PATENT RESEARCH AND ANALYSIS

Dissertation submitted in fulfillment of the requirements for the Degree of

BACHELOR OF TECHNOLOGY

By

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JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
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TABLE OF CONTENTS

PREFACE

Enjoy technology, but crave for more? A career as patent research analyst offers you a unique combination of business and technology

Where most companies derived their value from producing as efficiently as possible some twenty years ago, now-a-day's knowledge is the key to success. Knowledge of technology and marketing in the form of patents, trademarks, model rights, and copyrights, determine the value of company to an increasing degree. This development has caused the profession of a patent analyst to change considerably. A clever use of intellectual property now plays crucial part, as patent analyst we do much more than merely provide legal protection for new technologies. We are much more closely involved in the business and in taking strategic decisions. Thus we will be confronted with questions such as what knowledge is of strategic importance. How best to utilize it? Do we want to share our knowledge with competitors? And how do we lay down jointly acquired knowledge? Buying and selling knowledge leads to major advantages. Not only does it create income through the sale of rights, but it also generates the possibility of developing new technologies together with third parties. If a new technology is introduced in the market by more than one company, the chance of financial success is enhanced. The patent engineer plays a major part in all these aspects of the new intellectual economy.

ACKNOWLEDGEMENT

Before starting my report on my SIX MONTHS INDUSTRIAL TRAINING, I must express my gratitude to the people who helped me & guided me during training. I feel a deep sense of gratitude and affection for those who were associated with the project and without whose co-operation and guidance this project could not have been conducted properly. I would like to thank all of them for their enthusiasm and support.
I would like to thank my training teacher **Mr. Gurjinder Pal Singh (Team Lead**) and **Mr. Sanket Thakur (Manager, Operations)** for their constant support and guidance throughout the training. They had been a constant source of help for understanding the 6 months training. Without their help it would have been a quite a difficult task for understanding the concept behind the industrial training..
Last but not the least I would like to thank the Almighty for his constant blessing over me for the successful compilation to this training.

Ananya Saxena
(121118)

DECLARATION BY THE SCHOLAR

I hereby declare that the work reported in the B-Tech thesis entitled **"Patent Research and Analysis"** submitted at **Jaypee University of Information Technology, Waknaghat India,** is an authentic record of my work carried out under the supervision of Mr**. Gurginder Pal Singh (Team Lead) and Mr. Sanket Thakur (Manager)**. I have not submitted this work elsewhere for any other degree or diploma.

( )

(Ananya Saxena)

Department of Electronics and Communication Engineering

Jaypee University of Information Technology, Waknaghat, India

Date (20th May, 2016)

SUPERVISOR'S CERTIFICATE

This is to certify that the work reported in the B-Tech. thesis entitled "**Patent Research and Analysis**", submitted by **Ananya Saxena at Jaypee University of Information Technology, Waknaghat, India** is a bonafide record of her original work carried out under my supervision. This work has not been submitted elsewhere for any other degree or diploma.

( )	( )
(Sanket Thakur)	(Gurjinder Pal Singh)
(Manager)	(Team Lead)
Date (25th May, 2016)	Date (25th May, 2016)

LIST OF TABLES

CHAPTER 1:

I. COMPANY PROFILE

TT Consultants (ISO 27001 and ISO 9001:2008 certified) is a leading provider of high quality Intellectual Property and Innovation Support Services, helping clients to realize the opportunities and meet challenges. Through the years, we have worked with our clients to deliver foremost patent prosecution services and patent litigation support like Invalidity / Validity Searches, Patentability Searches, Patent Drafting etc. We also specialize in Patent Analytics, Technology Transfer and Licensing and other affordable legal support services to corporate, attorneys, law firms, research institutes and universities across the globe.

Our prime focus is to evolve a one stop platform for complete patent search technology innovation cycle.

TT Consultants offers a unique combination and consortium of an international patent search firm and an international patent analytics firm from the best professionals across the world. We are among top IP firms in India, providing patent services for the last 8 years to a growing list of satisfied clients all over the globe. In our constant pursuit to innovate, we have been able to successfully induct the many systems and tools aimed at providing enhanced quality solutions to our clients.

Our Patent Services include:

Prior Art Searches like Patentability/ State of the Art Search, Patent Invalidation Search, Freedom to Operate Search, Patent Infringement Search, Structure and Sequence searches. Our research includes innovative search reports that come along with a key feature analysis chart and many value additions offered by none other in the industry.

Patent Analytics that include Technology Landscape & Whitespace Analysis, Competitor Monitoring, Patent Portfolio Management. We search for, filter and analyses data for you and present it in a graphical form with clickable dynamic charts for all categories. We identify gaps in a technology area (whitespace analysis) helping clients to direct their R&D efforts.

Patent Prosecution Services, handled by our partners Talwar Advocates, include Patent Filing in India, Office Action Responses, Trademark Filing/ Search/ Watch. An experienced team of registered patent agents and other Para Legal staff look over filing of patents and trademarks.

Innovative Patent Tools that have been developed in-house by our dedicated experts. Automated Invalidator Tool, Patent Landscape Viewer, Project Allocation System, PAIR Tracking Platform are some of our tools that provide results as exhaustive as a manual search.

CHAPTER 2:

II. INTRODUCTION TO ASSIGNED WORK

II.1 Intellectual Property

Intellectual property (IP) is a legal concept which refers to creations of the mind for which exclusive rights are recognized.

II.2 IPR (Intellectual Property Right)

These are exclusive set of rules protecting products of human intelligence and creation. IPR are rights granted to creators and owners of works that result or human intellectual creativity. These works can be in the industrial, scientific, literary and artistic domains, which can be in the form of invention, a manuscript, a suite of software or business name.

II.2.1 Types of IPR

- **Copyright:** Copyright is a legal concept, enacted by most governments, that grants the creator of an original work exclusive rights to its use and distribution, usually for a limited time, with the intention of enabling the creator of intellectual wealth (e.g. the photographer of a photograph or the author of a book) to receive compensation for their work and be able to financially support themselves. It provides protection to authors (composers/writers). It is obtained automatically and there is no need for registration. Validity of copyright is for the lifetime of authors plus 50 years after his death.
- **Patent:** A patent is a set of exclusive rights granted by a sovereign state to an inventor or assignee for a limited period of time in exchange for detailed public disclosure of an invention. An invention is a solution to a specific technological problem and is a product or a process. Validity is for 20 years.
- **Trademark:** A trademark is a recognizable sign, design or expression which identifies products or services of a particular source from those of others. The trademark owner can be an individual, business organization, or any legal entity. A trademark may be located on a package, a label, a voucher or on the product itself. For the sake of corporate identity trademarks are also being displayed on company buildings. Trademarks are used to claim exclusive properties of products or services. The usage of trademarks by its owner can cause legal issues if this usage makes them guilty of false advertising or if the trademark is offensive.
- **Geographic Indications:** It points to certain goods specific to the geographical area based on the soil etc. on which it is produced. It points to specific region of production that determines the quality of the product.
- **Trade Secret:** A trade secret is a formula, practice, process, design, instrument, pattern, or compilation

of information which is not generally known or reasonably ascertainable, by which a business can obtain an economic advantage over competitors or customers. In some jurisdictions, such secrets are referred to as "confidential information", but are generally not referred to as "classified information" in the United States, since that refers to government secrets protected by a different set of laws and practices. It has been theorized that the doctrine of trade secrets should protect competitively valuable, personal information of company executives, in a concept known as "executive trade secrets". E.g. The coca cola formula and the colonel's secret blend.

II.3 Patents

Patent refers to an exclusive rights granted to anyone who invents any new, useful and non-obvious process, and machine, article of manufacture or composition of matter or any new and useful improvement thereof. It is granted to an invention that may be a product or process that provides a new way of doing things or a better solution to a technical problem. Its validity is for 20 years from the date of grant.

Advantages

- It keeps other out of the market
- Restricts the competitors
- Generates revenues from license or sale
- Gives your product credibility

Disadvantages

- Cost issue
- Liability

II.3.1 Types of Patent

- **Utility patent:** It includes process, machine, and composition of matter which is improvement of an existing idea. It lasts for 20 years from the date of application.
- **Design Patent:** It has a aesthetic value only and should not be functional like design of chair, wallpaper, shoes, jewelry. Its validity is for 14 years.
- **Plant Patent:** It includes only those plants which are asexually reproduced. Its validity is for 20 years from the date of filling.

II.4 Criteria for Patentability

- **Novelty:** Novelty is a patentability requirement. An invention is not new and therefore not patentable if it was known to the public before the date of filing of the patent application, or before its date of priority if the priority of an earlier patent application is claimed. The purpose of the novelty requirement is to prevent

the prior art from being patented again. The invention should be new and should not have been seen before.

- **Inventive step and non-obviousness:** The inventive step and non-obviousness reflect a same general patentability requirement present in most patent laws, according to which an invention should be sufficiently inventive — i.e., non-obvious — in order to be patented. In other words, "[the] non-obviousness principle asks whether the invention is an adequate distance beyond or above the state of the art."
- **Utility:** the invention should have some industrial utility. It must satisfy some requirements of the humans.

II.5 Non-patentable things

- Laws of nature
- Abstract ideas
- Mental process
- Printed matter
- Computer software
- Method of doing business

II.6 Parts of Application

- Title
- Abstract
- Field of invention
- Background
- Summary
- Brief description of drawing
- Detailed description of drawing
- Claims
- Drawing

II.7 Citations

Records used in patent to refer earlier prior art.

II.7.1 Backward Citation: Reference of prior art in patents

II.7.2 Forward citations: Reference of invention done in that field after the patent is issued. Mainly useful for patent search.

II.8 Important Dates in Patent Application

- **Invention date**: When an invention was completed**.**
- **Filling date:** The date of filling application with completed information required.
- **Priority date:** The first date of filling of application anywhere in the world.
- **Issue date:** Grant date the date on which the patent is issued from patent office.
- **Expiration date:** The date when a patent term ends.
- **Publication date:** The date on which patent information is made available to public 18 months after priority date

CHAPTER 3:

III. Modular description of the job

III.1 Types of Patent Applications

- **Ordinary Application:** The first application for patent filed in the Patent Office without claiming priority from any application or without any reference to any other application under process in the Patent office is called an ordinary application.
- **Convention application:** When an applicant files a patent application, claiming a priority date based on the same or substantially similar application filed in one or more of the convention countries, it is called a convention application. To get a convention status, an applicant should file the application before any of the patent offices within **12 months** from the date of first application in the convention country.
- **PCT- International Application:** The Patent Cooperation Treaty or PCT is an international agreement for filing patent applications. However, there is nothing called as a 'world patent'. The PCT application does not provide for the grant of an international patent, it simply provides a streamlined process for the patent application process in many countries at the same time.
- **PCT -National Phase Application:** The PCT-national phase must follow the international phase. The applicant must individually 'enter into the national phase'. i.e. file a National phase application in each county he wishes to enter. The applicant can enter the national phase in up to 138 countries within 30-31 months (depends on the laws of the designated countries) from the international filing date or priority date (whichever is earlier). If the applicant does not enter the national phase within the prescribed time limit, the International Application loses its effect in the designated or elected States.
- **Application for Patent of Addition:** Patent of addition is an application made for a patent in respect of any improvement or modification of an invention described or disclosed in the complete specification already applied for or has a patent. In order to be patentable an improvement, should be something more than a mere workshop improvement and must independently satisfy the test of invention. The major benefit is the exemption of renewal fee so long as the main patent is renewed. A patent of addition lapses with the cessation of the main patent.

- **Divisional Application:** A divisional application is one which has been "divided" from an existing application. The applicant, at any time before the grant of a patent can file a further application, if he so desires or if an objection is raised by the examiner on the ground that the claims disclosed in the complete specification relates to more than one

  Invention. A divisional application can only contain subject matter in the application from which it is divided (its parent), but retains the filing and priority date of that parent. A divisional application is useful if a unity of invention objection is issued, in which case the second invention can be protected as a divisional application.

III.2 Claims

It is the extent of the protection conferred by a patent or the protection sought in a patent application. It defines the scope of protection granted by the patent. It is more valuable to obtain claims that include the minimal set of limitations that differentiate an invention over what came before. Fewer limitations can increase rejection due to lack of novelty.

III.2.1 Types of Claims

- **Independent claims:** An independent claim stands alone and is self-contained. It is always broader than the dependent claims that follows.
- **Dependent claims:** It is dependent on parent claim and makes a reference back to the parent claim. It allows the applicant to include all the limitation of the parent claim. E.g. the hammer of claim1, further including a nail claw extending from the head and separated by a gap.

  It helps to cover the invention and various embodiments of the invention. It is narrower in scope than parent claim. It can add features to parent claim but cannot delete any feature from it.
- **Multiple dependent claim:** It is a dependent claim which refers to more than one other claim and must refer to such other claims in the alternative only. E.g. A hammer according to claims 2 or 3 further comprising a neoprene layer over the handle.

  A multiple dependent claim cannot serve as basis for any other multiple dependent claim. They have high filling fees.

III.3 Patent Cooperation Treaty (PCT)

Approaches to international patent protection:

- Apply in each country separately in which patent is sought. Cost is very high, documentation probe etc.
- Apply in accordance with the "Paris Convention for protection of industrial property". It provides a 12 months delay, priority date etc. are main features.

- File a PCT application. It provides an inventor a 30/31 months delay, preliminary examination option and prior art search report depending upon the inventors wish in which he sought to get patent.

III.3.1 PCT

It is an international patent law treaty which provides a unified procedure for filing patent applications to protect inventions in each of its contracting states. A patent application filed under PCT is called PCT application.

Steps:

- A single filing of PCT application is made with RO (Receiving Office) in one language.
- Search is performed by International Searching Authority (ISA) plus written opinion regarding the patentability of the invention which is the subject of the application.
- Preliminary examination is done by International Preliminary Examination Authority (IPEA) but it is optional.
- After this national regional authorities examine the application
- Then the final issuance of application.

III.4 Patent Classification System

It is a way to arrange documents in a patent office so that they can quickly find a document which is identical to the invention.
For this, International Patent Classification (IPC) is agreed internationally.
USPC (United States Patent Classification) is fixed by USPTO.
ECLA (European Classification) is adopted by the European Patent Office (EPO).
The logic behind classification is to ease patent search and retrieving.

III.4.1 Classification Based Searching

III.4.1.1 Advantages

- More complete results than text searching.
- Independent of the language syntax.
- Independent of changes in terminology.
- Concept search.
- Available for patent documents where no full text of claims/description is available.

III.4.1.2 Disadvantage

- Complex structure of classifications.
- It requires study of classification rules.

III.4.2 Different types of classification

- International patent Classification (IPC)
- European patent Classification (ECLA)
- Cooperative Patent Classification (CPC)
- US Patent Classification

III.5 Different Types of Searching

III.5.1 Novelty search: these search have no date constraints on the prior art. It helps the inventor to determine if his invention can be patented or not. All prior date is searched and is given to the inventor.

III.5.2 Validity search: The idea is to find prior art that is relevant to the validity of the CLAIMS of the subject patent. Not the general ide, not the entire patent but each claim. Thus it allows the claims to be disallowed on the grounds that someone came up with the invention before the patent in question was filed. Filing date is very important to prove that he/she was the first person to come up with the invention. NOTE we do not cite any prior art that has already been referenced by the subject patent. Relevant art does not has to be in the claims of other patents. It can be in the description also. Independent claims are the targets in validity search.

III.5.3 Infringement search: Patent infringement is the commission of a prohibited act with respect to patented invention without permission from the patent holder. In many countries, the use is to be commercial to constitute infringement. The extent of protection provided by the patent is defined in the claims of the granted patent. Patents are territorial and infringement is only possible in a country where patent is in force. The infringing party's product falls within one or more of the claims of the patent. In this we have to find the product of the company's which infringes the claims of the subject patent. Search ids focused on the products which are introduced in the market after the subject patent has been granted.

III.5.4 FTO search: It is a search done on issued patents or on pending patents to determine if a product infringes any of the claims of the issued or pending patents. It may also include expired art that acts as a safe harbour permitting the product or process to be used on patents in publications.

III.5.5 State of the art search: In this what is currently being developed in the field is searched. Patents on specific technology are read. It is done to provide direction to the research being done in the company or organization. Each and every patent on given technology is searched.

III.6 Basics of US Patent Laws

- 35 USC 101 ⟶ Invention must be useful
- 35 USC 102 ⟶ Inevtion must be novel
- 35 USC 112 ⟶ Inventio must be fully disclosed

CHAPTER 4

IV. Detailed description of individual module

IV.1 Types of Patent Applications

IV.1.1 Ordinary Application: The first application for patent filed in the Patent Office without claiming priority from any application or without any reference to any other application under process in the Patent office is called an ordinary application. It must be accompanied with complete specification and claims. It includes specification, drawing, oath or declaration and filling file. The date of filling is not given until all the document are completed. Once the application is received and the date of filling is given it is then sent for examination.

IV.1.2 Convention application: When an applicant files a patent application, claiming a priority date based on the same or substantially similar application filed in one or more of the convention countries, it is called a convention application. To get a convention status, an applicant should file the application before any of the patent offices within **12 months** from the date of first application in the convention country.

IV.1.3 PCT- International Application: The Patent Cooperation Treaty or PCT is an international agreement for filing patent applications. However, there is nothing called as a 'world patent'. The PCT application does not provide for the grant of an international patent, it simply provides a streamlined process for the patent application process in many countries at the same time.

Some of the benefits of the system are:

- It simplifies the process of filing patent applications i.e., an applicant can file a single international patent application in one language with one receiving patent office in order to simultaneously seek protection for an invention in up to 138 countries throughout the world.
- It provides internationally recognized priority date, which has an effect in each of the countries designated.
- Delays the expenses associated with applying for patent protection in various countries. PCT gives 30 to 31 months time to enter into various countries from the priority date or international filing date whichever is earlier unlike the convention method which gives only 12 months time to file for a patent application in the country of interest from the priority date. Hence, the PCT route allows the inventor more time to assess the commercial viability of his/her invention.

- It provides an international search report. The results of this search are very valuable to the applicant. They allow the applicant to make more informed choices early in the patent process, and to amend the application to deal with any conflicting material, before the major expenses of the national phase of the patent process begin.
- Provides an option of an International Preliminary Examination Report that is forwarded to the elected Offices and the applicant, the report containing an opinion as to whether the claimed invention meets certain international criteria for patentability.
- These reports give the applicant a fair idea about the patentability of the invention before incurring charges for filing and prosecution in each individual country.

IV.1.4 PCT -National Phase Application: The PCT-national phase must follow the international phase. The applicant must individually 'enter into the national phase'. i.e. file a National phase application in each county he wishes to enter. The applicant can enter the national phase in up to 138 countries within 30-31 months (depends on the laws of the designated countries) from the international filing date or priority date (whichever is earlier). If the applicant does not enter the national phase within the prescribed time limit, the International Application loses its effect in the designated or elected States.

IV.1.5 Application for Patent of Addition: Patent of addition is an application made for a patent in respect of any improvement or modification of an invention described or disclosed in the complete specification already applied for or has a patent.
In order to be patentable an improvement, should be something more than a mere workshop improvement and must independently satisfy the test of invention. The major benefit is the exemption of renewal fee so long as the main patent is renewed. A patent of addition lapses with the cessation of the main patent.

IV.1.6 Divisional Application: A divisional application is one which has been "divided" from an existing application. The applicant, at any time before the grant of a patent can file a further application, if he so desires or if an objection is raised by the examiner on the ground that the claims disclosed in the complete specification relates to more than one invention. A divisional application can only contain subject matter in the application from which it is divided (its parent), but retains the filing and priority date of that parent. A divisional application is useful if a unity of invention objection is issued, in which case the second invention can be protected as a divisional application.

IV.2 Claims

It is the extent of the protection conferred by a patent or the protection sought in a patent application. It defines the scope of protection granted by the patent. It is more valuable to obtain claims that include the minimal set of limitations that differentiate an invention over what came before. Fewer limitations can increase rejection due to lack of novelty.

IV.2.1 Types of Claims

- **Independent claims:** An independent claim stands alone and is self-contained. It is always broader than the dependent claims that follows.
- **Dependent claims:** It is dependent on parent claim and makes a reference back to the parent claim. It allows the applicant to include all the limitation of the parent claim. E.g. the hammer of claim1, further including a nail claw extending from the head and separated by a gap.

  It helps to cover the invention and various embodiments of the invention. It is narrower in scope than parent claim. It can add features to parent claim but cannot delete any feature from it.
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  A multiple dependent claim cannot serve as basis for any other multiple dependent claim. They have high filling fees.

IV.2.2 Various forms of Claims

- **Jepson Claims:** It is an improvement of an existing invention. The improvement, the invention being improved and the elements that have been altered are mentioned. It is not used in domestic patent application but is accepted in USPTO. It helps in explaining the novelty easily

  "Where in the improvement comprises" is always there in Jepson claim.

  The claim can be written without the Jepson format but using Jepson format it becomes easier for patent examiner to find what is novel.
- **Reach through Claims:** They seek to protect things which have not yet been discovered by an inventor but which might be discovered in future by making use of their invention. When an invention is made in a widely applicable basis research technology. It is often possible to envisage future technology which might be developed using the basic research technology.
- **Markush Claims:** Mainly used in chemistry, a markush claim is a claim with multiple "functionally equivalent" chemical entities allowed in one or more parts of a compound. Format: "selected from the group consisting of A, B and C". Markush groups are simply listings of alternative elements in a peculiar format.

  E.g**. "With nails, screws, bolts or glue"** makes the claim indefinitely. The use of the term or is confusing as it does not tell which of the connectors is being claimed.

  "At least one of nail, a screw, a bolt and glue"

  The above makes the claim more definite.

  Format of Markush Claim:

  "A chair held together with a coupling selected from the group consisting of a nail, a screw, a bolt and a glue."

Here the final connecting word is “and”.

- **Product by Process Claims:** It is a product claim where the product is defined by its process of manufacture especially in chemical and pharmaceutical industries.
  “Product obtained by the process of claim X” or **“Product made by the steps of”.**
  It helps to protect the final product which may be useful without the knowledge of the inventor on what the product is
  He must mention: the starting material and the process.
  Product by process claims are almost always chemical inventions but they may be for a physical device.
  The competitor can do reverse engineering to know about the product manufacture and then produce it be using a different process. Since the claim is given to the method of production the competitor would escape infringement.
- **Apparatus and Machine Claims:** They can be independent, dependent or multiple dependent. The term apparatus refers to a machine or device.
- **Article of Manufacture Claims:** Similar to machine or apparatus claim. It has no moving parts where as machine or apparatus does. It is a combination of elements that interrelate and are useful. E.g. light weight hammer.
- **Mean plus Function Claims:** Claims that include one or more such means plus function elements are called mean plus function claims.
  Structure Claims: It defines elements by structure. If claim for means for opening door but the drawing only shows a doorknob then the parent excluded any other way of opening door.
- **Omnibus Claims:** It is a type of claim that refers to the description, drawing and /or examples described in the patent specification without defining any technical features of the claimed product process.
  Advantage: It provides a claim larger that may be held valid and infringed while all other claims are held invalid.
- **Swiss Type Claims:** It is a claim format intended to cover the first, second or subsequent medical use of a known substance or composition. It is used to protect the new features of a product. E.g. A drug is used to treat headaches but a person found it is useful to treat hair loss than the person can file a Swiss type claim for the 2^{nd} use. Mainly used in pharmaceutical industry. Medical practitioners remain free to use the new purpose without fear of infringement yet the patented has the ability to restrain the manufacture of the medicament for that purpose.

- **Programmed Computer:** A programmed computer claim is one of the form – a general purpose digital computer programmed to carry out such and such steps where steps are those of a method etc.
  The basic idea is:
  A new program makes an old general purpose digital computer into a new and different machine.

IV.3 Patent Cooperation Treaty (PCT)

Approaches to international patent protection:

- Apply in each country separately in which patent is sought. Cost is very high, documentation probe etc.
- Apply in accordance with the "Paris Convention for protection of industrial property". It provides a 12 months delay, priority date etc. are main features.
- File a PCT application. It provides an inventor a 30/31 months delay, preliminary examination option and prior art search report depending upon the inventors wish in which he sought to get patent.

IV.3.1 PCT

It is an international patent law treaty which provides a unified procedure for filing patent applications to protect inventions in each of its contracting states. A patent application filed under PCT is called PCT application.

Steps:

- A single filing of PCT application is made with RO (Receiving Office) in one language.
- Search is performed by International Searching Authority (ISA) plus written opinion regarding the patentability of the invention which is the subject of the application.
- Preliminary examination is done by International Preliminary Examination Authority (IPEA) but it is optional.
- After this national regional authorities examine the application
- Then the final issuance of application.

The states which are parties to the PCT constitute the International Patent Cooperation Union regional patent office like EPO and ARIPO (African Regional IP Office). These offices grant regional patents.
Any resident or national of a contracting state of the PCT may file a PCT application. Under this system, patent protection is given in designated states contained in the PCT application.

IV.3.2 Role of WIPO in PCT

World Intellectual Property Organization (WIPO) is situated in Geneva, Switzerland. It oversees PCT applications. The international bureau of WIPO administers the international phase of the PCT application process. WIPO receives and store PCT applications and ensures the required format, declaration, filing fee for the patent. Defects and corrections are done at this stage itself. It helps to reduce formalities in the applying to the national patent offices.

WIPO also publishes the document which can be accessed from their website, its translation is also done at WIPO itself, it can provide the contracting states with application documents.

IV.3.3 Options and steps for filing under PCT:

Alternative 1

- File an international PCT application that complies with PCT formality requirements and pay one set of fees.
- At least one of the inventor is a resident of a PCT contracting state.
- It can be filed with the national patent office (which will serve as receiving office for the PCT) or directly with WIPO in Geneva.
- Time limits are given in the website of WIPO. Documents must be submitted within the time limit. The limits under PCT are measured from the priority date.

Alternative 2

File a national application first and then a PCT application within 12 months. Once a PCT application is filed, the inventor has up to 18 months to decide on which countries he wants to apply for patent. He can further delay it by first applying for national application and then within 12 months apply for PCT application.

During the 12 months period following the filing of the priority application, the applicant can choose to file one or more additional national applications, as new refinements or embodiments of the invention are developed.

PCT application can incorporate the disclosures of, and claim priority to, all the national applications directed to that invention that were filed during the previous 12 months period.

PCT application can also include new disclosure pertaining to the invention or new claims that were not set forth in any of the previous priority applications. However, to obtain benefit of earlier priority date, the new claim must be supported by earlier priority application.

Total delay = (12 + 18) months

1. National application (priority date claim)
2. Within 12 months PCT application is filed
3. After PCT application, within 18 months of that time or within 30 months of priority date we can enter the national phase.

IV.4 Patent Classification System

It is a way to arrange documents in a patent office so that they can quickly find a document which is identical to the invention.
For this, International Patent Classification (IPC) is agreed internationally.
USPC (United States Patent Classification) is fixed by USPTO.
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The logic behind classification is to ease patent search and retrieving.

IV.4.1 Classification Based Searching

IV.4.1.1 Advantages

- More complete results than text searching.
- Independent of the language syntax.
- Independent of changes in terminology.
- Concept search.
- Available for patent documents where no full text of claims/description is available.

IV.4.1.2 Disadvantage

- Complex structure of classifications.
- It requires study of classification rules.

IV.4.2 Different types of classification

- **International patent Classification (IPC):** It is a hierarchical patent classification system used in over 100 countries to classify the content of patents in a uniform manner. It was created under Strasbourg agreement (1971), one of a number of treaties administered by WIPO. It is updated on a regular basis by a committee of experts. IPC-8/IPC R is the reformed version of IPC. Under this system there is double designation for every patent document: Core and Advanced classification designation. Core classifications are to be revised every 3years from issue and advance classifications are to be revised after every 3 months. IPC R classification is to be eliminated with the 2011 IPC reform.

  Sections:

  - A – Human Necessities
  - B – Performing Operations
  - C – Chemistry; Metallurgy
  - D – Textiles; Paper
  - E – Fixed Constructions
  - F – Mechanical; Lighting; Heating; Weapons
  - G – Physics

- H – Electricity

Classes: Two digits numbers
Subclasses: One alphabet
Main groups: One to three digit numbers
Subgroup: Two or three digit numbers

- **European patent Classification (ECLA):** It is an extension of IPC and issued by EPO. Both IPC and ECLA are divided into eight sections which are further divided into classes, sub-classes, groups and sub groups. There are approximately 135000 classification entries in ECLA.

  Features:

  1. Highly skilled personnel: ECLA classes are only assigned by the EPO examining corps i.e. a small body of highly trained individuals maintains the relevance of the system.
  2. Narrow class definition: The sub groups are also further categories.
  3. Accelerated revision schedules: It is revised even before 5 years revision time of IPC. However with IPC-R, this advantage is reduced.
  4. Non-patent literature indexing: Non patent literature is also included in the sub group

  Disadvantages:

  ECLA classes are issued several months after classification. It cannot be used to retrieve recently issued/published documents.

- **Cooperative Patent Classification (CPC):** It is joint partnership between USPTO and EPO to integrate toward a common classification system. It is largely based on ECLA and is modified to ensure compliance with the IPC administered by WIPO. CPC is an effort to bring the best practices of USPTO and EPO together and to make patent research internationally compatible.

  Objectives to launch CPC

  i) Improving patent searching.
  ii) Sharing resources.

  The CPC is substantially based on the previous European classification system (ECLA), which itself was a more specific and detailed version of the International Patent Classification (IPC) system.

Structure: Each classification term consists of a symbol such as "A01B33/00" (which represents "tilling implements with rotary driven tools"). The first letter is the "section symbol" consisting of a letter from "A" ("Human Necessities") to "H" ("Electricity") or "Y" for emerging cross-sectional technologies. This is followed by a two digit number to give a "class symbol" ("A01" represents "Agriculture; forestry; animal husbandry; trapping; fishing"). The final letter makes up the "subclass" (A01B represents "Soil working in agriculture or forestry, parts, details, or accessories of agricultural machines or implements, in general"). The subclass is then followed by a 1 to 3 digit "group" number, an oblique stroke and a number of at least two digits representing a "main group" ("00") or "subgroup". A patent examiner assigns a classification to the patent
Application or other document at the most detailed level which is applicable to its contents.

- **US Patent Classification:** It is only applied to United States patent documents. The economic importance of the US patent system makes US patents a vital source for many prior art searches in the world.

Advantages

i) US patent examiner classifies patents with US more accurately than they do with IPC marks. They classify using US system first and then they use to generate IPC classification. They use US to IPC concordance tools to do this.
ii) It was perceived that USPC is revised more often than IPC. Hence it can adapt to changing technologies. However, the revision is done on as need basis and the reclassification work is done manually.

There are over 400 classes in the U.S. Patent Classification System, each having a title descriptive of its subject matter and each being identified by a class number. Each class is subdivided into a number of subclasses. Each subclass bears a descriptive title and is identified by a subclass number. The subclass number may be an integral number or may contain a decimal portion and/or alpha characters. A complete identification of a subclass requires both the class and subclass number and any alpha or decimal designations; e.g., 417/161.1A identifies Class 417, Subclass 161.1A.
The Manual of Classification ("MOC") contains ordered arrangements of the class and subclass titles, referred to as class schedules. These titles are necessarily brief, although they are intended to be as suggestive as possible of subject matter included. Therefore, it is best not to depend exclusively upon titles to delineate the subject matter encompassed by a class or subclass. Reference to respective definitions and notes is essential. If a search is to be expeditious, accurate, and

complete, the Manual of Classification should be used only as a key to the class or subclass definition and appended notes.

The Manual of Classification has the following parts:

- A list of classes revised in the most recent revision to the Manual and the reason for the revision to each class.
- A list of the contents of the Manual showing the current page date for each class and the year in which the class was originally established.
- Overview of the classification system.
- A hierarchical arrangement of class titles organized into four main groups by related subject matter. This hierarchy is to be used to determine document placement only as a last resort, i.e., when none of the other classification criteria, such as comprehensiveness, etc., allow placement. This part also includes an exact hierarchical listing of the synthetic resin and chemical compound classes.
- A list, in numerical order, by art unit indicating the classification(s) assigned to each.
- A list of classifications in numerical order by class number giving the class title, the art unit to which the art is assigned, and the examiner search room in which the art can be found.
- A list of classes in alphabetical order by class title with associated class numbers.
- The class schedule for PLANTS.
- Class schedules for utility patent classes arranged in numerical sequence by class number.
- The class schedules for the Design classes.

IV.5 Different Types of Searching

IV.5.1 Novelty search: these search have no date constraints on the prior art. It helps the inventor to determine if his invention can be patented or not. All prior date is searched and is given to the inventor. It is based on the sole criteria of novelty and non-obviousness. Novelty/ patentability search helps to evaluate a particular invention and provides an insight into the already existing technologies. It is important to conduct patentability searches before filing a patent application, while drafting the claims of a patent and during the invention review cycle.

A patentability search is designed to tell you the likelihood of obtaining a patent on your idea. Although the law does not require that you do a patentability search before filing a patent application, however often a search is the right first step in the patent process.

Time is often an obstacle with patentability searches. A patentability search is often a short search ranging from anywhere between 4 hours and 20 hours. Because they are short in nature, it is important to understand the main novel idea of the invention disclosure to be searched. By doing so, a searcher will be able to quickly scan a large set of search results looking for prior art that appears relevant to the main idea. Upon finding the relevant art, the searcher can then determine if the art has additional search features of interest.
In addition to finding related art, some patentability searchers may also be tasked with identifying less relevant documents that could contain "alternative embodiment" ideas that will be included in the drafting of the patent specification. Alternative embodiments are changes made to an invention's non-essential or non-novel parts, but that show how the invention could be adapted to work in different situations or with existing products. For example, an invention for a curtain-hanging device could work whether the user was hanging curtains, drapes, or valances, and it might also work for hanging blinds. Or, as another example, a novel design for a

Jacket that holds an MP3 player in an inner pocket would work whether the inner pocket were detachable, or sewn into the jacket fabric.

Alternative embodiment searching may not be necessary in all patentability searching. The bottom line is that searchers should always discuss the main goal of the search with a patent attorney, and tailor the focus of the search (and what kind of results are returned by the search) to the requester's specifications.

A patentability search will usually include a search in major patent collections, normally encompassing at least the United States (US), European (EP), Patent Cooperation Treaty (WO/PCT) and Japanese (JP) collections. Although any prior published document can be used against a patent application, most patent examiners from major patent offices will go straight to these collections, so it makes sense to include them in any patentability search, no matter how cursory. The patent search tool should be selected so as to gain necessary basic coverage, but pricing is usually a constraint with shorter patentability investigations. Many commercial and free tools will have some coverage in US and major foreign country databases.

IV.5.2 Validity search: The idea is to find prior art that is relevant to the validity of the CLAIMS of the subject patent. Not the general ide, not the entire patent but each claim. Thus it allows the claims to be disallowed on the grounds that someone came up with the invention before the patent in question was filed. Filing date is very important to prove that he/she was the first person to come up with the invention. NOTE we do not cite any prior art that has already been referenced by the subject patent. Relevant art does not has to be in the claims of other patents. It can be in the description also. Independent claims are the targets in validity search.

A validity search also helps with the valuation of a patent. If the searcher discovers closely related prior art that may cast doubt on the validity of the subject patent, the patent may be considered "weak." On the other hand, if the search does not discover these other

documents, the subject patent may be considered "strong." This kind of investigation plays in important role when licensing agreements or other royalties are being negotiated between the subject patent holder and a 3rd party interested in practicing its claimed subject matter.

One important consideration during a validity search is claim interpretation. Because validity searches are performed on patents that have already been examined and allowed, a broad interpretation of the allowed claims is necessary to find further relevant art. It is absolutely essential for the searcher to give the selected claims the broadest reasonable interpretation. Furthermore, this interpretation must be discussed and clarified with the search requester. Even if such art does not seem to constitute a direct challenge to the claims, it may still form the basis for a legal argument against validity. Successfully defining the scope of a validity search usually requires a strong understanding of the current state of the technology field, as well as some creativity when identify analogous technologies that may also fit into the claim limitations. A step in the specific shows an example of dividing a claim into its particular limitations; this activity can help the user in his or her quest to achieve the broadest possible interpretation. It must be stressed, however, that the interpretation of the claims should also be discussed with the search requester (a patent attorney), and agreed-upon prior to the start of the search. As in all

Patent searching, the searcher should get as much direction as possible from an attorney, and the task of interpreting any claims should fall directly to an attorney.

Another consideration in validity searching is determining the search cut-off date; ideally, this very important date should be agreed upon by the searcher and search recipient. Put simply, the search cut-off date should be determined to encompass any prior art that might defeat the subject patent's validity. This date is dependent on the national laws in the issuing country from which the subject patent originates. There are a number of legal concerns that dictate what cut-off date should be used for a validity search; however, in all cases, this date must be determined by a qualified attorney.

A validity search should encompass the entire body of potential prior art that could have been used to reject the original patent application. (However, due to the legal complexities involved in what material can be used to reject patent claims, the "search cut-off date" should always be determined by a patent attorney.) To meet these requirements, search tools selected for a validity search should have extended, reliable coverage in US and major non-US full text collections, as well as a complete worldwide bibliographic and family collection from at least one of the two major sources, the EPO’s INPADOC/DOCDB file and the Derwent World Patents Index. Most commercial patent search tools, along with the free USPTO EAST system in Alexandria, VA, will fit these criteria, although users should bear in mind that the more comprehensive the coverage is, the better the search will be. Free tools such as the EPO’s esp@cenet or Google Patents should probably not be used as primary sources, but can serve as useful supplementary sources of information, such as for free patent PDF downloading.

IV.5.3 Infringement search: Patent infringement is the commission of a prohibited act with respect to patented invention without permission from the patent holder. In many

countries, the use is to be commercial to constitute infringement. The extent of protection provided by the patent is defined in the claims of the granted patent. Patents are territorial and infringement is only possible in a country where patent is in force. The infringing party's product falls within one or more of the claims of the patent. In this we have to find the product of the company's which infringes the claims of the subject patent. Search ids focused on the products which are introduced in the market after the subject patent has been granted.

An infringement search primarily requires the searcher to analyze the claims of enforceable (or "live" or "in-force") patents, and published applications that may proceed to grant. The goal of the search is to uncover patents with claims that could represent an infringement risk to a new product, and the search should take place before the product is released to market. Infringement searches may also cover expired patent art, and sometimes non-patent sources such as product literature.

In addition to finding possible legal obstacles, infringement searches may offer some positive results. Infringement searches can sometimes be extended to include expired art, where searchers may find "safe harbor" (Freedom-to-Operate) patents which show material that has entered into the public domain. Finding expired art during the search process may allow an inventor to create,

Change, and/or tweak current processes of the invention to "design around" possible cases of infringement.

The biggest obstacle for preparing an infringement search strategy is the need to understand and predict all potential generic claim language that a new product might infringe upon. To cover the necessary ground, a searcher must be able to identify technology areas and/or applications which are equivalent or analogous to the product being searched. To illustrate this point, take the following example. A product disclosure states:

"A bag closure clip including a pair of opposing T-shaped clip members held in pivotal engagement by a U-shaped metal spring. Each clip member includes a jaw, a handle, and a fulcrum. As the handles are squeezed toward each other, the jaws open to allow a bag, such as for snack food or cereal, to be inserted between the jaws. When the handles are released, the spring forces the jaws toward each other to grip the bag and hold it closed."
A quick search of the US classification system shows that US Class 24 defines subclasses for various embodiments of clips, clasps, buckles, fasteners. This is an obvious place where patents having claims that the disclosed bag closure clip may infringe upon could be found. However, this is not the only place the searcher should look. Other classes may be applicable, such as Class 132, which includes subclasses for squeeze-open clips for hair, etc; Class 223 includes clothes pins; Class 439 includes jumper cables; and Class 606 includes surgical clamps. All could potentially have devices that claim the structural elements of the disclosure.

It is also necessary to carefully evaluate the claimed material to determine whether it could possibly encompass the proposed product of interest, especially when there are any vague limitations within the claims. For example, an infringement search could be conducted on a product that has the feature of “a radio frequency identification (RFID) tag.” If a patent document is found that is related to the search subject matter, and claims an “inventory item marker,” at first glance the searcher may not think that the claim is relevant to the search. However, after reading more of the document, it might become clear that the “item marker” could be an RFID tag, as seen in the embodiments described in the specification. Thus, the claim could be interpreted as possibly including the feature of interest. (This example is used here to show how claim language should always be given its broadest possible interpretation, and any final decisions should be left to the search recipient. In general, when there is any doubt about whether a claim could possibly encompass the search subject matter, that patent should be included in the search results.)

Non-patent sources are usually not primary sources for an infringement search. However, this type of search can include non-patent sources, especially product literature, as a means of identifying potential competitors in the market. Examining the patent holdings of close competitors is an important strategy in infringement searching, since the patented material from companies with similar products will be highly relevant to the search. Another consideration is that due to the lag between the filing and publication of a patent application, product literature may show the existence of a similar new product before its related patent applications are published.

IV.5.4 FTO search: It is a search done on issued patents or on pending patents to determine if a product infringes any of the claims of the issued or pending patents. It may also include expired art that acts as a safe harbor permitting the product or process to be used on patents in publications.

Freedom to operate", abbreviated "FTO", is usually used to mean determining whether a particular action, such as testing or commercializing a product, can be done without infringing valid intellectual property rights of others.

Since IP rights are specific to different jurisdictions, a "freedom to operate" analysis should relate to particular countries or regions where you want to operate. If you want to commercialize a new variety of lentil seed in your own country, for example, you might have complete freedom to operate if there are no patents, plant variety rights, trademarks or other IP rights covering the seed, the process used to make it or the way you wish to market it or in your country.

However, you might not have the same freedom to operate if you want to export the seed to another country, where patents or other IP rights may have been issued covering the plant genotype, methods, etc.

If you discover a patent application or patent in the database that seems to relate to the action for which you are seeking FTO, you can't immediately conclude that there isn't FTO,

because for a variety of reasons the matter claimed in the patent could be available to use. For example:

- Patents may not have been applied for in many countries; the claimed matter is protected only where there is a patent.
- Patents may not have been granted in some of the countries where applications were made; laws about what is patentable vary between countries.
- Patents that were issued may not still be in force if the patentee has not made regular payments due.
- Patents are a limited monopoly and they do expire (check expiration dates!).
- Some countries have exemptions for certain actions (for example, Germany is enacting a research exemption, and New Zealand has an exemption for certain types of clinical trials).
- Patents that were issued in different countries may have broader or narrower claims---so it is really important to look at the claims to see what they read on.

If you ask an attorney to render an FTO opinion, that might consist of finding such IP rights, issue jurisdictions, expiry dates and so on, and also assessing how the issued claims are to be construed and whether or not the issued claims might be invalid.
Most commonly, claims in a particular patent could be invalid because there is prior art, perhaps a publication or a public presentation about the matter claimed in the patent, that the patent examination process didn't find. In some countries a patent could be vulnerable to challenge because an inventor wasn't properly named.

IV.6 Basics of US Patent Laws

- 35 USC 101 ⟶ Invention must be useful
- 35 USC 102 ⟶ Inevtion must be novel
- 35 USC 103 ⟶ Invention must be non-obvious
- 35 USC 112 ⟶ Inventio must be fully disclosed

IV.6.1 35 USC 101: 35 U.S.C. 101 Inventions patentable. Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefore, subject to the conditions and requirements of this title. This may seem expansive, but certain subject matter are not eligible, what are called 101 judicial exceptions.
Patents are not granted for all new and useful inventions and discoveries. The subject matter of the invention or discovery must come within the boundaries set forth by 35 U.S.C. 101, which permits patents to be granted only for "any new and useful process,

machine, manufacture, or composition of matter, or any new and useful improvement thereof."
The term "process" as defined in 35 U.S.C. 100, means process, art or method, and includes a new use of a known process, machine, manufacture, composition of matter, or material.

IV.6.2 35 USC 102: 35 U.S.C. 102, entitled "Conditions for Patentability", describes some of the conditions when a patent should not be granted to an inventor based on the concept of novelty. These conditions generally relate to when an invention is already known publicly. Each subsection of section 102 describes a different kind of prior art which can be used as evidence that an invention is already public. This includes inventions that have already been described in other patent applications or publications. It also includes inventions that have been on sale for more than a year before a patent application was filed.

This section of US code was affected by the America Invents Act (AIA), and now reads as follows:
A person shall be entitled to a patent unless —

- the claimed invention was patented, described in a printed publication, or in public use, on sale, or otherwise available to the public before the effective filing date of the claimed invention; or
- the claimed invention was described in a patent issued under section 151, or in an application for patent published or deemed published under section 122 (b), in which the patent or application, as the case may be, names another inventor and was effectively filed before the effective filing date of the claimed invention.

Pre-AIA 35 U.S.C. 102 Conditions for patentability; novelty and loss of right to patent.
A person shall be entitled to a patent unless -

- the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for patent, or

- the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States, or
- he has abandoned the invention, or
- the invention was first patented or caused to be patented, or was the subject of an inventor's certificate, by the applicant or his legal representatives or assigns in a foreign country prior to the date of the application for patent in this country on an application for patent or inventor's certificate filed more than twelve months before the filing of the application in the United States, or

- the invention was described in - (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for the purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language; or
- he did not himself invent the subject matter sought to be patented, or
- during the course of an interference conducted under section 135 or section 291, another inventor involved therein establishes, to the extent permitted in section 104, that before such person's invention thereof the invention was made by such other inventor and not abandoned, suppressed, or concealed, or (2) before such person's invention thereof, the invention was made in this country by another inventor who had not abandoned, suppressed, or concealed it. In determining priority of invention under this subsection, there shall be considered not only the respective dates of conception and reduction to practice of the invention, but also the reasonable diligence of one who was first to conceive and last to reduce to practice, from a time prior to conception by the other.

Sections102 (a), (b) and (e) are the most important considerations when determining patentable subject matter during patent prosecution.

IV.6.3 35 USC 103: 35 U.S.C. 103 describes the condition of patentability referred to as non-obviousness. This provides that a patentable invention must not have been obvious to a "person having ordinary skill in the art" (PHOSITA) in view of the appropriate prior art.

The most important section of section 103 is 103(a):
35 U.S.C. 103 Conditions for patentability; non-obvious subject matter.
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at

the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negative by the manner in which the invention was made.

IV.6.4 35 USC 112: 35 U.S.C. 112 dictates the form and content of the specification and the form and content of the patent application's claims. The first paragraph introduces 3 legal concepts, the written description requirement, the enablement requirement, and the best mode requirement. The second paragraph limits the ability of claims to be too open-ended or unclear.

35 U.S.C. 112 Specification.

- The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.
- The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
- A claim may be written in independent or, if the nature of the case admits, in dependent or multiple dependent form.
- Subject to the following paragraph, a claim in dependent form shall contain a reference to a claim previously set forth and then specify a further limitation of the subject matter claimed. A claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers.
- A claim in multiple dependent form shall contain a reference, in the alternative only, to more than one claim previously set forth and then specify a further limitation of the subject matter claimed. A multiple dependent claim shall not serve as a basis for any other multiple dependent claim. A multiple dependent claim shall be construed to incorporate by reference all the limitations of the particular claim in relation to which it is being considered.
- An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

CHAPTER 5:

V. Project Undertaken

V.1 Patentability search

A patentability search involves searching the prior art, which includes published patent applications, issued patents, and any other published documents, with the aim of determining whether filing your patent application makes sense. If you find prior art that describes your invention completely or renders it obvious, you probably shouldn't bother trying to **patent** your invention. A patentability search is sometimes called a prior art search or simply just a patent search.

Before filing an application, it is advantageous to perform a preliminary patentability search. Doing so will provide an idea of the closest related prior art, and allow the patent claims to be drafted "around" this previous art, so that the novelty of the invention will be more obvious to the examiner.

In addition to being used as a preliminary research tool, a patentability search can aid in the preparation of an application. The search will help define an appropriate breadth for the claims of a future patent application as well as act as an aid in finding which aspects of the technology to focus an application on.

V.1.1 Obstacles Facing the Searcher

Time is often an obstacle with patentability searches. A patentability search is often a short search ranging from anywhere between 4 hours and 20 hours. Because they are short in nature, it is important to understand the main novel idea of the invention disclosure to be searched. By doing so, a searcher will be able to quickly scan a large set of search results looking for prior art that appears relevant to the main idea. Upon finding the relevant art, the searcher can then determine if the art has additional search features of interest.

In addition to finding related art, some patentability searchers may also be tasked with identifying less relevant documents that could contain "alternative embodiment" ideas that will be included in the drafting of the patent specification. Alternative embodiments are changes made to an invention's non-essential or non-novel parts, but that show how the invention could be adapted to work in different situations or with existing products. For example, an invention for a curtain-hanging device could work whether the user was hanging curtains, drapes, or valances, and it might also work for hanging blinds. Or, as another example, a novel design for a jacket that holds an MP3 player in an inner pocket would work whether the inner pocket were detachable, or sewn into the jacket fabric.

Alternative embodiment searching may not be necessary in all patentability searching. The bottom line is that searchers should always discuss the main goal of the search with a patent attorney, and tailor the focus of the search (and what kind of results are returned by the search) to the requester's specifications.

V.1.2 Searching Patent Documents

A patentability search will usually include a search in major patent collections, normally encompassing at least the United States (US), European (EP), Patent Cooperation Treaty (WO/PCT) and Japanese (JP) collections. Although any prior published document can be used against a patent application, most patent examiners from major patent offices will go straight to these collections, so it makes sense to include them in any patentability search, no matter how cursory. The patent search tool should be selected so as to gain necessary basic coverage, but pricing is usually a constraint with shorter patentability investigations. Many commercial and free tools will have some coverage in US and major foreign country databases.

V.1.3 Searching Non-Patent Literature

A patentability search will also include a non-patent literature search. Major non-patent literature sources encompassing many technical subject areas include, but are not limited to:

- Engineering Village (subscription)
- Scopus (subscription)
- Google Scholar (free)
- Google (free)
- IEEE explore (subscription)
- Science direct (free)
- Wikipedia (free)

V.1.4 Specific Search Strategies

These search strategies are examples of specific best practices that can be applied during the course of a patentability search. These are steps to be taken in addition to accepted search practices that apply to all searches.

- Always discuss the general search focus with the search requester. Determine whether there is a need to search for documents which may describe alternative embodiments, or if a straight forward search for only the most relevant art is needed.

- Ask the search recipient if potential claims have been drafted for the patent application. If so, the searcher should discuss whether a search on all of the claimed features is needed, just as the examiner would perform upon receiving the application. (Sometimes patentability searches are performed to determine

whether further research is viable before proceeding, and thus initial claims are not always available.)

- Always perform a search on the inventor name to get an idea of the person's core research interests. Collaborators and heavily cited colleagues are possible influences/sources of similar art.

V.1.5 A Typical Search Sequence

The following search sequence is a generic progression of search steps that could be applicable to many prior art investigations..

1. Understand the search. This usually requires reading of one or more technical publications in the field of search where familiarity is lacking. If the person who requested the search does not have any recommendations, a web search on the general search topic is usually good place to start for identifying these resources. Performing an entity search on any known authors or applicants can also help to orient the searcher and identify some useful references as a starting point.

2. Full-text search to quantify the scope of the art. Where the scope is broad, research the topic to narrow the scope with more specific search terms. For example, in a chemical engineering reactor search, is the topic a fluidized bed reactor or a packed bed reactor? If a packed bed reactor, what other terms are typically used for the reactor type and specific media used therein? Use an industry standard resource to become familiar with the terms of art (in this case, Perry's Handbook would be a good choice).

3. Identify related patent documents to determine more specific terms related to art in the field. (To continue the reactor example, a document may disclose silica as a type of inert media used in a packed bed reactor. However, silica is merely one species of inert media used in this type of reactor. Identify the other species and consider including them as additional keywords to broaden the search when appropriate.)

4. Narrow the search body with the most relevant classes and subclasses from the appropriate classification area(s) of interest. Patentability searches that encompass US art will benefit from a US class search in that collection, while at least IPC and/or ECLA classes should be used to adequately cover collections from other

patent issuing authorities. A healthy discussion with a USPTO Examiner is also sometimes beneficial to determine important US subclasses that may otherwise be overlooked.

5. Search all relevant art within each chosen subclass. Review each central reference for additional keywords and structural features that can be used to massage the body of the full-text searching in (3).

6. Iterate (4) and (5) to identify additional references.

7. After exhausting (6), examine key central references for classes and subclasses not originally considered and repeat with respect to each new subclass.

8. Return to the full-text searching body and search the art for more recently identified keywords. If the search engine permits it, exclude search strings or subclasses which were already fully reviewed.

9. Search the remaining body of art using keywords found from central references, client notes, Examiner suggestions, etc.

10. Perform a forward and backward citation search on each centrally relevant reference found during the search. Examine any relevant document discovered by this process to ascertain why it was not discovered during the text/class search. Perform additional search iterations to cover any newly identified classes or keyword terms.

V.2 Invalidation search

A validation/invalidation search seeks to uncover patents or other published prior art that may render a granted patent invalid. The search results consist of a search report, a claims mapping chart, and citation of prior art. The results of the search are used to invalidate a patent involved in infringement litigation or to support due diligence and ascertain the validity of a patent.

A patent validity/patent invalidity search is conducted by a client who is concerned about his product infringing a particular patent. These searches are important to a patentee from a commercial point of view.

Whenever a company is concerned of its product infringing another company's patented product/process or another company alleges infringement of a patent, a patent invalidation search can be performed to invalidate the claims of the granted patent. Patent Invalidation Search is performed to identify documents or prior use that may reduce the claims of a granted patent, thus invalidating it. The aim of the search is to uncover prior art or prior use which limits the scope of the granted patent. The invalidation search is a comprehensive search carried out by expert professionals to successfully invalidate patents. Detailed research is conducted to determine whether the claims of a particular patent are valid or invalid when analyzed and compared to the prior art available on the date of filing.

V.2.1 Obstacles Facing the Searcher

One important consideration during a validity search is claim interpretation. Because validity searches are performed on patents that have already been examined and allowed, a broad interpretation of the allowed claims is necessary to find further relevant art. It is absolutely essential for the searcher to give the selected claims the broadest reasonable interpretation. Furthermore, this interpretation must be discussed and clarified with the search requester. Even if such art does not seem to constitute a direct challenge to the claims, it may still form the basis for a legal argument against validity. Successfully defining the scope of a validity search usually requires a strong understanding of the current state of the technology field, as well as some creativity when identify analogous technologies that may also fit into the claim limitations. A step in the specific shows an example of dividing a claim into its particular limitations; this activity can help the user in his or her quest to achieve the broadest possible interpretation. It must be stressed, however, that the interpretation of the claims should also be discussed with the search requester (a patent attorney), and agreed-upon prior to the start of the search. As in all patent searching, the searcher should get as much direction as possible from an attorney, and the task of interpreting any claims should fall directly to an attorney.

Another consideration in validity searching is determining the search cut-off date; ideally, this very important date should be agreed upon by the searcher and search recipient. Put simply, the search cut-off date should be determined to encompass any prior art that might defeat the subject patent's validity. This date is dependent on the national laws in the issuing country from which the subject patent originates. There are a number of legal concerns that dictate what cut-off date should be used for a validity search; however, in all cases, this date must be determined by a qualified attorney.

Sometimes the term "critical date" is used to refer to this search cut-off date; however, in patent law, the phrase critical date has a distinct meaning, and it does not always correlate to the search-cutoff date that a patent attorney may request.

Oftentimes, the search requester will designate a search cut-off date of 3 to 5 years after the filing date of the patent to be searched. This is especially useful in certain emerging technologies, where searchers may find highly relevant references published after the filing date of an early seminal patent under validity investigation. Tracing their origins back to an early obscure conference proceeding or other hidden source can form the basis for a legal argument against validity. However, searchers should also bear in mind that the number of publications for a quickly moving technology might skyrocket after a certain seminal publication in the technology’s history, meaning that a post-filing-date search could swamp the searcher with too many useless references. When this happens, searchers should consult with the search requester to determine whether it is appropriate to move the search cut-off date back to an earlier date.

A special obstacle can arise when internet publications are found containing information that appears relevant to a validity investigation. Any publicly available information can be used to make a case against validity, but there is a need to prove that the information was in

fact available before the effective filing date of the patent document. One way to do this is to use internet archiving services, which have been crawling the web and making date-stamped copies of web pages. The most well-known of these is the Internet Archive (also called the Way back Machine), available here. This service will not index some pages, for example, those pages that are marked with a robots.txt file to discourage web crawlers, or "orphan" pages that are not linked by any other web pages on the net. Still, there is a chance that technical information publicly available on the web can be date-stamped using this resource.

Another useful tool in a validity search is the patent's prosecution history (also sometimes called a "file history"). A prosecution history is a record of all correspondence between a patent applicant and the patent office that examined the application. It may contain a search report filed by the examiner, which can be a helpful starting-off point for the searcher. It will also often contain a reasoned statement written by the Examiner considering the prior art found during the search, and explicitly describing the novel claim limitations that allowed the patent to issue in consideration of past inventions (in the US, this document is called the Reason for Allowance). Because it states exactly which claim limitations were not found in the prior art, this document is sometimes helpful to determine the focus of validity investigations, although the exact search strategies and claim interpretations should always be controlled by a qualified patent attorney.

Locating the prosecution history can be a tricky business. In the US, some newer patent prosecution histories may be accessed online via the USPTO Public PAIR service. A prosecution history for a newer document may be available as an Image File Wrapper (or IFW), meaning it is fully available online in PDF format; older documents may need to be ordered from a prosecution history service, where employees physically retrieve the records and make copies. Similarly, the EP maintains a system for accessing prosecution histories online, at the EPO's Register Plus service; although not all EP prosecution histories are available this way. The situation gets even trickier when a prosecution history is needed from other patenting authorities. Some patent office's allow physical inspection of their prosecution histories, but do not allow them to be copied. In addition, some patent offices may destroy their records due to lack of storage space. The age and issuing authority associated with a patent document may determine whether or not this valuable resource can be found

V.2.2 Searching Patent Documents

A validity search should encompass the entire body of potential prior art that could have been used to reject the original patent application. (However, due to the legal complexities involved in what material can be used to reject patent claims, the "search cut-off date" should always be determined by a patent attorney.) To meet these requirements, search tools selected for a validity search should have extended, reliable coverage in US and major non-US full text collections, as well as a complete worldwide bibliographic and family collection from at least one of the two major sources, the EPO's INPADOC/DOCDB file and the Derwent World Patents Index. Most commercial patent search tools, along with the

free USPTO EAST system in Alexandria, VA, will fit these criteria, although users should bear in mind that the more comprehensive the coverage is, the better the search will be. Free tools such as the EPO's esp@cenet or Google Patents should probably not be used as primary sources, but can serve as useful supplementary sources of information, such as for free patent PDF downloading.

For validity searching in older technologies, specifically the mechanical arts, it is very advisable for searchers to select a data source with a complete collection of US full text patent data. In the mechanical arts, it is possible for a current idea to actually appear in the patent literature far earlier than 1976, the date at which many US full text collections begin in electronic sources. Micro Patent Patent Web, Thomson Innovation, LexisNexis Total Patent, and Google Patent Search are examples of sources which provide complete US full text backfire data.

Citation searching is a valuable tool during any search effort, but because a validity search always starts with an issued patent, there should always be an initial investigation into the patent art cited by the examiner. The searcher should attempt to get an idea of the closest art found during the initial search, to understand which claim limitations were discovered by the examiner, and which were not found, allowing the patent to issue. (The patent file history should also be consulted, whenever possible, to gain an understanding of the reasons for allowance. For US patents, this can be done using Public PAIR, and for EP patents, using the EPO's Register Plus service.)

The essential features in any full text patent search tool to be used for validity searching should include:

- Highest quality data possible
- As much backfire data as possible
- Efficient citation search features
- The ability to limit the search by date using publication, application or priority date

V.2.3 Searching Non-Patent Literature

A validity search must also include a non-patent literature search, encompassing any document published before the search cut-off date. (Due to the legal complexities involved in what material can be used to reject patent claims, this date should always be determined by a patent attorney.) Recommended non-patent literature sources for various technical disciplines can be found in their respective best practices articles. Both large compendiums of information and smaller resources such as individual journals, books, and even web pages can be sources of relevant prior art during this type of in-depth investigation.

Validity searches by nature are intended to be more extensive and in-depth than the search which was performed by the examiner who issued the patent. For that reason, validity investigations often require searchers to consult obscure, unusual, and remote sources of potential prior art. Failing any positive hits from major online sources, it is not unusual for searchers in the most pressing legal cases to utilize major libraries, such as the Library of Congress (US) or the National Library of Medicine (US), to conduct investigations manually. Failing the ability to go to a nationally recognized source, searchers might consider gaining access to university libraries in their area

Major non-patent literature sources encompassing many technical subject areas include, but are not limited to:

- Engineering Village (subscription)
- Scopus (subscription)
- Google Scholar (free)
- Google (free)
- IEEE explore (subscription)
- Science direct (free)
- Wikipedia (free)

V.2.4 Specific Search Strategies

These search strategies are examples of specific best practices that can be applied during the course of an infringement search. These are steps to be taken in addition to accepted general search practices that apply to all searches..

- **Develop the search features by making each limitation of the claims its own feature.** Through discussion with the search recipient, identify the various limitations which are likely to be the most difficult to find in the prior art. (Usually, the searcher must ensure that every limitation of the selected claims is included in the search features. However, the purpose of breaking the claim into its component features is that it will be easier to find pieces of the claim, rather than the entire claim in entirety.) Because examiners can combine multiple patent references to prove non-obviousness, a validity searcher must look for individual “pieces” of a claimed invention rather than focusing on the whole.

- **Agree on and clarify the broadest reasonable interpretation of claim limitations with the search recipient.** Claims in a validity search should always be given the broadest reasonable interpretation; a patent attorney should always be consulted during this process. This step is crucial for searchers to fully understand what to include and exclude in the search results.

- **Identify keywords from the claims of the patent.** A patent drafter acts as a lexicographer for the patents she drafts. She can pick words she wants to use and lay stress on specific words. The reverse is also true; she may avoid words she considers less important. A neat way to start an invalidity search is to pick keywords based on the patent drafter's focus. Generally, a patent drafter would use important keywords in the claims and use them repeatedly with due antecedent basis applied. A searcher can tap this resource and pick out words that have antecedent basis applied to them. This will ensure that the searcher begins the search on the right track, making the initial searches highly focused.

1. **Establish a search cut-off date with the person requesting the search.** Due to a number of legal complexities involved in determining what constitutes prior art and can be used to challenge validity, **this date should always be determined by a patent attorney.** A common range will be 3-5 years after the filing date of the subject patent.

- **If possible, review the file history of the subject patent.** The patent prosecution is a tool that can provide some extra help and useful clues to the validity searcher. Firstly, the examiner's original search report, including the field of search and relevant results found by the search, is often contained in the prosecution history. Secondly, the prosecution history can provide some answers these two questions: why did the examiner allow the patent application? What material was the examiner unable to find in the prior art? Ideally, in the US, the patent prosecution history will contain a copy of a special document known as the examiner's Reason for Allowance, outlining why the application was allowed to issue as a patent. However, it is common for this information to be missing from the prosecution history. When this occurs, searchers should review the other documents within the prosecution history (documents with names such as Applicant's Remarks, Claim Objections, and/or Amendments to the Claims) to find additional clues.

  Searchers should note that **any conclusions drawn from examining the file history should be discussed with a patent attorney before they are used to direct the search.**

  Scanned US prosecution histories can be found via the USPTO Public PAIR website (http://portal.uspto.gov/external/portal/pair), while EP file histories are available from the EPO's Register Plus service (https://register.epoline.org/espacenet/regviewer?lng=en). For non-US or EP patent documents, the file history may need to be ordered via proxy from the issuing patent

office, if the search time budget allows. Certain offices will not even allow photocopies to be made of their file histories, and in extreme cases this may require the searcher (or a proxy) to visit the original copy and make notes by hand to summarize the examiner's decision.

- **When reporting the results of a validity search, consider using a feature matrix to note key subject areas addressed by each reference.** Always relate the results to the claimed subject matter.

- **When reporting your search results, do not offer any opinion about the validity of the patent in question.** Searchers should remember that their job is to find references that **may** be relevant to a particular validity case. However, searchers should always refrain from producing any written interpretation of the results that they find. All interpretation should be left to the patent attorney, and a discussion of the search deliverables should always take place before the search is complete.

V.2.5 A Typical Search Sequence

The following search sequence is a generic progression of search steps that could be applicable to many prior art investigations..

1. Understand the search. This usually requires reading of one or more technical publications in the field of search where familiarity is lacking. If the person who requested the search does not have any recommendations, a web search on the general search topic is usually good place to start for identifying these resources. Performing an entity search on any known authors or applicants can also help to orient the searcher and identify some useful references as a starting point.

2. Full-text search to quantify the scope of the art. Where the scope is broad, research the topic to narrow the scope with more specific search terms. For example, in a chemical engineering reactor search, is the topic a fluidized bed reactor or a packed bed reactor? If a packed bed reactor, what other terms are typically used for the reactor type and specific media used therein? Use an industry standard resource to become familiar with the terms of art (in this case, Perry's Handbook would be a good choice).

3. Identify related patent documents to determine more specific terms related to art in the field. (To continue the reactor example, a document may disclose silica as a type of inert media used in a packed bed reactor. However, silica is merely one species of inert media used in this type of reactor. Identify the other species and consider including them as additional keywords to broaden the search when appropriate.)

4. Narrow the search body with the most relevant classes and subclasses from the appropriate classification area(s) of interest. Patentability searches that encompass US art will benefit from a US class search in that collection, while at least IPC and/or ECLA classes should be used to adequately cover collections from other patent issuing authorities. A healthy discussion with a USPTO Examiner is also sometimes beneficial to determine important US subclasses that may otherwise be overlooked.

5. Search all relevant art within each chosen subclass. Review each central reference for additional keywords and structural features that can be used to massage the body of the full-text searching in (3).

6. Iterate (4) and (5) to identify additional references.

7. After exhausting (6), examine key central references for classes and subclasses not originally considered and repeat with respect to each new subclass.

8. Return to the full-text searching body and search the art for more recently identified keywords. If the search engine permits it, exclude search strings or subclasses which were already fully reviewed.

9. Search the remaining body of art using keywords found from central references, client notes, Examiner suggestions, etc.

10. Perform a forward and backward citation search on each centrally relevant reference found during the search. Examine any relevant document discovered by this process to ascertain why it was not discovered during the text/class search. Perform additional search iterations to cover any newly identified classes or keyword terms.

V.2.6 Case study

Subject Patent

Patent No.: US 7178020

Title: Attachment integrated claims system and operating method therefor.

Abstract: A digital device operatively coupled to a computer network including first and second networked components receives unitary data stream having N fields of data and an associated Nth field label, and distributes the contents of each of the N fields to one of the first and second networked devices in response to the N field labels included in the unitary data stream, where N is a positive integer. A method for operating the digital device is also described.

Summary: One purpose of the present invention is to create a coherent system that allows for the electronic filing, transmission, and processing of "insurance claims with attachments," and to thereby overcome the many deficiencies of the hybrid system claims processing methodology described above.

Thus, one object according to the present invention is to provide a PAC form processing system, which minimizes the necessity of manual data entry. According to one aspect of the present invention, only about 40% of the information needed to complete the PAC form has to be entered by hand. According to another aspect of the present invention, the amount of information that has to be manually re-entered by an operator is essentially zero.

Another object according to the present invention is to provide a PAC application processing system, which eliminates handling errors resulting in a mismatch between, for example, a PAC form and an associated patient x-ray. According to another aspect of the invention, mismatch errors are virtually eliminated since the electronic x-ray and the associated text are never separated; field data included in, for example, the PAC form is copied and transferred between the server and the mainframe computer systems inside the insurance company. According to yet another aspect of the invention, mismatch errors are virtually eliminated since no hard copy of the x-ray is ever sent to the insurance carrier.

Still another object according to the present invention is to provide a PAC application processing system, which increases the number of service providers employing electronic claims systems to thereby reduce the overall claims processing costs. Since a PAC form can now be handled electronically in accordance with the present invention, electronic final payment claims become viable for approximately 20,000 additional dentists.

A still further object according to the present invention is to provide a PAC application processing system in which Document Identification Numbers, or some other method of uniquely specifying the PAC, are simultaneously associated with both the text and the x-ray by a single computer entry.

Yet another object according to the present invention is to provide a PAC application processing system, which operates at lower cost. Cost efficiencies are readily achieved according to the present invention by eliminating the need to send a physical x-ray with the claim.

Another object according to the present invention is to provide a cost effective claim processing system wherein little or no information on either the PAC form or the Predetermination form has to be manually re-entered.

Still another object according to the present invention is to provide a system for packaging textual data with an associated digitized x-ray for transmission to an insurance company. It will be appreciated that direct digital images are easy to integrate into the system because such images are already in the form of a computer file.

Another object according to the present invention is to provide a totally digital PAC application processing system which can accommodate both text and digitized x-rays at low cost, thereby allowing insurance companies to require x-rays with all claims because such requirements will not significantly increase the processing cost associated with non-x-ray documented claims.

An additional object according to the present invention is to provide a totally digital PAC application processing system in which a customizable claim form, i.e., the PAC form, which addresses the needs of all insurance carriers is stored in the memory of the computer in every service provider's office. This, in combination with a non-clearinghouse communications channel and having AIC system software at all of the insurance carriers, then eliminates the need for imposing industry-wide standards, such as ANSI ASC X12, for claim-related electronic transactions. The present invention allows each individual insurance company to get the information that it requires and to get that information in whatever format that insurance company prefers. Moreover, the ability to transmit the customizable claim form and integrated attachment to an insurance carrier via a non-

clearing house communications channel advantageously permits the transmission of other types of claims, including worker's compensation claims, to the insurance carrier. In addition, it will eliminate the irritant of the patient or provider having to obtain a PAC form from a particular insurance company.

Another object according to the present invention is to provide a totally digital PAC application processing system in which prescreening of information entered into a PAC form, which is stored in the memory of the computer in the service provider's office, is easily performed.

Yet another object according to the present invention is to provide a totally digital PAC application processing system in which provider information is automatically entered into each PAC form.

It will be appreciated that none of the above-identified objects need actually be present in the invention defined by the appended claims. In other words, only certain, and not all, objects of the invention have been specifically described above. Numerous other objects advantageously may be provided by the invention, as defined in the appended claims, without departing from the spirit and scope of the invention.

These and other objects, features, and advantages are provided by a method for operating a computers system including first, second and third computers, each of the first, second and third computers including a memory, an input device, and a display, respectively, the first and the second computers being connected to one another by modems and a common communication line, and the first computer including a digitizing device. The method includes steps for:

a. retrieving a first form from storage in the first computer's memory and displaying the first form on the first computer's display;
b. writing first field data to the first form using the first computer's input device;
c. digitizing a patient's x-ray to thereby generate a digitized x-ray;

d. combining the digitized x-ray and the first form so as to generate an attachment integrated file;
e. transmitting the attachment integrated file to the second computer;
f. transmitting the first field data from the second computer to the third computer;
g. generating a second form upon receipt of the attachment integrated file, the first and second forms containing at least a portion of the first field data;
h. displaying the first form, the second form and an image corresponding to the digitized x-ray on respective displays of the third computer and the second computer;
i. writing second field data to the second form using the second computer's input device;
j. Transmitting the first and second field data corresponding to second form back to the first computer.

These and other objects, features and advantages are provided by a method for operating a computer network including first and second computer systems connected by a communications channel, each of the first and second computers including a memory, an input device, and a display, respectively. The method preferably includes steps for:

a. retrieving a first form from storage in the first computer system's memory arid displaying the first form on the first computer system's display;
b. writing first field data to the first form using the first computer system's input device;
c. combining a digital attachment and the first form so as to generate an attachment integrated file;
d. transmitting the attachment integrated file to the second computer system;
e. generating a second form upon receipt of the attachment integrated file, the first and second forms containing at least a portion of the first field data;
f. displaying the second form and an image corresponding to the digital attachment on the second computer system's display; and
g. Writing second field data to the second form using the second computer system's input device.

h. **Claims to Invalidate:**

A digital device operatively coupled to a computer network, said network comprising operatively coupling the digital device to a first network component and operatively coupling the digital device to a second network component, the digital device receiving a unitary data stream comprising a set of N fields each field having a respective Nth field label, and transferring the contents of a first subset of the N fields to the first network component and transferring the contents of a second subset of the N fields to the second network component in response to the N field labels included in the unitary data stream, where N is a positive integer greater than 1, the first and second subsets are not both equal to the full set N, and the first and second subsets each contain at least one member

Search begins

The search begins with understanding the claim of the patent. Patent analyst has to understand the claim by reading the full patent. If he/she is not able to get it then him/she must discuss the claim with the inventor otherwise the search will not be in the direction in which the inventor want it to be. So understanding the patent is must. After this the real search begins.

Our patent talks about sending a part of the data to one device and other part of the data to other device along different channels over the computer network

Steps of searching

1. Understand the subject patent
2. Understanding the claim to be invalidate
3. Start searching the NPL
4. Keyword based searching
5. Classification based searching
6. Combination searching
7. Citation searching
8. Inventor/assignee based search
9. Report making

10. Mapping of relevant text

Relevant Citations: US5778183A

Application/Patent no.	US5778183A
Title	Apparatus and method of automatically transmitting event-related information to a user of a network printing system
Assignee	XEROX CORP
Inventor	Joseph L. Filion, Charles F. Evans, Kenneth E. Rohlfing, Diane S. Rogerson, Kitty S. Koul,Mei-Yuei Lee, Craig W. Jacobs
Priority Date	Jun 12, 1995
Filing Date	Jun 12, 1995
Family Members	DE69627071D1 | EP0749065A1 | EP0749065B1

Table 5.1

Key features	**Claim**	**Relevant text**
KF1	A digital device operatively coupled to a computer network	An automatic transmitting system for use in a networked printing system including a first client, second client and server. The automatic transmitting system includes an agent, operatively associated with the server, for maintaining information regarding a plurality of subsystems associated with a printing machine--the agent communicates with both the first and second clients. The automatic transmitting system further includes a registration system, including the

		first client, the second client and the agent, for registering the information. The information includes a first identifier and a second identifier, the first and second identifiers being stored with the agent and corresponded with first and second sets of information, respectively. In practice, the agent transmits the first set of information exclusively to the first client when a first event occurs in one or more of the plurality of subsystems and transmits a second set of information exclusively to the second client when a second event occurs in one or more of the plurality of subsystems
KF2	said network comprising operatively coupling the digital device to a first network component and operatively coupling the digital device to a second network component	An automatic transmitting system for use in a networked printing system including a first client, second client and server. The automatic transmitting system includes an agent, operatively associated with the server, for maintaining information regarding a plurality of subsystems associated with a printing machine--the agent communicates

		with both the first and second clients. The automatic transmitting system further includes a registration system, including the first client, the second client and the agent, for registering the information. The information includes a first identifier and a second identifier, the first and second identifiers being stored with the agent and corresponded with first and second sets of information, respectively. In practice, the agent transmits the first set of information exclusively to the first client when a first event occurs in one or more of the plurality of subsystems and transmits a second set of information exclusively to the second client when a second event occurs in one or more of the plurality of subsystems
KF3	the digital device receiving a unitary data stream comprising a set of N fields each field having a respective Nth field label, and transferring the contents of a first subset of the N fields to the first network component and transferring the contents of a	An automatic transmitting system for use in a networked printing system including a first client, second client and server. The automatic transmitting system includes an agent, operatively associated with the server, for

	second subset of the N fields to the second network component in response to the N field labels included in the unitary data stream, where N is a positive integer greater than 1	maintaining information regarding a plurality of subsystems associated with a printing machine--the agent communicates with both the first and second clients. The automatic transmitting system further includes a registration system, including the first client, the second client and the agent, for registering the information. The information includes a first identifier and a second identifier, the first and second identifiers being stored with the agent and corresponded with first and second sets of information, respectively. In practice, the agent transmits the first set of information exclusively to the first client when a first event occurs in one or more of the plurality of subsystems and transmits a second set of information exclusively to the second client when a second event occurs in one or more of the plurality of subsystems
KF54	the first and second subsets are not both equal to the full set N, and the first and second subsets each contain	In accordance with another aspect of the invention, there is provided an informing system for a printing

	at least one member	system, which performs a plurality of print-related functions and includes a print server communicating with a client by way of a network connection, the client being under control of a user. The informing system, which employs the print server to inform the client that an event associated with one of the plurality of print-related functions has occurred, includes: an agent operatively associated with the print server, a first identifier portion being stored at said agent; a source of identifier portions, said source providing a second identifier portion; a storage area, communicating with said source, for storing the second identifier portion; and a process, associated with one of the print-related functions, for conveying the second identifier portion to said agent when the event occurs;. In practice, said agent combines the second identifier portion with the first identifier portion to form a resultant identifier, the resultant identifier corresponding with a packet of information indicating

		that the event has occurred; said agent transmits the packet of information to the client; and in response to receiving the packet of information, the client informs the user of the occurrence of the event by reference to the information of the packet received at the client

Queries

S. no.	Queries	Database
1	(((((((DEVICE* OR APPARATUS* OR EQUIPMENT*) NEAR4 (SEN* OR TRANSM* OR TRANSF*)) NEAR5 (HAL* OR PART*)) NEAR6 (DATA* OR INFORMATION* OR FILE*)) NEAR7 (ON* OR FIRST* OR PRIMAR*)) NEAR10 (COMPUTER* OR"PC")) NEAR15 (SECOND* OR REMAIN*)) NEAR14 (OTHER OR ANOTHER OR SECOND*)) AND PRD<=19960328	THOMSON
2	(((((DATA+ OR INFORMATION+ OR FILE+ OR PACKET+) 3D (SERVER+ OR DATABASE+ OR ARCHIVE+ OR STORAGE+)) 6D (DISTRIBUTE+ OR ISSU+ OR CIRCULAT+)) 8D (HAL+ OR SUBSET+ OR PACKET+ OR PART)) 10D (DEVIC+ OR APPARATUS+ OR EQUIPMENT+ OR	ORBIT

	COMPUTER+ OR “PC”)) AND PRD<=19960328	
3	(((((((DEVICE* OR APPARATUS* OR EQUIPMENT*) W4 (SEN* OR TRANSM* OR TRANSF*)) W5 (HAL* OR PART*)) W6 (DATA* OR INFORMATION* OR FILE*)) W7 (ON* OR FIRST* OR PRIMAR*)) W10 (COMPUTER* OR"PC")) W15 (SECOND* OR REMAIN*)) W14 (OTHER OR ANOTHER OR SECOND*))AND ((713*) OR (G06*)) AND PRD<=19960328	PATBASE

Table 5.2

NPL Queries

S. no.	Queries	Database
1	(DEVICE OR COMPUTER OR "PC") (SENDING OR TRANSMITTING OR TRANSFERRING) (HALF OR FIRST OR PART) (OTHER OR ANOTHER) (FILE OR INFORMATION OR DATA)	GOOGLE, GOOGLE SCHOLAR, IEEE EXPLORE, SCIENCE DIRECT
2	(SENDING OR SEND OR TRANSMIT OR TRANSMIITING OR TRANSMISSION OR TRANFER OR TRANSFERRING) (DATA OR INFORMATION OR FILE OR APPLICATION) (PART OR PARTS OR PACKETS OR HALVES) TWO DIFFERENT DEVICES	GOOGLE, GOOGLE SCHOLAR, IEEE EXPLORE, SCIENCE DIRECT

Table 5.3

IPC Classification

Classification	Definition
G06	Physics; computing; calculating; counting

US Classification

Classification	Definition
713	Electrical computers and digital processing systems: support

Table 5.4

Keywords

Transmission	Sending	Transmitted
Transfer	Transferring	Sent
Send	Transmit	Transmitting
Device	Apparatus	Equipment
Computer	Pc	Packet
Half	Halves	Subset
Part	Primary	Secondary
File	Information	Application
Data	Second	Other
Another	First	Two
Different	One	Remain
Server	Database	Archive
Storage	Distribute	Issue
Circulate		

Table 5.5

CHAPTER 6

VI. Practical Application

- A patent gives the inventor the right to stop others from manufacturing, copying, selling or importing the patented goods without permission of the patent holder
- The patent holder has exclusive commercial rights to use the invention.
- The patent holder can utilize the invention for his/her own purpose.
- The patent holder can license the patent to others for us. Licensing provides revenue to business by collecting royalties from the users.
- The patent holder can sell the patent any price they believe to be suitable.
- The patent provides protection for a predetermined period (20 years) which keeps your competitors at bay.
- Patents are partially responsible for advancements in medical science, biotechnology, drug chemistry, computers etc.
- A patent reward inventors with the aforementioned advantages and hence, creates bigger and better discoveries.

VII. Conclusion

After completing the training we come to know about the importance of the patents in the technological world. A lot of money is spent by the companies all over the world in the intellectual property. It is the only way which is used to protect the rights of the people's intellectual property. To get a patent you require a strong idea which should be novel, non-obvious and should have a utility in the life of the people. It should be useful to the mankind and should not harm the life and sentiments of people. The inventor gets the protection over the claims which are there in the patent. The rights are on the claims. The date criteria are very important for the researcher as it changes with the change of the type of search. For patentability search we give the patents and NPL till date. In invalidation we give patents and NPL before the priority or effective filing date of subject patent. In case of infringement we give the products which are introduced in the market after the priority or effective filing date of subject patent. Patents can also be given if the client asks for it.
During the training we came across a lot of new technologies. We did electronics as well as mechanical projects.

VIII. Bibliography

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