

Patent Search For Engineers And Lawyers
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Lecture - 23
Introduction to patent landscape

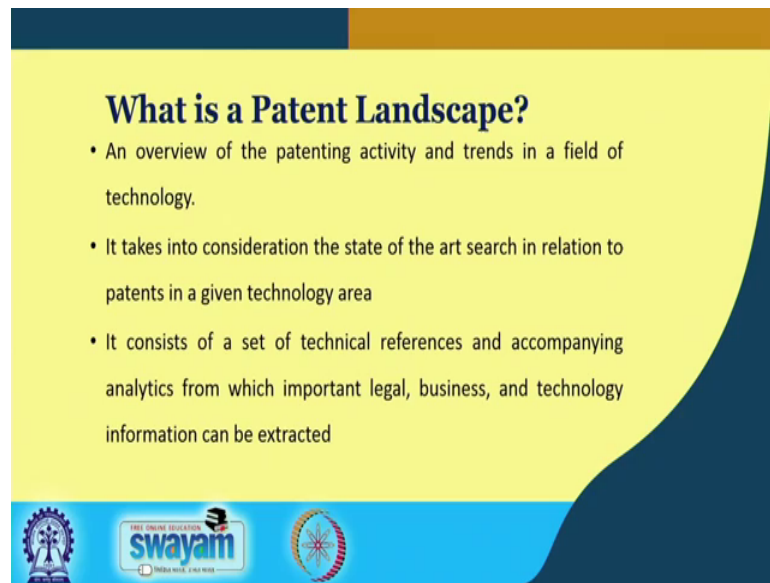
Welcome to the lecture on the Introduction to patent landscape search. In this we will be covering certain concepts on the basics of patent landscapes.

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The introduction to patent landscape; what is the need for doing a patent landscape and what are the steps involved in doing a patent landscape search.

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What is a Patent Landscape?

- An overview of the patenting activity and trends in a field of technology.
- It takes into consideration the state of the art search in relation to patents in a given technology area
- It consists of a set of technical references and accompanying analytics from which important legal, business, and technology information can be extracted

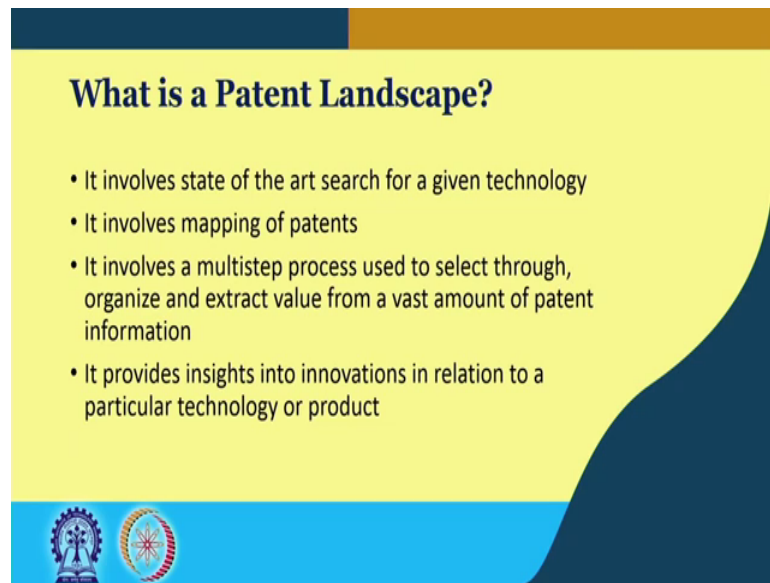
Logos at the bottom: IIT Bombay, SWAYAM (Free Online Education), and another circular logo.

Let us understand certain aspects of what is a patent landscape. As you will understand in the common parlance landscape is something which provides you an overview of a given area. In many terms landscapes also provide certain features which are very unique to certain landscapes.

Similarly, in the case of a patent landscape, the landscape is about the patents, the organization of patents in a given technology area. So, therefore, a simple definition of what is a patent landscape would be an overview of the patenting activity and the technology trends in a given field. Patent landscape is essentially a state of the art search in relation to patents in a given technology area.

Therefore, sometimes it also provides for certain technical references in relation to a particular technology area and the analysis that comes out of a patent landscape provides important insights for both the technology teams, the business and the legal teams in different areas. So, the information that is extracted out of a patent landscape can serve for a purpose to all these different areas. So, today patent landscape is also an important area of patent search activity.

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What is a Patent Landscape?

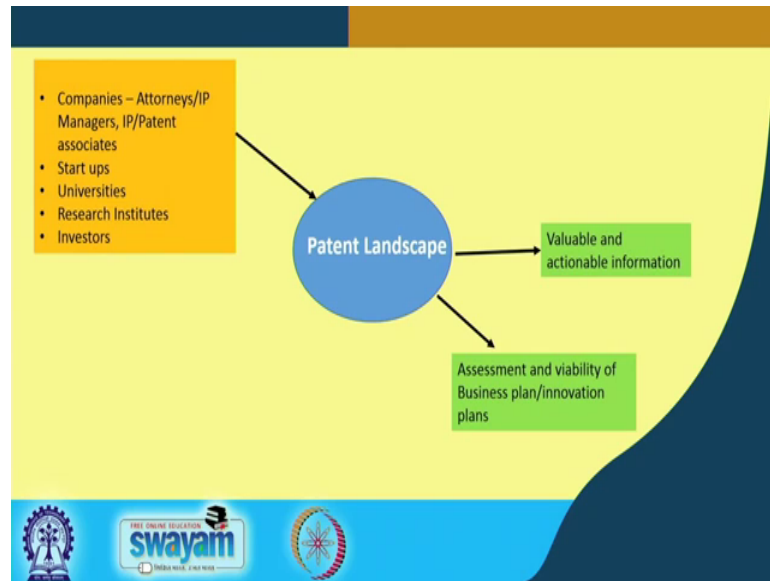
- It involves state of the art search for a given technology
- It involves mapping of patents
- It involves a multistep process used to select through, organize and extract value from a vast amount of patent information
- It provides insights into innovations in relation to a particular technology or product

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So, moving on to understand the different facets of what is a patent landscape, we need to understand certain aspects of how the technology trends are actually mapped. So, therefore, patent landscape is essentially a mapping of patents. So, it falls within the context of mapping of patents and since it involves the state of a search in relation to the technology area, it is also important to understand the technology focus in a given area. Patent landscape search is a multistep process which involves up the entire collection of patent documents, screening of those patent documents, organization or classification of patent documents and analysis of the patent documents.

Normally, the preparation of a patent landscape can happen anywhere between 15 days to a few months. Patent landscape search is a routine part of a process in case of R and D and also it can be coupled with a post analysis in relation to an FTO. So, a patent landscape also provides insights into a particular technology from the point of view of what are the innovations in a given area; how many of those are covered by products; how many of those are covered by processes. So, it is actually a very elaborate study in relation to patent search.

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So, patent landscape can have a different meaning to different people. So, we need to also understand patent landscapes are of relevance to whom. They are relevance to companies as well as research institutions. For instance, in the case of companies, it is often the attorneys the IP associates or the patent associates or who are involved with the job of preparing patent landscapes.

Universities is also embarked on doing patent landscape analysis. Here, the approach is more in terms of looking at technology trends which provides insight into what could be the future R and D in a particular technology area. Startups also participate in the activity in relation to pattern landscapes to understand where are the focus areas, where these startups can take up R and D. Investors are also often interested in patent landscapes.

So, often the business team would come up with a patent landscape, identify the gaps between patents and those gaps can provide a opportunity for further R and D and that justification goes into the area, where investment can become a great opportunity for future R and D.

So, patent landscapes provide a lot of valuable information and not only that they also provide actionable information so that decisions can be reached based on those outcomes. Patent landscapes also provide for what we call assessments. Assessments of the viability of a business plan in relation to opening up R and D in particular areas or investment in particular areas. Also from the point of view of R and D planning on the

innovations in a given area, this is also this assessment is also provided by patent landscapes.

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Why is a Patent Landscape done?

Research and Development

- Understand current technology focus
- Analyse the recent trends in technology
- Identify the unsolved problems in the prior art
- Technology space available for practice
- Technologies which have the potential

Identification of R&D opportunities

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So, we have understood that the that patent landscape means different things to different people. So, the same collection of patents organized in a particular way can being different outcomes to different people. So, you have the simple landscapes to the most complex landscapes depending on what is the technology focus. To the R and D it has connotation from the point of view of what is the future research and development directed to. So, for an R and D unit, it helps in understanding the technology focus. It also helps in analyzing the recent trends in relation to a technology.

So, therefore, a patent landscape can differ in terms of the time period by which the patent landscape is done. So, if you are looking at the most distal of the patents in a given area or you are looking at what are what is the evolution of the technology in relation to the patent filed rate in a given area, then the patent landscape would be very elaborate landscape. Sometimes, the patent landscapes are expanded into specific time periods which would mean let us imagine the last 5 years of patents or the last 10 years of patents in which case we are actually looking at the most recent technology that is covered by patents.

So, the scope of the landscape can actually vary with respect to what is the technology focus in relation to the patent landscape. Patent landscapes also provide for the gaps in

relation to patents. So, when we layout the entire set of patents in a very organized way, it helps to also identify what are the unsolved problems in the prior art and this can become a good starting point to incubate future R and D.

So, patent landscapes can provide the technology space that is available for further practice. It also helps in the assessment of understanding which are the technologies that have potential value. For instance, in a landscape you would find certain objects which are closer to each other, which means there is clustering of that particular set of technologies. So, it also helps us to assess the richness of a particular area in relation to patents.

So, again one when one looks at this entire set of clusters which are organized in a patent landscape, it also provides you an opportunity to assess which are the technologies which are not yet worked and where there is space available for R and D. So, to an R and D unit, it provides opportunity in terms of future research.

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Why is a Patent Landscape done?

- **Policy support**
 - Understanding of topical issues of concern to policymakers
 - Innovation Policy: Providing evidence of the emerging trends in technology
 - Innovation landscape with respect to geography
 - Public policy cooperation
 - Review of the area to provide best policy support

Effective participation of various stakeholders including national and international policy makers, governmental agencies, legislators, civil society and industry

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INDIA WISE, CHANGING WORLD

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Patent landscapes are also useful for policy support unlike the other types of patent search that we have visited so far from the point of view of patentability searches, FTO searches; patent landscape searches something which is very useful for even policy makers. And let us understand how does it help the policy makers. When one looks at a patent landscape covering a set of technologies, one gets a view into what are the

specific tissues or the concerns that have been addressed in a given technology area which are covered by patents.

So, it provides an opportunity to policymakers to understand which are the technologies that are actually being practiced and what is the status of those technologies and who are the people who are actually incubating those technologies. From the point of view of overall innovation policy patent landscape of a great support. They provide evidence in the form of which are the emerging technologies of value to the policymakers.

So, the policymakers can actually direct R and D funding based on the patent landscapes. Understanding what are the recent and emerging technologies and where are the where is the future in relation to that particular set of areas. From the point of view of an international basis of looking at patent landscapes, it also provides us the islands of innovation in relation to a given technology area which means it gives us also the geographical value in relation to innovations in a given technology area. Thereby, it fosters a lot of cooperation between different entities who are practicing that particular technology area.

Today, we have a lot of worldwide issues in relation to food, in relation to health and in relation to the overall wellbeing in case of human beings, where there are many unaddressed issues which need to be solved and we are at a dire need of looking at the development of technologies at a very rapid pace.

So, for policymakers who are looking at the strength of innovation, the innovation ability, the innovation index of certain countries patent landscape provides a lot of insight into establishing cooperation between different stakeholders. So, this is the area of what we call public policy cooperation that is possible in relation to patent landscapes; whereas, where various stakeholders can come into the picture where you have the nongovernmental, the governmental, national agencies, international agencies and civil society who come forward and participate in understanding what are the areas of importance to be taken forward from the point of view of international cooperation.

Today, you find a lot of international agencies partnering with intellectual property organizations to come up with the different landscapes. For example, the International Renewable Energy Agency, ARENA has collaborated with the WIPO to come up with a renewable energy landscape.

Now, how does this landscape help? Such a landscape would help in steering the policy in relation to renewable energy; which are the set of technologies which are relevant to certain geographies and from the point of view of policy support, it provides again the value with respect to where governments can actually cooperate together to work on a given set of technologies.

So, therefore, it also helps in understanding where the technologies have value from the point of view of certain geographies. In terms of the entire policy support review of patent landscapes would be very useful in terms of national as well as international implementation.

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Why is a Patent Landscape done?

Business or corporate use

- Identify existing solutions/technologies for technical problems (options for in-licensing; potential partners with know-how)
- Check for potential infringements of IP rights (Freedom-to-operate (FTO), product clearance; need for in licensing)
- Competitive intelligence
- Identify business opportunities (out-licensing; marketing opportunities)
- Monitor expiry of protected technologies for later use, e.g. generics
- Identify white spaces/gaps for strategic R&D planning
- Mergers and acquisitions

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Patent landscape have a lot of value to business and are an essential part of the entire corporate IP policy in many organizations. Before embarking into the R and D for a particular development in terms of new products and new processes, it is important to understand the entire gamut of technology is taken in a particular area and since patenting index provides an opportunity of assessing the innovations at a higher scale. Understanding the innovations in a given area is also important for companies and so, therefore, patenting or patent mapping in a given area is useful in terms of looking at where is the technology space in relation to a given R and D.

A patent landscape will provide a great opportunity to address the unsolved problems and arrive at new technical solutions in terms of the products and processes which a company

can take up. Patent landscape search and analysis is a dynamic process which means not only in the beginning of the R and D, it is important to keep reviewing the patent landscape for addition of new patents which are published in relevance to a given technology area.

So, therefore, a patent landscape will vary with respect to the time period in which it is studied, the geography that is being considered and also at the time point at which the patent landscape is done. Also there are other attributes which can be actually derived out of a patent landscape.

So, depending on the business concern or the business focus, the patent landscape which you started with originally may vary with time to capture further information in relation to patents. A patent landscape also provides for an opportunity to assess the potential infringement with respect to patent rights in a given scenario.

So, it can be coupled well with an FTO process to understand the issues that could arise in relation to patent infringement and opportunity to in license patents can happen through the analysis of a patent landscape. Patent landscapes are not only done for the purposes of looking at where is the future R and D, they are also done to understand the competitive intelligence part of the entire business.

So, patent landscapes are created also to understand where is the competitors IP portfolio. In this case specifically the patent portfolio and how is the company gearing up to avoid one the infringement issues with respect to patents and second opening up the space for practice in given area. So, this forms an important starting point for looking at competitive intelligence information. Based on the patent landscape one can actually identify new business opportunities, based on the clusters that can be found in the patent landscape.

Now, for instance if you are looking at a patent landscape in a given area, it is possible that you would find a lot of patent thickets in relation to specific owners. This provides an opportunity to look at a possibility of an opportunity to collaborate possibility of out licensing. So, all of this information can be derived from the patent landscape. In many cases a patent landscape can also provide an opportunity to open up the market based on the expiry of certain patents.

So, this is also helpful to monitor the patent status in relation to a given area. For strategic R and D planning, it is important to have a very elaborate patent landscape because here you are looking at the white spaces are the gaps in patents and looking at an opportunity to open up the area for further R and D. And often, patent landscapes are elaborated with respect to specific clusters where you have a extensive mapping done beyond the general landscape that is prepared.

In a case of a merger and acquisition, the question of IP assets becomes very formidable to do a successful merger and acquisition. Now, IP assets consists of the different forms of IP and patents being technological in nature for all industries which are technology based or which are technology dominant considering the patent portfolio as a part of the entire patent landscape is important.

So, when you look at the entire set of the patents in the patent landscape, it is also important to understand how many of those patents are valuable from the point of view of the worth or the economic value of those patents. Also understanding the possible setbacks that patents can also be involved with in terms of possibly, there are some infringement suits already there with respect to certain patents.

So, an assessment of that can be done based on the look at the landscape of patents which are catalogued. So, often when you look at patent landscapes, specific portfolio of patents are elaborated further to understand the value with respect to those patents in a given area.

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Why is a Patent Landscape done?

- Decision to invest money in the development of a particular technology
- Technology trends and development over time
- Clusters areas of technology development
- Gaps or white spaces, i.e. areas with little patent protection, that permit business opportunities
- Further applications or uses that are possible
- Further adaptations or embodiments that could be explored
- Technology not yet covered by patent claims

Don't reinvent the wheel!

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So, if you look at it from the point of view of a business, it is important to reach certain decisions and one of the important decisions to invest into the R and D is to know whether a particular technology would be valid from the point of view of products bringing in products into the market. Also today, we have innovations coming up at a very rapid pace. So, keeping all that interview, what are the kind of technology developments over time is what the R and D unit needs to be continuously be available with respect to that information.

So, therefore, a patent landscape to an R and D engineer or a scientist is a valuable place or to provide to get this kind of information in relation to what are the technologies which are of value at that point of time. So, it helps you to also understand what the clusters in relation to technology. When one looks at the landscape in relation to a given area, one finds that certain technology areas are have a rich set of patents that is from the point of view of looking at the particular area is covered by a huge set of patents. So, in which case the data set would be really large from the point of view of analysis, which means that in that particular area there is not much of a space available for future R and D.

So, one needs to look at which are the clusters which are rich and which are the clusters which are not so rich in terms of patent distribution and again, the mapping of that with respect to business is very important. So, keeping in view the business concern is an

important aspect of moving in R and D with respect to a particular area. It also helps us to understand what are the future applications possible in relation to a given area.

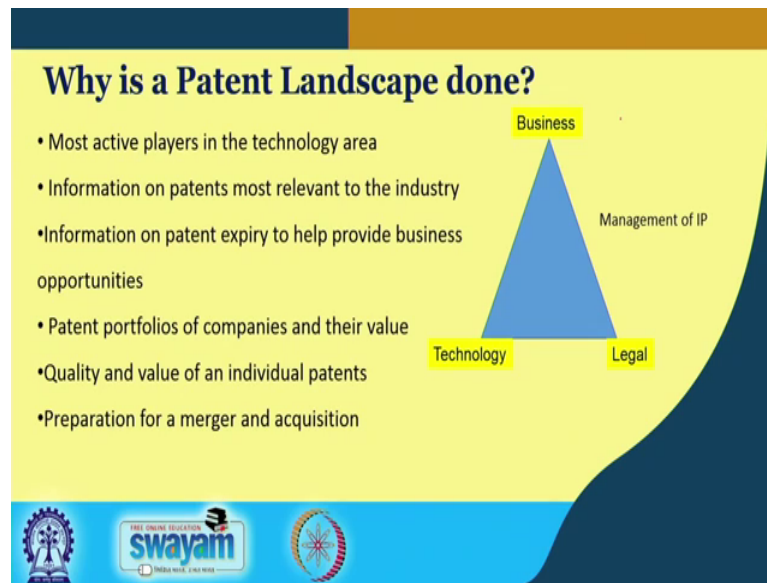
So, the market provides us information into which are the products which are more popular, which are the products which are actually a lot of value from the point of view of the market from the point of view of let us say health, agriculture and any of those different areas. So, from that impetus the future R and D is derived from the point of view of looking at additional applications in relation to those areas.

So, therefore, further adaptations or embodiments could be explored in relation to those particular areas. Often people working in this space also understand that the implementation of products is not uniform across geographies that is because a lot of customization goes into products. There could be a difference in relation to the cultural aspects of why certain products are more favorable in certain geographies. There could be reasons of disease burden for which certain products are more relevant to certain geographies.

So, understanding the market from the point of view of the improvements of technology is something which is necessary and a patent landscape can provide that kind of information when geographical distribution of patents has looked at.

And the most formidable thing which is of great value to industry is where the technology is not covered by patents and this is the place where there is a lot of opportunity available for the industry to start the R and D and provide for the value with respect to products that could come up in future in relation to a given area. So, the important thing for consideration here is that we do not need to reinvent the wheel. So, keeping in mind a patent landscape from that standpoint is very important.

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So, here in this figure this is a very important figure to keep in mind with respect to the value of patent landscape. So, here we have business at the top of the triangle and we have the business is supported by technology and the legal team. Efficient management of IP means that the business technology and the legal team should be in sync with respect to a particular technology.

Technology development must be made with respect to understanding what is the business focus. Support from the legal team comes in from the point of view of looking at what are the patents valid from the point of view of the patent portfolio planning of patent filing in certain jurisdictions that strategy is provided by the legal team the FTOs, the future of FTOs from the point of view of opening up patent landscapes is typically what the legal team is involved with.

So, while the teams are working individually at their own end dealing with different aspects of the business technology and legal aspects, they work in synergy so that the business is driven well from the point of view of bringing in products and process to the market.

Now, where does the entire concept of IP comes in picture and patent landscape? For an efficient management of IP, it is important to understand the companies existing patent portfolio and not only that it is also important to assess, what is the future of that

portfolio from the point of view of expansion of that particular portfolio. Planning of the future scope of R and D, looking at enforcement of patents and the patent portfolio.

So, a patent landscape provides vital information in relation to many of these different aspects. A patent landscape is not a static report, you can get multiple options based on the patent landscape. What you today find as a useful and favorable option may not be a scenario, when you look at it few months down the lane. That may be because the business has focus has changed the R and D basis may be different.

So, today we are looking at technology not developed in a single country. Here we are looking at technologies which are globally spread. So, it is as much important to understand the patent portfolio in relation to those different geographies which means you are looking at the entire patent statistics, the value in relation to those patents in relation to those markets' enforcement aspects. So, whole lot of data underlying the patent information exists in these different geographies. So, putting all that together into a patent landscape and analysis and analyze and analyzing them could mean that there are several different ways in which a landscape can be read and interpreted.

So, today it depends on how you look at the landscape in its relevance to the industry. Many a time businesses are created post the patent expiry. So, there are certain business which are solely created, but in the post patent expiry period. If you look at it from the point of view of the certain industries like electronic industries and software industries, it is about huge patent portfolios. Today, the entire web and the web-based applications are covered by patents.

So, the value that you derived out of a patent landscape can mean different things to different business entities. For a preparation for collaboration merger and acquisition, it is important to consider. The patent landscape as a part of the overall IP landscape because often when you are looking at merger and acquisition, it is a question of the total IP IP assets and for technology driven companies obviously, patents are the big chunk of it. But then, you have to look at it from the point of your patent landscape amidst the entire IP assets.

So, this is where you look at the value with respect to patent landscape. So, keeping in view this triangle is very important when you are preparing a landscape. So, that synergy

of the business technology and legal teams must be kept in mind for an effective landscape to be prepared.

Thank you.