remember that it's not everything. If your invention is duplicated without being filed for a patent, the patentability of the invention is still in jeopardy. As a result, a thorough previous art search is required. This could include, but is not limited to, the following:

- Searching non-patent literature such as journals, research papers, periodicals, and newspapers for articles or entries about the invention.
- Searching patent literature such as journals, research papers, periodicals, and newspapers for articles or entries about the invention.
- Searching for patent documents from all across the world, not just those from your own country.

It's risky to presume that just because you haven't seen an advertisement for a similar product, it doesn't exist. Finally, after all of this, the inventor must determine whether the idea is innovative enough to warrant going through the patenting procedure.

#### 3.7. Restrictions

If a creator claims two articles in a single patent and the Patent Office determines that both technologies are related to grant separate patents, the creator needs to make a choice between one of the two articles for the present patent. The office of the patent and trademark domain assists the creator so that they can register a patent for the second article, they can do so using the previous patent's filing. The person who checks the novelty of the invention cannot move forward before the creator must meet a certain threshold for their proposed request to any of the dual claimed articles.

### 3.8. Office Actions

The 'activity' of the Patent Office, which is regarded by the inventor's or assignee's attorney or litigation team, contains the Patent Office's decision on the invention. Any discrepancy or reason for an unwelcome action is listed in the Office Action, along with some information that may be useful when the applicant is deciding whether or not to take his or her application further.

If the invention in question is not connected to the patentable subject matter, the claims listed in the patent application will be rejected outright. The examiner also has the authority to reject any claims that he or she considers to be obvious or non-innovative, or if previous art exists to refute the claims.

### 3.9. Applicant's Reply

If the applicant wishes for their application to be reassessed, they must do so in writing, clearly detailing the apparent errors in the examiner's decision. The applicant must respond to each reason of objection and rejection raised in the previous Office decision. The reply that has been made in the textual format should be detailed and should showcase the aim of admitting the flaws and continuing with the application. Simply stating that the examiner made a mistake while reviewing the application is not sufficient grounds for reconsideration.

When responding to a denial with an updated application, the applicant must explain the changes made to the claims in light of the examiner's feedback, either in terms of novelty and non-obviousness, or in the matter of how the patent or innovation can be wholly different from what the prior art dictates or is sent by the examiner. The inventor must also explain why the new rewritten claims do not fall into the same gaps as the old ones. This resubmitted application is subjected to the same level of examination as the original, and, like the first office action, it is sent to the lawyer or litigation team with a progress report. According to past experience, the second office action is typically the ultimate decision.

### 3.10. Final Rejection

The Office usually makes a decision on the application's second consideration. When claims are refused, the applicant's options are limited to filing an appeal. Even yet, if the inventor believes the examiner made a mistake in denying the claims, he or she might file a petition with the Director. If any claim is allowed, the inventor must include it in their response to the final rejection or any other

Decision made by the office, and similarly for each claim that is thus rejected, as well as complying with any special requests, if the claim in issue is allowed. The examiner's reasons for rejecting the claims are repeated, and they are taken into account when sending the final report.

### 3.11. Nature of Patents and Patent Rights

Whenever any recognition is issued to an innovative property it is done so by the particular country's office and bears the seal of the country's Patent and Trademark Office. The director subsequently signs the application electronically, attests it by hand, or has an officer of the intellectual property office sign it in extraordinary cases. This granted patent includes a printed copy of the specifications and drawings, as well as the claims and abstract, which are all now part of the patent. The grant gives the recipient "the right to prevent anybody from manufacturing, using, offering for sale, or selling the invention in the particular country or bringing the invention into the respective country and its territories and possessions, with a patent period of twenty annual year from the deadline upon which statement of claim was submitted in the country or, if the proposal was not lodged in the country, from the date upon which request has been filed in the respective state or, if the request was not submitted in the respective location, from the date on which the phrase "Right to exclude" is the crucial phrase, and its significance could only be interpreted if the statement language is fully grasped. Sole authority to create, use, offer for sale, sell, or importing the innovation is conferred by the patent, not the right to create, use, offer for sale, sell, or import the invention.

Anyone can typically develop, use, offer for sale, sell, or import anything they wish without the need for a government permission. The patent only grants the right to prevent others from selling or developing something.

A patent holder is also prohibited from creating, selling, or marketing anything that could infringe on another's patent. The inventor of a specific type of scooter can patent their creation, but it does not give them the right to break the law while driving it. Even if they are the patent holder, they would need a driver's licence to operate the car.

If infringing on someone else's previous rights, a patentee may not create, use, offer for sale, sell, or import his or her own invention. The innovator is not free to do whatever they want just because they have a patent on their idea. The patent holder is nevertheless subject to the laws in effect in various commercial sectors. Unless a patentee infringes on another's patent that is still valid, nothing precludes a patentee from developing, utilising, offering for sale, selling, or importing his or her own invention. For instance, if the patent application is for an improvement on an already existing unique device, the invention would be covered by the original product's patent.

The term of a patent is generally 20 years from the date on which the patent application was filed in the country respective of the innovation, or, if the application contains a specific reference to an earlier filed application under 35 U.S. 120, 121, or 365(c), from the date on which the earliest such application was filed, subject to payment of maintenance fees as required by law. For all patents issued from applications filed on or after December 12, 1980, a maintenance fee is due 3 1/2, 7 1/2, and 11 1/2 years after the original award. The patent application has a maintenance fee that must be paid at predetermined intervals to keep the patent 'alive.' Once the time is out for the innovation any person may produce, sell, promote, or acquire any invention described in the now-expired patent as long as their actions do not infringe on other active patents. These legal phrases can be shaped in a variety of ways depending on the circumstances.

## CHAPTER 4 - PATENT PROSECUTION

### 4.1. Elements of a Patent Application

The following are the essential components of a patent application:

**Standard:** This section of the patent provides text that contains instructions and information that enables any reader with a basic understanding of the patent's field to copy the invention and identify new uses for it. This text must be prepared in such a way that anyone with knowledge of the field in which the patent exists may follow the instructions and information provided and, theoretically, develop and use the technology described in the invention. The following sections can be found in the Specifications:

**The invention's title:** The invention's title should be brief and succinct, describing the invention's entire technique in as few words as feasible. It should be noted that only if the characters in the main heading is limited to a threshold of five hundred and is larger when viewed in context of the font and placement, then it is acceptable.

**The background of the invention:** comprises important information that sets the stage for the full discussion of the patented innovation. It should describe the patented invention's substance and nature. This brief summary should correspond to the invention and its intended use, as well as all of the patent's claimed articles.

**A brief summary of the drawing's many views (if any):** If the inventor believes that illustrations of their invention will better describe their innovation, they can submit drawings. This section describes the drawings that were submitted with the patent application.

**Thorough Explanation of the Creation:** This section of the patent is the most technical. It contains a full view and description of the invention in question, with the aforementioned illustrations being referenced and discussed.

**Claims:** Arguably the most significant element of a patent, claims are frequently numbered statements that claim a specific component of the invention, as well as some noun phrases, and are often put after the thorough description of the patented invention.

The claims are what define the scope of protection that the patent provides with respect to the invention in very precise technical terms.

As an example, here are 3 different claims:

an **encrypted host platform** disposed in a specific territory and upon which **export controlled data** is stored

Figure 4. (a) Claim Clause 1

Data hosting platform where the data can be hidden and not easily identified, arranged in a specific place where sensitive data (related to military and export) is stored.

a **controller** configured to allow a **primary user** to set permission settings and identify **authorized end users** and degrees of access granted to each said **authorized end user**, said **authorized end user** being pre-cleared for compliance, with export controls pertaining to said **export controlled data**

Figure 4 (b) Claim Clause 2

Role of controller: built as such that it allows the primary user to give permissions and identifies where the data is being used and by whom and how much access is given to those who are using that data, and if it is in compliance with ITAR rules, and if the authorized user can control the export data.

said **controller** configured to permit access to said **encrypted host platform** only if said **host platform** is located within said specific territory and said **hosting platform** is in compliance with predefined data security protocols, said **controller** being further configured to allow said **authorized end user** access to said **export controlled data** in accordance with said permission settings and degrees of access granted thereto, and said **controller** configured to exclude access to both a provider of the system for storage and a **system host platform provider (Q)**

Figure 4 (c) Claim Clause 3

- Role of controller: to give access to the data hosting platform only if it is located in a specific location that is approved, and it is in compliance with the security measures too.
- The controller should be made such that it allows the user access to the data with permissions and rules of access in mind.

- The controller should be made such that it excludes access of data to the provider of the storage space and host platform provider

There are two sorts of claims: independent claims and dependent claims.

Independent Assertions: Simply said, Independent Claims are claims that stand alone. Their wordings are sufficient in and of themselves to claim a specific aspect of the invention; they do not require other claim elements to be valid.

Dependent claims, on the other hand, are those that are dependent on one or more independent claims. Without the independent claims, their content is incomprehensible. In the patent application, the phrases 'in one embodiment,' 'in a preferred embodiment,' 'in a particular embodiment,' 'in an advantageous embodiment,' and other similar phrases are commonly used to give light on the part of the patent on which the current claim is based.

The foundation of a dependent claim is generally made up of the preceding implementations. By law, each dependent claim must cover a lesser area than the original Independent Request with which it is based. This may lead to the conclusion that dependent assertions are ineffective. However, having dependent claims under the umbrella of a dependent claim has a number of advantages. There is a list of any benefits that could be in this situation. Clarifying Independent Claims' Meaning: Independent Claims are usually drafted as broadly as possible, allowing them to claim a larger portion of the patent. But in any case, there was a disadvantage. One of the disadvantages is that using a broad term raises the question of what this term actually means.

Is a "network technology" the same as a "mobile phone," for instance?

Dependent Claims can be used to simply resolve this misinterpretation. A dependent claim that specifies "wherein said communication equipment means a mobile phone" can be added to the independent claim. The examiner's approval is also required for this clarification using a dependent claim. In practice, these Dependent Claims are utilized to narrow down the area in which the invention is located from the vast area claimed in the Independent claim (e.g., the actual product design that the inventor intends to use.)



To put it another way, an independent claim is the broadest, followed by a dependent claim.

The foundation assertion's potential legitimacy: It's nearly impossible to tell whether a claim in an application is true. is a legal claim or not when the application is filed. This is because, as previously said, any piece of knowledge existing prior to the filing date, whether it is a patent, a paper, or an article, can invalidate the claim in the application, regardless of the language in which it is presented (U.S. practise [but other countries are even stricter]). This uncertainty can be reduced, but not eliminated totally, because it is impossible to scan every piece of public data on the earth. Even so, if a document is discovered that is incorrect, It is not always the case that the Dependent Claim will be invalidated along with the parent claim. The dependent claim may be broad enough to be included in the patent.

Claim differentiation: Under the principle of claim differentiation, each claim is judged to encompass a different characteristic of the invention than the other claims. When a claim on its own could be considered as having either a broad or limited meaning, this strategy might be utilised to help retain broad claim scope. If a dependent claim is introduced that is based on the "parent" claim but refers to the narrower interpretation, the parent claim must be changed - the broader interpretation must be utilised.

Basically, the clauses and claims that are a part of any patent can have numerous types. But in the case of the latter, it is divided in mainly two groups or cases you can say A physical thing, such as a product (or substance) or an instrument, can be used to make a claim (or device, system)

A concise discussion of the technical disclosure in the specification, including the novelty in the art to which the invention relates, must be set forth on a separate page, preferably following the claims.



(12) **United States Patent**  
**Imai**

(10) **Patent No.:** **US 7,064,874 B2**  
(45) **Date of Patent:** **Jun. 20, 2006**

(54) **BOTH-SIDE DOCUMENT READING APPARATUS AND BOTH-SIDE DOCUMENT READING METHOD**

(75) Inventor: **Takashi Imai, Nara (JP)**

(73) Assignee: **Sharp Kabushiki Kaisha, Osaka (JP)**

(\* ) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 878 days.

(21) Appl. No.: **10/000,572**

(22) Filed: **Oct. 23, 2001**

(65) **Prior Publication Data**  
US 2002/0048053 A1 Apr. 25, 2002

(30) **Foreign Application Priority Data**  
Oct. 25, 2000 (JP) ..... P2000-325748

(51) **Int. Cl.**  
**H04N 1/04** (2006.01)  
**H04N 1/40** (2006.01)

(52) **U.S. Cl.** ..... **358/498; 358/448; 358/447; 358/497; 358/475**

(58) **Field of Classification Search** ..... **358/498, 358/448, 447, 497, 475**  
See application file for complete search history.

(56) **References Cited**

**U.S. PATENT DOCUMENTS**

4,956,547 A	9/1990	Mita	
5,899,726 A	1/1999	Copenhaver et al.	
5,864,408 A	1/1999	Kumashiro	358/461
6,122,077 A *	9/2000	Kaji	358/448
6,323,933 B1 *	11/2001	Arzuff	355/23
2002/0039207 A1 *	4/2002	Kanda	358/498

**FOREIGN PATENT DOCUMENTS**

JP	3-240361	10/1991
JP	04-266261	9/1992

**OTHER PUBLICATIONS**

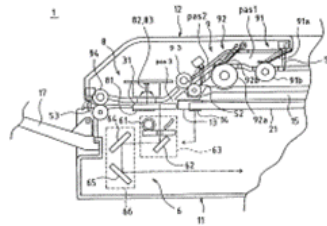
2000-325748; Notification for Reason of Refusal dated May 25, 2004.  
2000-325748; Notification for Reason of Refusal dated Feb. 17, 2004.  
Partial European Search Report for Application No. EP 01 30 9016 dated Jan. 3, 2002.  
\* cited by examiner

*Primary Examiner*—Thomas D. Lee  
*Assistant Examiner*—Houshang Safaipour  
(74) *Attorney, Agent, or Firm*—Renner, Otto, Boisselle and Sklar, LLP

(57) **ABSTRACT**

First and second scanning and reading systems are arranged on the both sides of the document transport path. The image reading region by the first scanning and reading system is positioned on an upstream side of an image reading region by the second scanning and reading system. The document images on the surfaces are read while illuminating with light from light sources of the scanning and reading systems the main and back surfaces of the document being transported on the document transport path. Until the document image reading by the second scanning and reading system is ended, the light amount of the light source of the first scanning and reading system is maintained constant thereby preventing the reception-light amount in the second scanning and reading system from changing.

**18 Claims, 6 Drawing Sheets**



**Fig. 5. Patent Abstract and Introduction**

## 4.2. General Procedure to getting a Patent

When an invention is conceptualized, a disclosure is prepared that includes a description of the invention or the notion anticipated by the inventors. The disclosure is submitted to a technical review after the inventors submit it. The disclosure is then assigned to a Patent Engineer, who will investigate the disclosed concept or invention for novelty. The Patent Engineer examines the disclosure to have a better understanding of the concept or invention and to identify key features. Furthermore, the Patent Engineer evaluates all related publications specified in the disclosure and searches for more relevant technologies to help him determine whether the disclosed concept or invention is something that has not been done before.

Based on the search results, the Patent Engineer generates a search report. Based on the search report, a business review is also conducted. During the business review, a Technical Reviewer reviews the search report and makes recommendations on whether or not the disclosure should be pursued. If the disclosure is decided to be pursued as an application, an attorney will be assigned to the case. The attorney then hires a Patent Engineer to help him prepare a patent application based on the disclosure. The Patent Engineer drafts a patent application based on the disclosure and sends it to the Attorney and the inventors for review, after which the attorney files the patent application. Later on, in the section devoted to the description of the method of preparing the patent application is covered in depth as part of the preparation process. Finally, the patent application is submitted to the Patent Office by the Attorney.

The Patent Office reviews the patent application and issues the patent if it is judged to be patentable. The Office Action is issued when the Patent Office determines that the invention mentioned in the patent already awarded in someone's name, an IEEE article, etc. has already disclosed the patent application. The Patent Office's Office Action includes cited references, such as prior art to the patent applications and resources that the Patent Office feels describe the patent application.

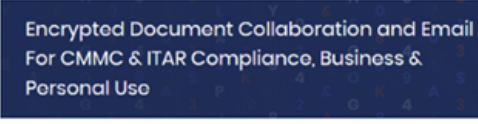
The Intellectual Expert examines the Office Action as well as the references included in it. The Property Analyst prepares a denial assessment and an Office Action Response based on the Official Action. The claim is defended by the Patent Engineer in an Office Action Response document. The Patent Office evaluates the Office Effectively Identify and may conduct additional Office Actions or grant the patent proposal as a result of it. The process is repeated until the Patent Office is satisfied with the arguments in the Office Action Response. Due to a received Office Action, a patent application may be abandoned in a variety of ways. The patent application is issued once the Patent Office is satisfied with the Office Action answer. After one year from the date of filing, the Patent Office awards a patent for the patent application.

#### 4.3. Claim Map

The objective of a Claim Mapping is to contrast the Applicant's assertion to the investigator's references to see if they match or not. If both the Applicant's claim and the stated references map, the examiner is correct; however, even after proper claim

mapping, the Applicant can amend his claims to include some new element from the specification (not taught by the references) and then dispute. If the claims do not correspond, the Applicant may simply argue.

**Table 1. Claim Mapping**

Claim 1	Product	Analyst Comment
<p>Preamble: A system for the storage of data, the system comprising:</p>	<p>With ABC, your files and folders are automatically encrypted on your device and stored in the cloud.</p> <p><a href="#">Source</a></p> <p>ABC is an encrypted cloud storage service using end-to-end encryption, which is the gold standard in protection. The Gold Standard. PreVeil's end-to-end encryption means that information is encrypted on your phone or computer before being sent to the cloud.</p> <p><a href="#">Source</a></p>	<p>System for storage of data: Preveil drive which stores encrypted files and folders</p>
<p>Clause 1: an encrypted host platform disposed in a specific territory and upon which export controlled data is stored;</p>	<p><b>Encrypted Host platform</b></p>  <p><a href="#">Source</a></p>	<p>Encryption present on the host platform; Disposed in a specific territory: could not find explicit evidence.; ITAR data is export controlled</p>

## **CHAPTER 5 -CONCLUSION AND FUTURE SCOPE**

### 5.1. Conclusions

We studied about the patent process at the USPTO as well as international organizations. After training, the one point that was notable about the rather technical parts of patent prosecution, such as completing background and previous art searches, overcoming obstacles in patent prosecution, and offering technical information during invention. These positions may place a heavy emphasis on R&D while also considering the difficulties that come up in a patent, focusing more on their technical qualifications which makes them qualified rather than legal or patent agent credentials.

### 5.2. Future Scope

An IP expert, often called a patent researcher, is a patent legal expert who focuses on patent filing preparation and enforcement. "Patent professionals" are patent experts with scientific or technical credentials who do not need to be attorneys or patent agents but nonetheless work with patent applications. In general, the work comprises completing background and prior art searches, drafting patent specifications and generating reference figures, and offering technical guidance during invention assessment. The R&D (Research and Development) part of the patent, as well as other significantly technical areas of the patent, are given more weight in the Research Analyst role than the litigation and legal aspects of patent prosecution.

The bulk of patent researchers and technologists have a bachelor's of science degree in sciences or engineering, some have advanced credentials like Ph.D.'s or M.D.S. Patent scientists and engineers with a legal degree are rare, although patent attorneys are more prevalent.

Becoming a patent attorney or scientists or engineers in this field requires one to usually pursue patent agent certification and/or law school (this is true in the United States but not in Europe). In this context, they are commonly referred to as trainees.

One can also term the work of a patent researcher as a patent examiner, given that the task is nearly identical in both professions, in the private sector: reviewing and comprehending intellectual property.