

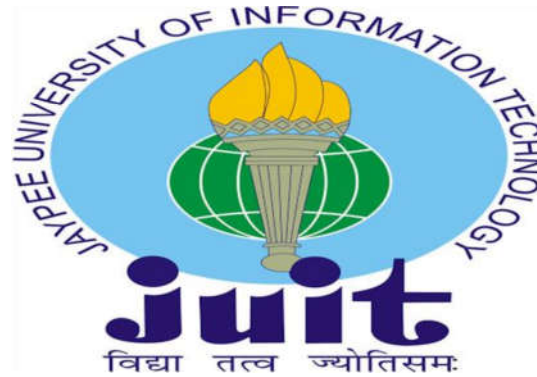
TECHNICAL SEARCH INSIGHTS AMONG WLAN ENTITIES

*Thesis submitted in partial fulfillment of the
Requirements for the Degree of*

**MASTER OF TECHNOLOGY
IN
ELECTRONICS AND COMMUNICATION ENGINEERING**

By
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**UNDER THE GUIDENCE OF
MR. MUNISH SOOD**



JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

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DECLARATION

I hereby declare that the work reported in M.Tech dissertation Report entitled "Technical Search insights among WLAN entities" submitted at Jaypee University of Information and Technology, Wagnaghat, India is an authentic record of our work carried out under the supervision of Mr. Munish Sood (Asst. Professor at JUIT), Mr. Sanket Thakur (Team Lead at TTC). We have not submitted this work elsewhere for any other degree or diploma.

Signature of Student

Name of Student

Vishal Thakur (212051)

This is to certify that the above statement made by the candidates is correct to best of my knowledge.

Signature of Supervisor

Mr. Munish Sood

Date:

Signature of Supervisor

Mr. Sanket Thakur

Head of Department

Acknowledgement

Above all, I thank God, the Almighty for providing me with this opportunity and granting me the capability to proceed successfully. The present work will remain incomplete unless I express my feeling of gratitude towards several persons who delightfully co-operated with me in the process of the work.

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List of abbreviations:

Sr. No.	Acronym	Full form
1	IPR	Intellectual Property Rights
2	TT consultants	Talwar and Talwar consultants
3	EP	European
4	US	United States
5	JP	Japan
6	PCT	Patent Cooperation Treaty
7	IPC	International patent classification
8	CPC	Cooperation patent classification
10	USC	United states Code

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Abstract

This report explores the various aspects of intellectual property (IP) and intellectual property rights (IPR). It begins by defining intellectual property as the legal concept that grants exclusive rights to mental creations. The report also examines different types of patent-related searches, starting with novelty searches. These searches have no time restrictions and assist inventors in determining whether to file a patent application by providing information on previously discovered innovations. Another type of search discussed is the patentability search, which evaluates the chances of an idea being patentable and is often conducted before submitting a patent application.

The report examines different types of patent-related searches, starting with novelty searches. These searches have no time restrictions and assist inventors in determining whether to file a patent application by providing information on previously discovered innovations. Another type of search discussed is the patentability search, which evaluates the chances of an idea being patentable and is often conducted before submitting a patent application.

The report also highlights the importance of considering national laws, seeking legal expertise, and selecting appropriate search cutoff dates for each type of search. It emphasizes the need for thorough research, collaboration with patent lawyers, and the use of reliable patent search engines to ensure comprehensive coverage of relevant databases.

Further, an invalidation project is also discussed here where the methodology of proceeding a project in IPR is disclosed. The types of databases, queries, AI software searching is also included in the report.

Overall, this report provides insights into the different types of patent-related searches and their significance in protecting intellectual property, assessing patentability, determining validity, and identifying instances of infringement.

Chapter 1

INDUSTRY DETAILS

1.1 Introduction to company:

TT Consultants are Patent Search and Analytics Support Service Providers, certified by ISO 27001 and ISO 9001:2008 based in India, USA and Taiwan. The company provides high-quality Intellectual Property and Innovation Support services, including R&D search support operations, patent licencing and infringement analyses, leading patent prosecution and litigation searches, and portfolio rating and competitor benchmarking.

Through a range of in-house created IP technologies, we provide creative and automated solutions that assist businesses in increasing their productivity and lowering the expenses associated with patent prosecution and litigation concerns.

Through our five locations internationally in India, the United States, and Taiwan, we have a footprint all over the globe and have shown our competence to customers in more than 30 significant geographic areas.

Our knowledge in a variety of technological fields enables us to comprehend the fundamental difficulties that our customers confront, allowing them to realise the full potential of their company. Our employees' excellent expertise and experience, who work around the clock to guarantee high-quality results and speedy turnarounds, is our greatest strength.

Additional expert services that we provide include document review, legal research, evidence summaries, and more.

1.2 Services

It includes those ones for patentability/state of the art, patents invalidation, freedom to function, infringement of patents, and searches for structure and sequence that look for previous art. Our research includes distinctive search reports, a major feature analysis chart, and other value additions that are unparalleled in the industry.

Technology landscape and whitespace analysis, competitor tracking, and patent portfolio

management are all included in patent analytics. We find, sort, and analyse data for you, then show it graphically with dynamic charts that are clickable for every category. By locating gaps in a technical field, we can help clients focus their R&D efforts.

Innovative patent tools that our devoted professionals have created internally. Some of our products, including as the Automated Invalidator Tool, Patent Landscape Viewer, Project Allocation System, and PAIR Tracking Platform, produce findings that are just as thorough as a manual search.

1.3 Awards & Recognition

1.3.1 TT Consultants Ranked Company 'A' By JETRO

Japan External Trade Organization (JETRO) recently released the 2014 India IPG patent working group report on 'Evaluation of patent research companies in India'. The report has ranked TT Consultants as the top patent search firm in India, for its overall quality management processes, understanding on typical technology research projects and high levels of output. The assessment was based on a number of parameters like understanding of critical technology disclosures, screening capacity and selection accuracy, identification of key search terms and relevant classifications, capability to search on international databases including PAJ, ability to handle invalidity search projects etc. A number of Japanese companies operating at a global level are now actively using patent research companies in India. This is mainly to accelerate patent research, improve accuracy and reduce costs of research work, which is so far one of the major challenges for Japanese companies.

1.3.2 XLPAT Labs – The Best Product Of The Year 2013

2013 STPI named XLPAT Labs "The Best Product of the Year - 2013" for its online platform for cutting-edge tools for quick patent analysis. The patent invalidator, which replaces human prior art searches with automated ones, is one of the product's ground-breaking technologies. It also provides collaboration via the internet, machine learning, and artificial intelligence—technologies that are used by several companies worldwide in the most contentious patent licencing battles. Talwar & Talwar Consultants Pvt. Ltd. has spun off XLPAT TT Consultants Pvt. Ltd. The platform, which was created in association with IIT and ISB, has the potential to generate millions of dollars through innovation and automation.

1.4 Aims and Objectives of the training

Aim:

To learn Patent and Non-Patent Literature Research and Analysis for various types of projects.

Objectives:

- Perform following types of Projects/ Searches:
 - Prior Art/ Patentability Search
 - Infringement Search
 - Invalidation Search
 - Landscape and Whitespace Analysis
 - Freedom-to-Operate (FTO) Search
- Learn Patent Portfolio Management and Valuation
- Learn Query making for Patent Search on various databases
- Gain knowledge of IP Laws
- Business/ Market Research of Patents, Products and Technology

CHAPTER 2: INTRODUCTION TO IPR

2.1 Intellectual Property

Intellectual property (IP) is a legal concept that pertains to the exclusive rights accorded to mental creations.

2.2 IPR (Intellectual Property Right)

These are the exclusive principles that protect human intelligence and creation. IPR are privileges accorded to the creators and proprietors of works resulting from human intellectual creativity. These works may be in the industrial, scientific, literary, or aesthetic fields, and may take the form of an invention, a manuscript, a software suite, or a business name.

2.2.1 Types of IPR

Copyright: Copyright is a legal concept that gives the creator of an original work exclusive rights to its use and distribution with the goal of enabling the founder with intellectual wealth to be given for their work and be able to support themselves financially, typically for a limited time. It shields writers (composers/artists) from infringement. There is no need to register; it is received automatically. Copyright is valid for the lifetime of the author plus 50 years after his or her passing.

Patent:

A sovereign state will grant a creator or assignee a number of exclusive rights under the conditions of a patent in exchange for full disclosure of an idea. Innovation is the term used to describe a process or a product that addresses a specific technological problem. The duration of validity is 20 years.

Trademark:

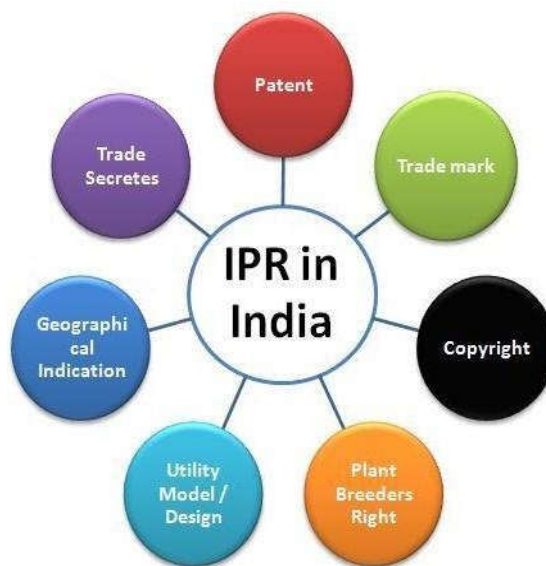
A trademark is an easily recognized image, phrase, or design that sets one source's products or services apart from those of competitors. A trademark can be owned by an individual, a business, or another kind of legal entity. A trademark may appear on the actual product, a label, a coupon, or a box. Additionally, trademarks are shown in company structures for corporate identity purposes. Trademarks are used to promote the distinctive characteristics of products or services. Legal issues may arise if a trademark's holder uses it in a manner that amounts to deceptive advertising or is generally offensive.

Geographic Indications:

It refers to particular products that are unique to the region because of the soil and other factors on which they are produced. It makes reference to a certain producing area where the product's quality is decided.

Trade secret:

A technique, process, layout, tool, sequence, or collection of data that is not widely known or easily identifiable and that a business utilizes to gain an advantage over customers or competitors is known as a trade secret. The idea behind "executive trade secrets" is that the doctrine of trade secrets should safeguard personally identifiable, commercially valuable knowledge of firm leaders, such as the colonel's secret blend and the coca cola recipe.



2.3 Patents

A patent is an exclusive right given to anybody who creates a brand-new, practical, and non-obvious technique, machine, manufactured good, or material composition, or a brand-new, practical improvement thereof.

It is given to an innovation that offers a fresh approach to a challenge in technology, whether it be a procedure or a product. After the date of award, it remains valid for 20 years.

Advantages

- It excludes competitors from the market
- limits the competition
- produces income via a licence or sale.

Disadvantages

- Cost concern
- Liability

2.3.1 Types of Patent

- **Utility patent:** It consists of a method, a tool, and a material composition that enhances an earlier notion. It remains valid for 20 years from the application date.
- **Design Patent:** It should be useful, like the design of a chair, wallpaper, pair of shoes, or piece of jewellery. It is good for 14 years.
- **Plant Patent:** It solely contains plants that reproduce asexually. Following filing, the patent is valid for 20 years.

2.4 Criteria of Patentability

Novelty: A requirement for patentability is novelty. If an invention was widely known previous to the filing date of the patent application, or prior to its date of priority if an earlier patent application's priority is claimed, it is not novel and consequently not patentable. The novelty criterion exists to prevent the previous invention from being claimed again. It should be a brand-new innovation that has never been seen before.

Inventive step and non-obviousness: The inventive step and non-obviousness embody the same fundamental requirements for patentability that can be found in the majority of patent laws, which stipulate that a creation must be sufficiently inventive — that is, non-obvious — to be eligible to be patented. In other words, "[the] non-obviousness rule asks whether the invention] is an adequate

distance over the state of the art."

Utility: The innovation must be useful in industry. It has to meet a few human standards.

CHAPTER 3:

TYPES OF SEARCHING

3.1 Novelty search:

There are no time restrictions on the previous art in these searches. It aids the inventor in deciding whether or not to file for a patent on his creation. The creator is provided with all previously discovered information. It is only based on the criterion of innovation and originality. A search for novelty and patentability aids in evaluating a specific invention and offers information on currently used technology. Prior to submitting an application for a patent, while creating a patent's claims, and during the invention's review cycle, it is crucial to carry out patentability searches. The patentability search is intended to inform you of your idea's chances of being patentable. Although doing a patentability search prior to submitting a patent application is not legally required, doing so is often the best course of action.

With patentability searches, time is sometimes an issue. A search for patentability is often quick, lasting between 4 and 20 hours. Given their little length, it is crucial to comprehend the primary inventive concept of the idea disclosure that will be looked for. A searcher shall be able to swiftly browse a large collection of search results this way in search of earlier work that seems pertinent to the core topic. The searcher may then decide whether the relevant work has any other search characteristics that would be of interest after locating it.

Sometimes patentability researchers may also be charged with locating less important publications that may provide "alternative embodiment" thoughts that will be incorporated into the writing of the patent specifications in addition to related art. Alternative embodiments are modifications applied to a discovery's non-essential or non-novel aspects that demonstrate how the invention may be modified to function in other contexts or with already available goods. An innovation for a curtain-hanging tool, for instance, may function whether the user was hanging drapes, valances, curtains, or blinds. Not all patentability searches need looking for alternative embodiments. The basic conclusion is that searchers ought to constantly discuss the search's primary objective with a patent lawyer and adjust the search's emphasis (as well as the kind of results it yields) to the request.

Major patent collections, including at least those from the United States (US), Europe (EP), the

Patent Cooperation Treaty (WO/PCT), and Japan (JP), are often searched as part of a patentability search. Despite the fact that any previously published document might be used opposing a patent application, the majority of patent examiners from large patent offices will go directly to these collections, therefore it's sensible sense to involve these in any patentability searches, no matter how quick. It is important to choose a patent search engine that will provide the fundamental coverage required, however shorter patentability studies often have a price limit. Many paid and unpaid services will have some exposure in important international and US databases.

3.2 Validity Search:

The goal is to locate previous art that bears on the reliability of the current patent's CLAIMS. Each claim, not the patent as a whole or the overall concept. As a result, it permits the specifications to be rejected on the basis that the invention was developed before the relevant patent was submitted. To demonstrate that the inventor was the first to come up with the innovation, the filing date is crucial. NOTE: We do not mention any previous art that the cited patent has already cited. The specifications of other patents do not always have to include relevant art. It may also be in the description. Targets in a validity search are independent assertions.

A validity check is beneficial for patent value as well. The subject patent may be deemed "weak" if the searcher comes across closely similar previous art that questions its validity. The subject patent, however, may be regarded as "strong" if the search turns up no more papers. This sort of investigation is essential when the subject patent holder and an outsider interested in exploiting its claim subject matter are discussing a licencing treaty or other arrangement.

Claim interpretation is a crucial factor to take into account while doing a validity search. A wide interpretation of the authorised claims is required in order to uncover further relevant art since validity searches are conducted on patents that have previously been evaluated and granted. The searcher must give the chosen claims the largest reasonable interpretation possible. The search requester must also be consulted about and given clarification on this interpretation. Even if a piece of art doesn't appear to directly contest the claims, it might nonetheless serve as the foundation for a legal defence of invalidity. A solid grasp of the status of the technological field today and some ingenuity when finding associated innovations that may also fit within the claim constraints are often necessary for successfully establishing the scope of a the validity search. A step in particular provides an example of how to break down a claim into its specific limits; this activity may aid the user in obtaining the

fullest interpretation feasible. However, it must be emphasised that the meaning of the claims ought to be examined and decided upon before the search is conducted with the search the applicant (a patent attorney). As with any patent search, the person performing the search should get as much guidance as is possible from a legal professional, and the responsibility for evaluating any claims should lie solely on the lawyer. Choosing the search cut-off date is a further factor in validity searching; ideally, the person who searches and search receiver should agree on this crucial date. Simply put, the search's cut-off date must be chosen to include any previous art that might invalidate the subject invention. The national laws of the country where the relevant patent was issued will determine this date. What cut-off date can be chosen for a validity search depends on a variety of legal considerations, but an attorney must always choose this date.

3.3 Infringement Search: A forbidden conduct using a patented innovation that is carried out without the patent owner's consent is considered a patent infringement. In many nations, the usage must be for profit in order to be considered illegal. The claims that are part of the awarded patent specify the scope of the defence offered by the invention. Due to the territorial nature of patents, only nations where the patent is in effect may commit an infringement. One or more patent claims apply to the infringement party's goods. We must identify the company's product that violates each claim of the relevant patent in this. The items that are released into the marketplace after the relevant patent has been awarded are the main focus of the search.

The analysis of claims of enforceable ("live" or "in-force") patents and published application that have a chance of being granted is the main need of a search for infringement. Prior to the product's introduction to the market, a search should be conducted to identify patent with claims that potentially provide an infringement risk for a new product. As a consequence of the study, infringement searches sometimes include non-patent sources of literature as well as expired patent art.

In addition to identifying potential legal barriers, infringement searches could also have some beneficial outcomes. Searchers may identify "safe harbour" (Freedom-to-Operate) patents that reveal content that has become public domain by extending infringement searches to include expired art. An inventor may be able to build, modify, and/or adapt present procedures of the invention in order to "design around" potential instances of infringement if they come across expired art throughout the search process. The need to comprehend and anticipate every conceivable general claims language that a new item can infringe against is the largest challenge when developing an infringement search

approach. A searcher has to be able to recognise technological domains and/or applications that are comparable to or equal to the item being searched in order to cover the requisite terrain. Take the following instance to demonstrate. According to a product disclosure:

"A bag closing clip comprising a U-shaped metallic spring pivotally engaging a pair of opposed T-shaped clip parts. Each clip component consists of a handle, a fulcrum, and a jaw. The jaws open when the handles are pressed together, allowing a bag—such as one containing cereal or snack food—to be put between them. The spring pulls the jaws towards one another when the grips are released, grabbing the bag and holding it shut.

The US system of classification may be quickly searched, and it reveals that US Class 24 provides subclasses for numerous embodiment of clips, clasps, buckles, and fasteners. This is a clear indication of where to look for patents with claims that the revealed bag closing clip could violate. The searcher should seek elsewhere as well, however. Other classes, such Class 132, which has subclasses for squeeze-open hair clips and other items, Class 223 (clothes pins), Class 439 (jumper cables), and Class 606 (surgical clamps), may also be relevant. All could have gadgets that assert the disclosure's structural features.

Additionally, it's important to carefully assess the claimed content to see whether it could include the desired product, particularly if there are any ambiguous claims that are pertinent to the search. The "item marker" might, however, be an RFID tag if the text is read in its entirety, as is the case with the embodiments stated in the specification. As a result, the claim may be understood to include the characteristic of interest. (This illustration illustrates how claims language ought to always be interpreted broadly and how any final judgements should be left up to the search receiver. Generally, a patent ought to be included when there's any question as to whether a claim may conceivably embrace the subject matter of the search.

The main sources for infringement search are often not non-patent sources. To find possible rivals in the market, this sort of search might also incorporate non-patent sources, including product literature.

Since the intellectual property from businesses that make comparable goods will be very relevant to the search, evaluating the patent rights of close rivals is an essential method in infringement hunting. Another factor to take into account is the delay between submitting a patent application and having it published, which might result in product literature revealing the existence of a new product before the relevant patent applications are made public.

3.4 FTO Search:

To find out whether a product violates any one of the claims of existing or pending patents, a search on existing or pending patents is conducted. Additionally, it could include outdated works of art that serve as a safeguard allowing the use of the thing or method in patents and publications.

The phrase "determine whether an action in particular, such as investigating or commercializing an item, can be performed without infringing on valid rights to intellectual property of others" is often referred to as "freedom to operate," or "FTO."

Since IP rights are region-specific, the "freedom to operate" examination should focus on the individual nations or areas where you intend to conduct business. If there aren't any patents, plant variety rights, and trademarks, or other intellectual property rights covering the seed, the manufacturing process, or the way you want to market it in your nation, for instance, you may have total freedom to operate.

If you desire to export the seed to another nation, where patents or other intellectual property rights may have been granted protecting the plant genotype, processes, etc., you may not have the identical freedom to operate. You can't automatically assume that there isn't FTO if you find an application for patents or patent in a database that seems to be related to the activity for which you are asking for FTO. This is because the topic claimed in the patent may still be usable for a number of different reasons.

A limited monopoly, patents do have an expiry date (be sure to verify it!).

Some nations have exclusions for certain acts (for instance, New Zealand has a waiver for specific sorts of clinical studies, and Germany is implementing a research exemption).

It is very essential to look at the specifications to see what they say since patents granted in various countries may have larger or narrower claims.

If you ask a lawyer to provide you with an FTO opinion, they may research relevant IP rights, issuing jurisdictions, expiration periods, and other information. They may also determine how the granted claims should be interpreted and if they are potentially invalid.

Most often, a given patent's claims may be void because the patent examination process missed previous art, such as an article or a public presentation regarding the subject matter of the claim. A

patent may be challenged in various nations if the inventor was not properly identified.

3.5 US Patent Laws:

- 35 USC 101 → Invention must be useful
- 35 USC 102 → Invention must be novel
- 35 USC 103 → Invention must be non-obvious • 35 USC 112 → Invention must be fully disclosed

3.5.1 35 USC 101: 35 U.S.C. 101 Patentable inventions. Subject to the terms and restrictions of this title, anybody who creates or discovers a novel and useful technique, machine, manufacturing, or mixture of matter, or a novel and beneficial development thereof, may receive a patent for it. Although certain topics—known as the "101 judicial exceptions"—are not eligible, this may appear pricey.

Not all fresh and practical discoveries and ideas get patent protection. The topic of the creation must be within the parameters established by 35 U.S.C. 101, which restricts the kind of inventions for which patents may be issued to "any novel and beneficial procedure, machine, production, or mixture of matter, or any novel and beneficial enhancement thereof."

According to 35 U.S.C. 100, a "process" is a "process, art, or method," which includes a novel application of a well-known process, device, product, manufacturing, mixture of matter, or substance.

3.5.2 35 USC 102: The "Conditions for Patentability" section of 35 USC 102 outlines some of the circumstances in which an inventor should not be granted a patent based on the idea of novelty. These circumstances often apply when an innovation is already well recognised. The many types of previous art that may be utilised to prove that an invention has already been made public are described in each part of section 102. This contains innovations that have been previously disclosed in publications or patent applications. It also covers innovations that were offered for sale for at least a year prior to the filing of a patent application.

The priority of creation under this subsection shall be established by taking into account not only the dates on which the invention was first conceived and last put into use, but also the fair diligence of the party that did so from the time of the other's conception forward.

The most crucial factors to take into account while choosing subject matter that is patentable during patent prosecution are sections 102(a), (b), and (e).

3.5.3 35 USC 103: The definition of the non-obviousness requirement for patentability is found in 35 U.S.C. 103. This stipulates that, given the relevant prior art, an invention that is patentable must not have been evident to a "an individual having ordinary expertise in the art" (PHOSITA).

Provision 103(a) is the most significant portion of this provision.

3.5.4 35 USC 112:

35 U.S.C. 112 governs the form and content of the specification and the form and content of the claims. In the first paragraph, the terms "description in writing requirement," "enabling demand," and "most effective mode requirement" are presented. The scope of allegations that may be made in the second paragraph is limited.

35 U.S.C. 112 Specification

Anyone proficient in the art to which the invention relates or with which it is most closely associated must be able to make and use it, and the specification must include an explanation in writing of the invention as well as the way and procedure of creating and applying it.

- A claim in a variety of dependent form must first identify a further restriction of the subject item claimed before making an alternate reference to one or more previously stated claims.
- No additional multiple dependent claims may be based on a multiple dependent claim. All of the limitations of a claim that depends on another claim must be deemed to be incorporated by reference into the multiple-dependent claim.
- Without mentioning the associated structure, subject matter, or acts in support of it, an element in a combination claim may be expressed as a method or step for carrying out a specific function. In this case, the claim is still construed to cover the equivalent structure, material, or functions described in the specification.

CHAPTER 4

PROJECT UNDERTAKEN

4.1 Invalidation Search Project-

Patent No.- US7733833B2

Cut-off date/Priority Date- 2004-03-24

Assignee- STRIX SYSTEM INC.

Inventors- Kalika Leoniod, Berg Alexender, Irani Cyrus

Title- Self-configuring, self-optimizing wireless local area network system

Searching Hours – 160 Hrs.

4.2 Methodology-

The patent given for invalidation search is known as subject patent. We must find the prior art that can invalidate this patent. So there are techniques to proceed in a project that will be described in this section below-

- Firstly, we have to analyze the patent and a deep understanding about the invention is a must.
- For understanding the whole patent knowledge of all the embodiments is necessary.
- Then we discuss it with our team members to clarify the doubts.
- After this, the first thing we do is to verify the priority date. That can be checked on ESpaceNet website.
- Keeping priority date in mind we start searching.
- We start from Google patents then move forward to the other databases.

4.3 Overview of Patent-

This patent belongs to the “H” class among the various classifications of a patent. “H” class belongs to electric and electronics patent group. All the patents related to this category come under this class. The priority date of this patent is 2004-03-24. It was filed by Strix System Inc. And they are also its

current assignee. The technology described in this patent is wireless local area network i.e., WLAN. The abstract of the patent is given below:-

Abstract

A system and associated method provides for a wireless local area network (WLAN) that permits mobile units to communicate with an external, wired network. Nodes in the WLAN include multiple components, such as a base module, antenna module, and one or more wireless modules. Indeed, this system can employ two or more wireless modules that employ different short-range wireless protocols, such as IEEE 802.11-type and Bluetooth protocols. The nodes may perform self-discovery to determine modules within the node and associated functionality, as well as identify neighboring nodes to thereby establish a mesh-type network. Nodes can be configured to provide connectivity to the wired network, while others (access points) communicate wirelessly with mobile devices. The nodes may then be interconnected wirelessly, or via wires.

Fig. 4.1 Abstract

Now it is clear from the invention that it belongs to wireless technology and more particularly to WLAN. The claims of the patent are also given below-

1. An apparatus, comprising:

a base module positioned within a stack, said stack being associated with a node of a wireless local area network, and said wireless local area network being configured to communicate with an external wired network;

an antenna module positioned within said stack; and

one or more wireless modules positioned within said stack and coupled to the base and antenna modules,

wherein each of said wireless modules is configured to perform automatic self-discovery by automatically determining a position of said each of the wireless modules within the stack, by automatically identifying other wireless modules in the stack, and by automatically determining whether said each of said wireless modules is configured to communicate with said external wired network via a wired or wireless communication link.

Fig. 4.2 Claim 1

9. A method, comprising:

performing, by each of wireless modules comprised in a stack associated with a node of a wireless local area network, an automatic self-discovery by automatically determining a position of said each of the wireless modules within said stack, by automatically identifying other wireless modules in the stack, and by automatically determining whether said each of said wireless modules is configured to communicate with an external wired network via a wired or wireless communication link,

wherein said stack further comprises a base module and an antenna module, said wireless local area network is configured to communicate with said external wired network, and said each of said one or more wireless modules are coupled to said base and antenna modules.

Fig. 4.3 Claim 2

Above given material is the claims of the invention. Keeping these claims in mind we have to find the prior art. If we are able to invalidate these claims, then invalidation of the patent is successful.

4.4 File Wrapper of the Patent:-

File wrapper is the document that consists of the whole history of the patent from filing till the grant of the patent. Mainly all the communications that occurred between the examiner and the inventor are disclosed in this document. File wrapper is a long document that consists of various rejections such as final and non-final rejections, arguments by inventor, fee related papers and citation by inventor etc.

It also consists of "Notice of Allowance" paper where the information why this patent has been granted is given there. All the rejections that are made by the examiner during the application process are also given here. Then responses given against these rejections are also present in the file wrapper.

The patent office stores and retains all the papers associated with a given patent application in a folder

known as a file wrapper. It includes a complete record of all actions taken by the patent office, from the submission of a patent applications until its issue.

03/17/2010	A.NA	Amendment after Notice of Allowance (Rule 312)	1	Preview	PDF	<input type="checkbox"/>
03/17/2010	SPEC	Specification	2	Preview	PDF	<input type="checkbox"/>
03/17/2010	REM	Applicant Arguments/Remarks Made in an Amendment	1	Preview	PDF	<input type="checkbox"/>
03/17/2010	N417	Electronic Filing System(EFS) Acknowledgment Receipt	2	Preview	PDF	<input type="checkbox"/>
01/12/2010	NOA	Notice of Allowance and Fees Due (PTOL-85)	6	Preview	PDF	<input type="checkbox"/>
01/12/2010	SRNT	Examiner's search strategy and results	13	Preview	PDF	<input type="checkbox"/>
01/12/2010	FWCLM	Index of Claims	2	Preview	PDF	<input type="checkbox"/>
01/12/2010	SRFW	Search information including classification, databases and other search related notes	1	Preview	PDF	<input type="checkbox"/>
01/12/2010	IIFW	Issue Information including classification, examiner, name, claim, renumbering, etc.	1	Preview	PDF	<input type="checkbox"/>
01/12/2010	ANE.I	Amendment After Final or under 37CFR 1.312, initialed by the examiner.	1	Preview	PDF	<input type="checkbox"/>
10/23/2009	A.NE	Response After Final Action	1	Preview	PDF	<input type="checkbox"/>

Fig. 4.4 File wrapper

Analyzing this document, we can find the novelty of the patent that why it has been granted or it describes the originality of the invention that it is disclosing. In this search, finding the novelty of invention is very necessary. This helps in searching as you must break the novelty of the patent.

Database used in the searching:

There are plenty of databases that can be used for patent searching. Some of them are free to use such as Google patents etc. In our project we have used XLSCOUT, ORBIT and GOOGLE PATENT databases.

XLSCOUT database:

XLSCOUT is an in-house database of our company. This database is an AI powered database that

can be used to find prior art in automated way. Xlscout consists of a huge database on which various learning models are applied.

In this database, the prior art searching is done in an automatic way. It automatically gives you relevant art according to your subject patent. Further, you can also modify your queries by using the supervised search option.

How we used XLSCOUT in our project:

Since XLSCOUT is an AI tool so, we only need to enter the patent number you want to invalidate.

Complete methodology along with the pics of project is given in detail below:-

Interface and tools of XLSCOUT-



Fig. 4.5 Interface of XLSCOUT and five tools provided by XLSCOUT.

There are 5 tools that are provided by the xlscout. These are:

- Tech scraper
- Company Explorer
- Expert patent search
- Novelty Checker/ideacue
- Invalidator

Since we are doing invalidation search, so we have to use invalidator tool.

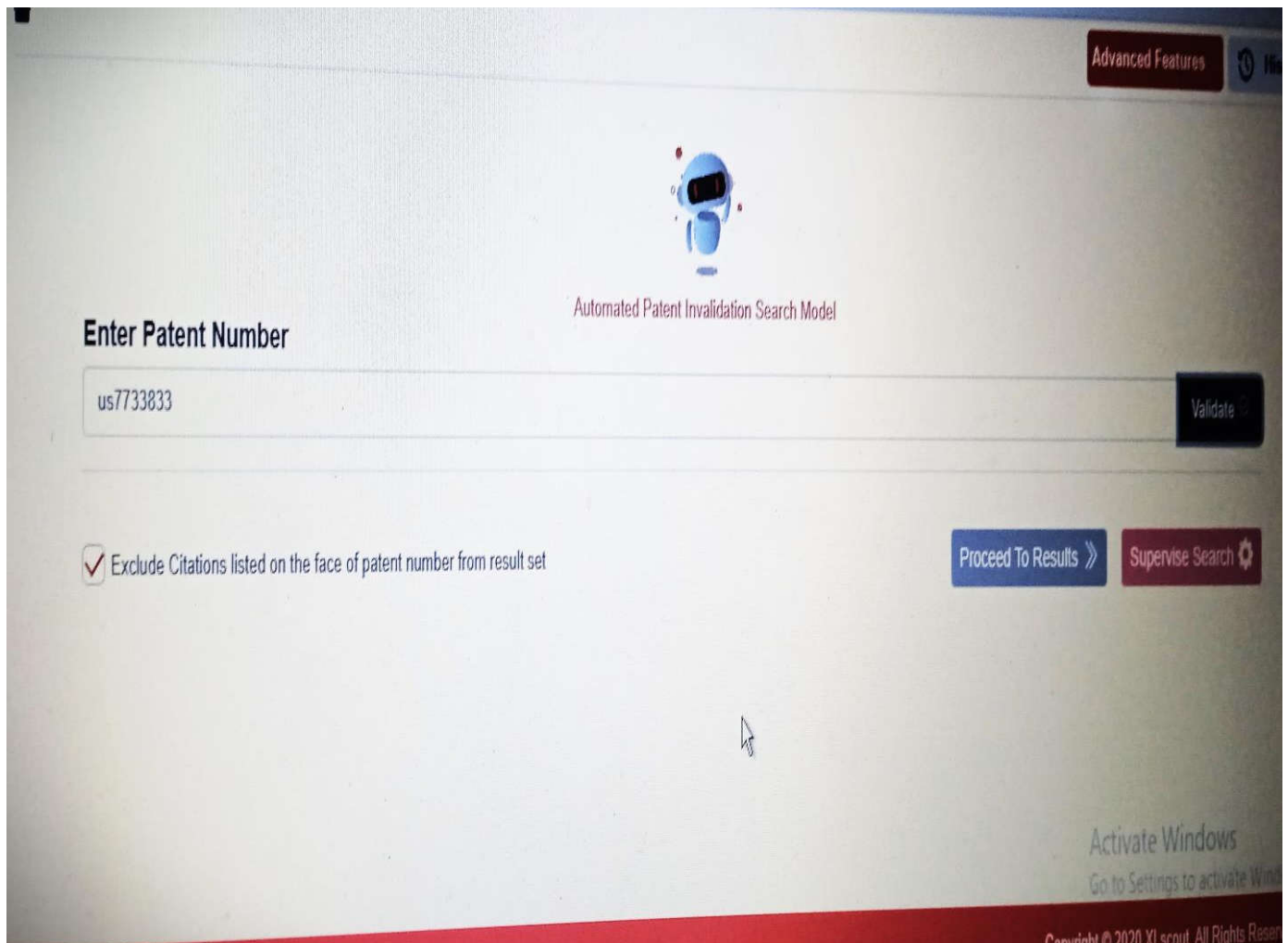


Fig. 4.6 Invalidator tool interface

On this page you just have to enter the patent number and it will give all the information about the patent along with event dates of the patent. Also, there are two options provided on this page, either you can directly proceed to results or you can select supervise search. In supervise search you can select the claims you want to invalidate. Sometimes a client gives the particular claims which he wants to search for so we can also select

only those claims.

In supervise search, the option to exclude the citations is also present. Further if you want to add more relevant text in the search you can also put or include that text in the search. The XLSCOUT is an AI model. It works by comparing the keywords with the other relevant arts that are present on the internet and gives us results according to that. It is the reason for calling this tool an automated patent invalidation search model.

After entering the patent number the invalidator tool gives the claims to be selected for invalidating. Then select the claims of interest and you can also add relevant text of your subject patent.

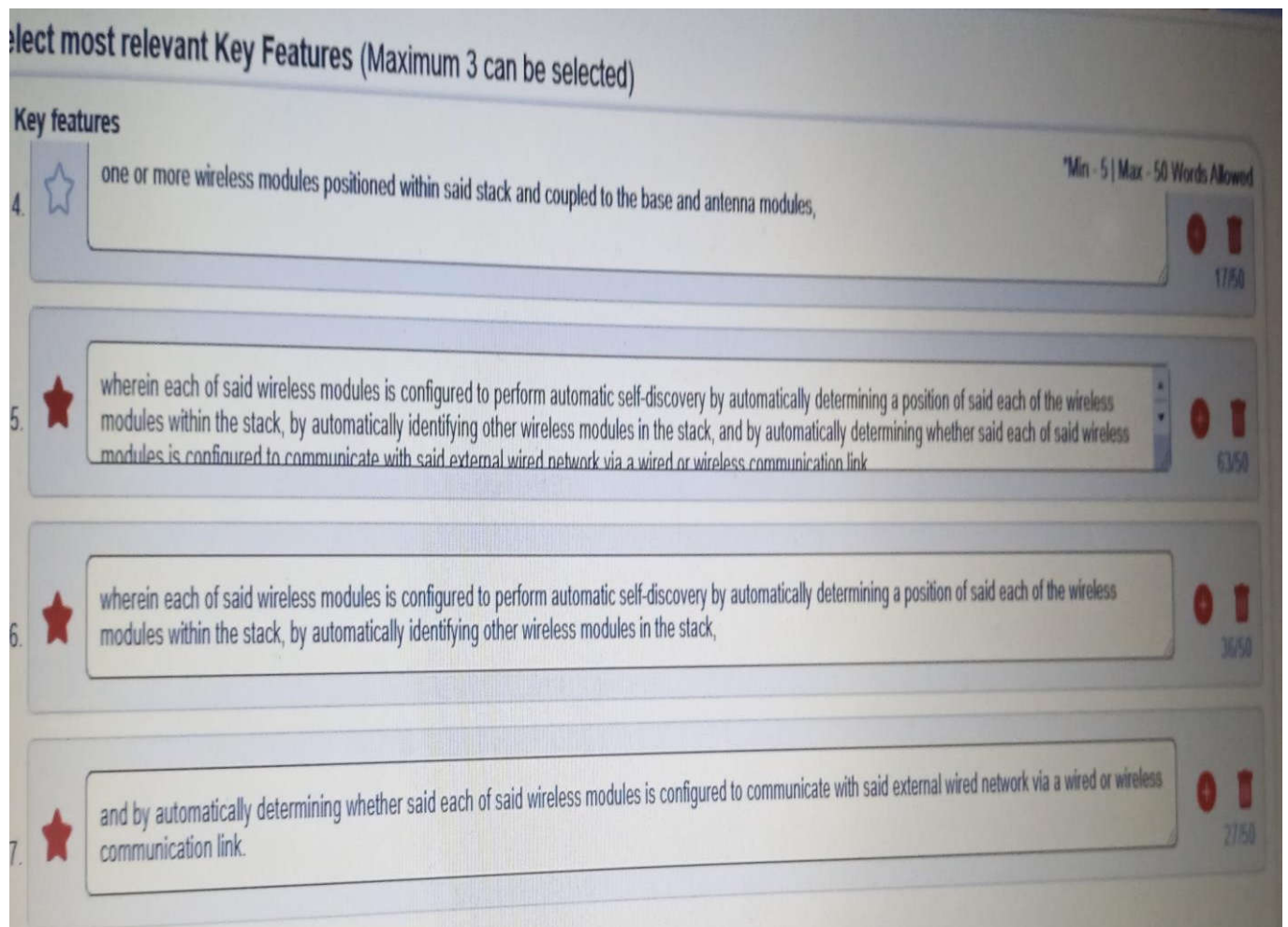


Fig. 4.7 Claims of interest

You can select maximum up to 5 claims in this tool.

After that you can further proceed with your search and the next window will show the key features of the patents which this tool extracts from the claims of interest. Then we can select the key feature which is somewhat exposing the novelty of the patent. After selecting that the invalidator tool will

give the results based upon that.

Further there is one more option that is present in this invalidator tool i.e., Advance search. By clicking on this button, you can select the dates of patent on which you want to search on that can be either priority date or publication date or grant date.

After selecting the interested key features, you can further proceed with your search. The next window that will appear will be the corpus window that will consist of keywords that the invalidator tool will use in the searching.

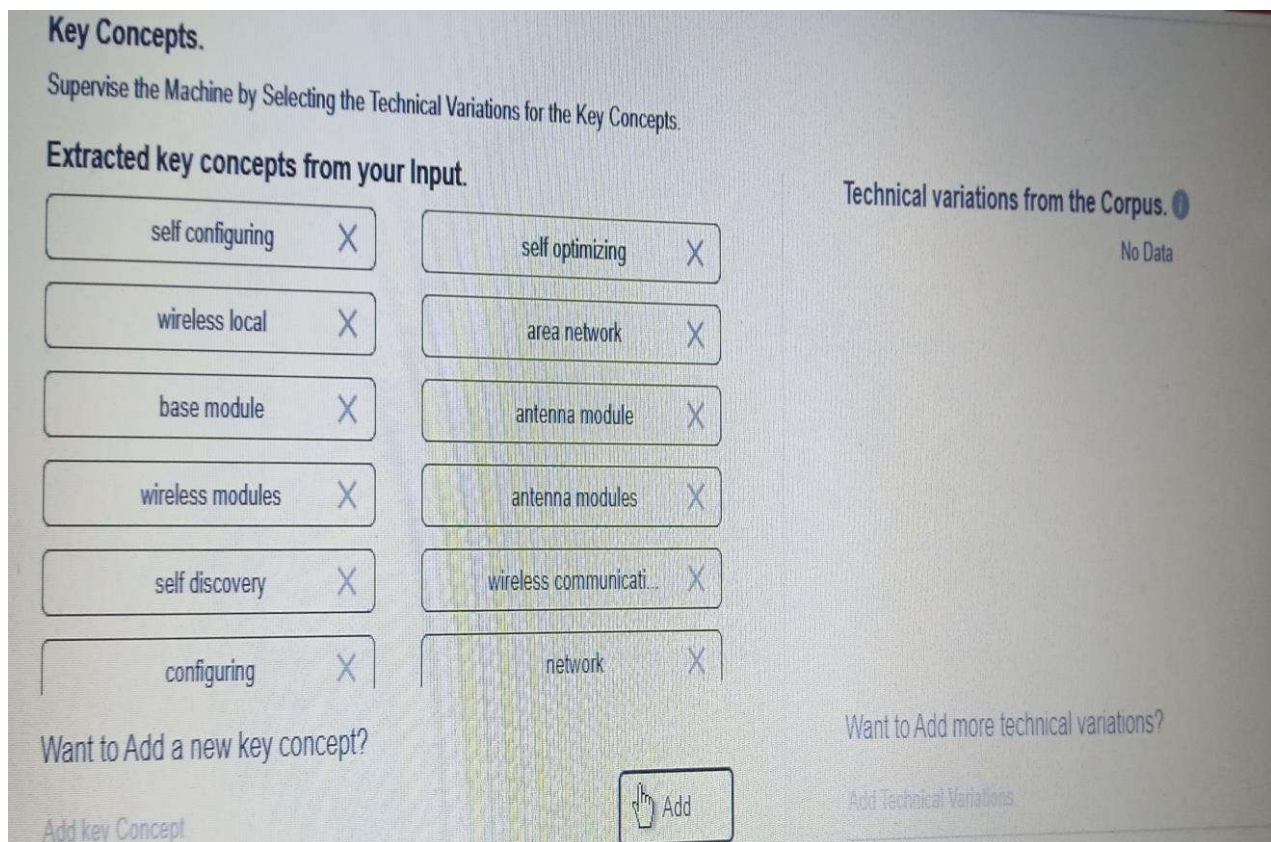


Fig. 4.8 Keyword Corpus

XLSCOUT has its own keyword corpus. This is an intelligent corpus that gives the keyword according to the relevancy of the patent. There is one more option of putting your own keywords if anyone of them left in case.

This corpus automatically finds the words from the patent and shows them on this window. Moreover,

it also gives the synonyms of the words according to the relevancy of the patent.

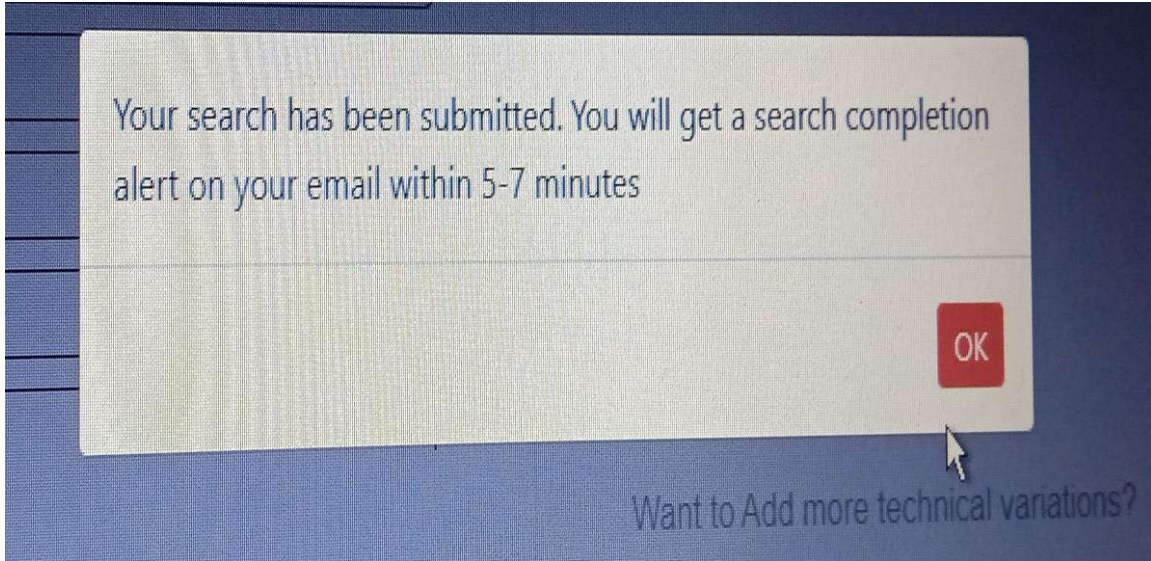


Fig. 4.9 Result

After 5 to 7 minutes the invalidator will inform you about the results on your registered mail.

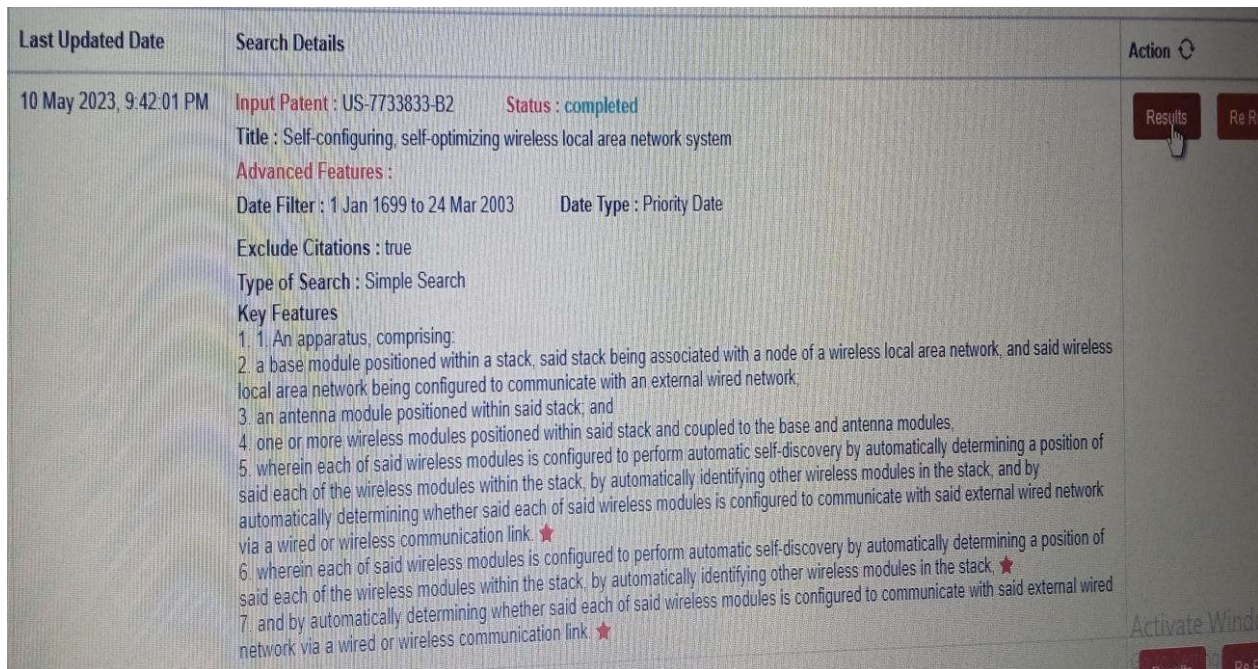


Fig. 4.10 Result waiting window

The result will be informed via email. Result will include 20 patents that are at most close to the subject patent. Further if you want to scroll more patents then you can also do that.

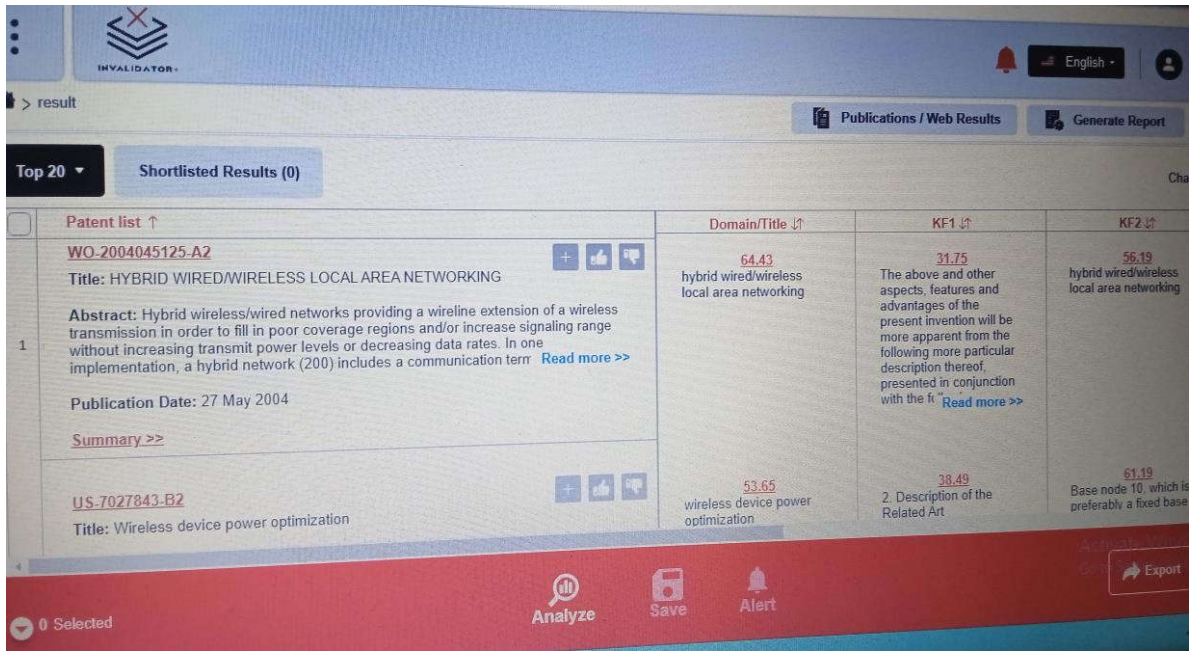


Fig.4.11 Results

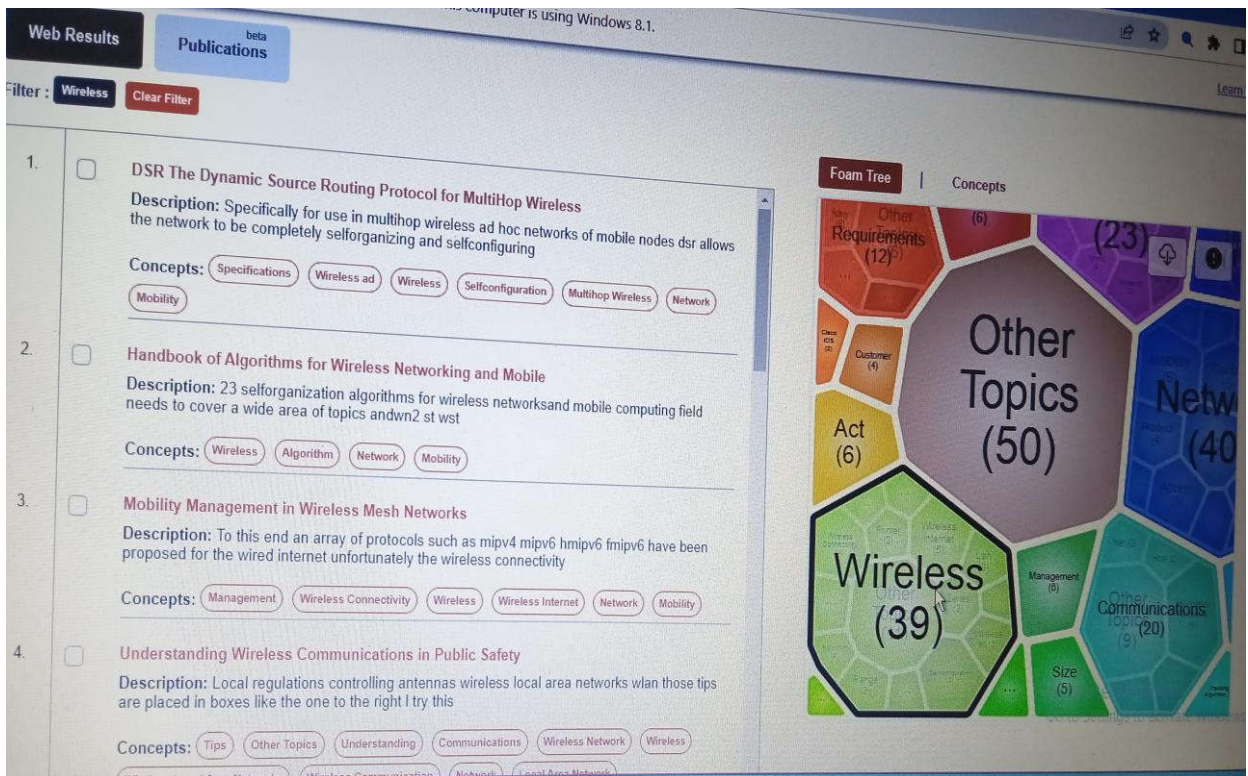


Fig.4.12 Web and Publication Results

Along with patents XLSCOUT also gives web and publication results.

4.5 Query Making:

Making queries for finding the prior art is the most difficult task in the patent searching. The query must be precise in order to get results. A searcher must include all the relevant synonyms in a query.

To make a precise query searcher must include the novel part of the invention. In our subject patent the novel part is the intelligent/smart node that will automatically discover the modules present in the network.

Orbit database:

We also use orbit database to find the prior art. More the precise query you make more relevant results you will get. Query in the orbit database is made using various operators such as AND, OR, D, P, S etc.

AND operator- (pen AND pencil) - in result it will include both pen and pencil as well.

OR operator- (pen OR pencil) – in result it will include either pen or pencil.

P operator – (car P tyre) - In result it will include the patents which has car and tire in same paragraph.

S operator - (car S tyre)- in result it will include all the patents that will have car and tyre in same line.

D operator- (car 5D tyre)- In result it will include all the patents that has car and tyre within 5 words.

Exemplary Query on this project:

```
(((automatic???? OR self) 3D (discover??? OR find??? OR select+)) 5D (mobile? OR phone? OR cell OR module?)/ TI/AB/CLMS AND (WLAN? OR wifi? OR network?)/TI/AB/CLMS AND (control+ OR supervisor) 3D (node OR unit)/TI/AB/CLMS) (EPRD <=2004-03-24))
```

Exemplary Google Query on this project:

```
(automatic OR self) (discovery OR finding) (mobile OR phone) (wlan OR wifi)(node controller) before:priority:20040324
```

Result sent in this Project:

Patent No.- US20040106408A1

Priority date- 2001-05-02

Application Date- 2003-11-03

4.6 Final Report sent to client:

The final report consists of the relevant citations that a searcher has found during the searching. It also consists of the methodology that a searcher has used in this project.

Things we sent in the final report to client:

- Firstly, we make key features of the subject patent.
- Details of the citations that we have mapped in the report.
- Then make report format according to the client requirement.
- Details of mapped citation along with their application, publication date.
- Assignee of the patent.
- Inventors of the patent.
- Family members of the patent.
- Abstract of the patent.

After all this information the relevant text is included in the report which is breaking the novelty of the subject patent. The final report also consists of a searcher comment which is made to understand the mapped patent that what this patent is all about and what this patent is exposing.

Conclusion:

In my training at TT consultants, I learned various things about IPR (intellectual property rights) industry. In these types of organization different types of searching techniques have to be followed. The work required here must be done with full accuracy.

Moreover, working in this type of industry keeps you updated with the latest technology trends. It keeps you in touch with your electronics domain and gives you idea about how the process of patent filing works.

The invalidation project disclosed in this report under patent no. US7733833B2 titled “Self-configuring, self-optimizing wireless local area network system” has been done successfully. The prior art we found in this invalidation searching project has been mapped in the final report along with the relevant text.

References-:

- <https://patents.google.com/>
- <https://patents.google.com/patent/US8045531B2/en?q=US8045531B2>
- <https://patentcenter.uspto.gov/#!/applications/10591184>
- <https://worldwide.espacenet.com/patent/search?q=pn%3DUS8045531B2>
- <https://ttconsultants.com/>
- <https://xlscout.ai/>
- <https://www.orbit.com/>