

**Social Innovation in Industry 4.0**  
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**Lecture 32**  
**Introduction to IPR (Part 2 of 2)**

Welcome, to the next lecture on Introduction to IPR. This is a very important lecture.

**Patent Registration Process**

Step 1: Conduct a Prior Patent Search → *state of the art search.*

Search existing patents, published patent applications, scientific literature, and databases.

- Resources:
  - Patent databases: United States Patent and Trademark Office (USPTO), Social Innovation in Industry 4.0, European Patent Office (EPO), World Intellectual Property Organization (WIPO) Patentscope, etc.
  - Scientific literature databases: Google Scholar, PubMed, IEEE Xplore, etc.
- All inventions may not be patentable, as per Indian patent act (IPA)
- Patentability Report - Novelty, Non-obviousness, Industrial application

*IPA there are certain inventions that are not patentable, appropriate cognizance shall be exercised.*

So, let us now see the Patent Registration Process. There are several steps. Let us see them in detail. Step 1 is conduct a prior pattern search.

This is nothing but state of the art search. So here, we would like to see existing patterns, then published pattern application, scientific literature and database. Gravitation law cannot be patent, Newton's law cannot be patent, certain things are observation, sun rises in the east cannot be done. So, there has to be a product, there has to be a process attached to it.

Suppose, you say, all Indians are of this height and this weight, that cannot be patented, maybe your data is right, you did statistically something, you are right, but this cannot be done. So, you have to have some idea where in which there is a utility, that means to say, there is a function or there is a design or there is a plant patent, something like that, it has to be like that. So, what you do is first, you try to search for the existing patterns what is published. Published means there are two ways. One, you try to look at those things which are published, which has expired.

For example, crossed 25 years or 75 years in some countries, that is also open literature. The second thing is, which is all under the 25 years gamut. So, two things. Existing

patent, published patent applications, and then scientific literature and database. So, you will try to search there, and you will try to figure it out.

Say for example, whenever we put a keyword in Google, we try to get some result, same way you have other search engines also. The resources for patent search will be United States Patents and Trademark Office (USPTO) is one of the database where in which you can search for all the US based patents. Then, it is European Patent Office (EPO), then it is World Intellectual Property Organization (WIPO), and Patentscope, etcetera. These are several search engines which are available. You can do it when the search engine is in public domain, or what you do is, you pay money to the search engine people and they search, and then they give it to you.

For every search, they charge you like 1 dollar, 5 dollar, 100 dollars, 1000 dollars, whatever it is. So, they do a thorough job and then they give it. Next is the scientific literature database. So, this can be PubMed, IEEE Xplore, Google Scholar, etcetera are scientific literature database. You have to search everywhere, and suppose, you try to hide, and then say no, there is nothing available.

So, I am going to patent it. So, when the attorney runs, or if their office runs, and they find out something, they reject it. Or on top of it, if you have intentionally hid something, then you will be under legal action. So, it is better to be transparent and better to do clean job, such that you can try to have a patent. and do not worry, patent also after 20 years, or 25 years, or 75 years depending upon the company, it gets into public domain.

You hold the right for only a time period. So, as I told you ethical practice is very important. When you do innovation, you should also follow the ethical practices. So, do a proper search, and then maybe while searching you might find 3, 4 which are not exact 1 to 1, but there is a small variation. Then, try to capture that small variation and present it in your patent, saying that this small variation is the IP of my patent, you can do it.

So, all inventions may not be patentable, as per Indian patent act. So, patentable report novelty, non-obviousness and industrial application. For example, you try to develop a patent and if there is no industrial relevance, then there is no point in patenting. Innovation means there has to be somebody to take your idea. So, if there is somebody to take your idea, then you apply for a patent, such that, that person pays you money as royalty or one time affair, and then tries to take it and go.

So, if there is no industrial application, then it is not worthwhile patenting. So, in Indian patent act let us see some more things in detail. In IPA, I make it as IPA (Indian patentable act) there are certain inventions that are not patentable appropriate cognitions shall be exercised, very important. So, all inventions may not be patentable as per Indian

patent act there are certain inventions that are not patentable, but appropriate cognitions shall be exercised, and you can try to have some ownership of the developed one.

**Patent Registration Process**

Step 2: Prepare the Patent Application:

Prepare a detailed description of the invention, mentioning the patent specifications with drawings and claims.

- Resources:
  - Patent application drafting guidelines and manuals: USPTO Manual of Patent Examining Procedure (MPEP), EPO Guidelines for Examination, WIPO Patent Drafting Manual, etc.
  - Patent drafting software or templates: Patent drafting software tools like PatentWizard, PatentEasy, or template resources provided by patent offices.
- Provisional application - For Inventors in early stage of development.
  - It secures filing date & complete specification must be filed in 12 months

Step 2 will be prepare the patent application. Prepare a detailed description of the invention, mentioning the patent specification with drawing and claims. Generally, patent application is not so easy to be filled you can write it in your normal words, you can try to have something like a research paper publication abstract, then introduction, then you try to say what is your experimental procedure, then you try to give a description of your claim, then some of the results, then you have a conclusions.

That is how you have it in a piece of paper like which we gets published. So, here also what you do is, you prepare it in almost similar lines, and here do not have to worry too much about the of the results and discussion. You just report the results you do not have to discuss here.

And second thing, when you try to draw a schematic diagram or something here it has to be in a detailed fashion, such that you are trying to say, what is your IP there in the product or in the process or whatever it is. So, prepare a detailed description of the invention, mentioning the patent specification with drawings and claims. So, the results and discussion at the end you should have claims, these are my claims you should have.

And generally what happens, after you write it in a common man's word, we always move our file to a patenting lawyer, then the patenting lawyer or his committee of people try to understand it, and convert it into a form, such that it is understood and accepted by attorney. You have firms which tries to write it, and then you have lawyers to present it in front of attorney, and then the attorney approves, so that it gets through.

So, you will have firms to write. It is always better to go through that firm, so that they try to vet and write it in a fashion, such that it can get through. So, the resources for this

is patent application drafting guidelines and manuals of USPTO (United States Patent Trademark Office). You have a trademark office, United States Patent Trademark Office. Manual of the Patent Examining Procedure (MPEP), EPO( European Patent Office) guidelines for examination, WIPO is World Intellectual Property Organization, Patent Drafting Manuals, etcetera are available.

The patents drafting software or templates they are also there. The patent drafting software tools like patent wizard, patent easy or template resources provided by the patent office is also there. So, you can use the guidelines or you can use a software to draft the patent application. So, the provisional application for inventors in early stage of development. So, in this case like provisional applications, these are all how to file an application.

you also can file a provisional application where in which you have an idea, but you have not developed it, but you had a quick idea you wanted to patent it. For inventors, in early stage of development, it secures filing date and complete specification must be filed in 12 months period. So, you can just apply for a very draft patent, and then you say that if my product can do this-that, but I do not have anything to prove, I do not have anything to produce right now, but I will try to complete my application with more details, but protect my idea. So, there we try to file a provisional application, and that is valid for 12 months. At the end of 12 months you cannot then this application gets into public domain, you cannot use it or neither anybody else can use it.

**Patent Registration Process**

Step 3: Filing the Patent Application: *pre - dra - file*

- File the patent application with the relevant patent office.
- Resources:
  - Patent office websites: Visit the website of the relevant patent office, such as USPTO, EPO, or your national patent office, to access application forms, filing guidelines, and fee information.

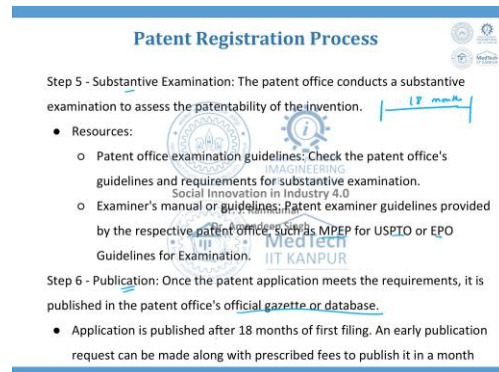
Step 4 - Formal Examination: The patent office performs a formal examination to ensure compliance with filing requirements and formalities.

- Resources:
  - Patent office guidelines: Refer to the guidelines provided by the respective patent office for formal requirements and document submission.

So, step 1 is searching, step 2 is preparing the application, step 3 is filing the patent application File the patent application with the relevant patent office you cannot do it in any office. So, it has to be done the relevant offices. So, the patent office website or official website which you can try to get the relevant office details, such as where is this office USPTO, EPO or your nation patent office, to access the application form, filing

guidelines, and fee information ,then it undergoes a formal. So, first step is prepare, then you try to draft, then you try to file. The next one, after you file what happens, after you file it undergoes a formal examination.

The patent office performs a formal examination to ensure compliance with filing requirements and formalities. So, it checks the compliance whatever you have done whether it is renowned or it is relevant or it is unique. Then, the resources are patent office guidelines. It refers to the guidelines provided by the respective patent office for formal requirements and document submissions. So, formal examination is done as the part of step 4.



In step 5, substantive examination is carried over. So, here the patent office conducts a substantive examination to assess the patentability of the invention. So, it is like sectioning whatever you have written. Is it really worthwhile? How do I go about all these things? So, the resources, the patent office examination guidelines. Checks the patent office guidelines and requirements for substantive examination.

Then, the examiner's manual or guidelines which tries to tell the patent examiner's guidelines provided by the respective patent office, such as MPEP for USPTO or EPO guidelines for examination is done. Once that is done, we do a publication of the patent file. Once the patent application meets the requirement, whatever substantive examination, and in the previous case, you will try to see formal examination, then substantive examination, then we go for publication. In publication, once the patent application meets the requirement, it is published in the patent office official gusset or database. So, application is published after 18 months of the first filing.

So, Ram Kumar files it. They give a period of 18 months and see whether anybody else claims that yes, I have also done it or if it is silent, then they say okay, it is good. So, application is published after 18 months of first filing and early publication request can be made along with the prescribed fee to publish it in a month. So, that is also possible.

So, you pay early fee. So, you do a fast track and then you try. Instead of 18 months, you do it in 1 month and also you can get it.

**Patent Registration Process**

Step 7 - Examination and Grant:

- The patent office reviews the application and any amendments or responses provided by the applicant after receiving request for examination (RFE) on the following criteria:
  - Patentable subject matter
  - Novelty
  - Non-obviousness
  - Inventive step
  - Industrial application
  - Enabling
- Everything happening to patent application before grant of patent is generally called as patent prosecution.

*Handwritten notes in blue ink: 'Social Innovation in Industry 4.0', 'Dr. J. Ramkumar', 'MedTech IIT KANPUR', 'file Exam App', 'Exam - Grant'.*

After publication, then comes the examination and the grant. The patent office reviews the application and any amendments or responses provided by the applicant after receiving request for examination on the following criteria. Patentable subject matter, novelty, non-obviousness, invented steps, industrial application, enabling. All these things if it is there, the examination report the office looks into it.

Once, it is done. Then, what they do is, they try to grant permission. So, everything happening to patent application before granting of patent is generally called as a patent prosecution. So, like legal prosecution, it is called as patent prosecution. So, every step is undergone. So, first you do a research, then you start writing the document.

Then, you file the document, then they try to examine the document, and then they try to publish, then they try to examine, you might have corrections, you might have this. So, that is examine, and then it goes to grant. These are the steps involved.

**Patent Registration Process**

Step 8: Respond to objections

- Majority of patent applicants will receive some type of objections based on examination report.
- The best thing to do is to analyse the examination report with patent professional (patent agent) and creating a response to the objections raised in the examination report.
- This is a chance for an inventor to communicate his novelty over prior arts found in the examination report.
- The inventor and patent agent create and send a response to the examination that tries to prove to controller that his invention is indeed patentable and satisfies all patentability criteria's.
- Up clearing all the objections, patent is granted as early as possible.

So, if there are any respond to objections, majority of the patent application will receive some type of objection based on the examination report.

Examination report is in the seventh step. And, once the examination report is done, then it is cleaned and the patent is granted. Majority of the patented application will receive some type of objections based on the examination report. The best thing to do is, to analyze the examination report with patent professional, and create a response to the objection raised in the examination report.

So, examination report will come, then once in the report if it is a clean slate patent goes, if it is not a clean slate they ask objections, then you start working on the objections along with the patenting professional, a lawyer. This is a chance for an inventor to communicate his novelty over prior art found in the examination report.

The inventor and the patenting agent create and send a response to the examination that tries to prove to controller that his invention is indeed patentable and satisfies all the patentable criteria. It should be non-obvious, it should have an industrial application. So, that is what it is, the patentable criteria's. Clearing all the objections, the patent is granted at the earliest.

Generally, it takes long time. Some countries it may take 5 years, some countries it may take 7 years, some countries it may take 3 years. Design patent happens very fast, because there is not much you claim through a design patent, but in a utility patent, it takes its own time. If you look into the steps. It is first prior art, then preparing the document, you can do it.

Then, you file the document. Then, there is a first round of rough cut examination to see, whether everything is fine, whether you are following the compliance. And, is there any novelty? All these things they try to see. Then, they do a sectional analysis, that substantive examination will be done. And, after substantive examination, the patent document will be published in public domain.


It can vary from 18 months to 6 months to 1 year. Sometimes, you also have a fast track wherein which you get it in 1 month. Then, once everything is done, the collection of all these data is done, then it comes for examination and grant. In the examination again, there is a chief person attorney who goes through it. And then, he looks into all the objections, whatever comes in the publication side, if there is any objection or something. Then, what he does, he does prepare a detailed report saying that your patent is not worth patenting because of the following reasons.



Now, what you do is, you take out all those reasons work with your patenting lawyer, and then you try to defend it in front of the attorney. Moment the attorney feels yes, there is a merit, then your patent is granted. Predominantly, this stage is where you have to work as a team and get it done.

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### Patent Registration Process



Step 10 - Grant of Patent: It is notified in the patent journal → *locket no*

Step 11- Maintenance and Renewal:

- Visit the patent office's website to access information on maintenance fees, renewal requirements, and deadlines to keep the patent in force

Step 12 - Enforcement and Protection:

- Monitor and take action against unauthorized use or infringement of the patented invention.
- Resources:
  - Intellectual property legal resources: Consult with intellectual property attorneys or law firms specializing in patent law for guidance on enforcement and protection.

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So, next step is grant of patent. The patent is given and it says Ram Kumar you hold the patent of this number they give a lock number or a docket number.

Locket number is given for your patent. And, your data, everything is stored in a search engine and it is kept there for maybe 20 years or 25 years and then what happens, now, the lock number is there, you have to maintain the lock number. So, for maintaining the lock number every year, you have to give your maintenance and a renewable charge. So, for filing, you have to give. For examination you have to give, for publication you have to give, for response review you have to give and the grant gets published, there also you have to give. And then, what you do is, you have to maintain it for 25 years or 10 years there is called as a maintenance fee and renewable fee.

Renewable is every year you try to pay an x amount, such that the company maintains your patent for 25 years. So, visit the patenting office website to assess information on maintenance fee, renewable requirements, and deadline to keep the patent in force, that means to say, alive.

Enforcement and protection, monitoring and taking action against unauthorized use or infringement of the patent invention is very important. There are few companies who always have their innings by filing case, and then try to generate money. There are few companies who are legitimately working on trying to find out if somebody has breached what is that and this.



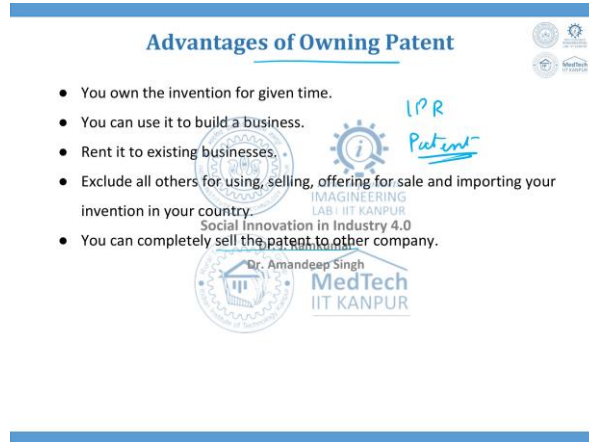
So, then we have resources for it. Intellectual property legal resource are available, where and which you consult with your intellectual property attorneys or law firm specializing in patent law for guidance on enforcement and protection.

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**Advantages of Owning Patent**

- You own the invention for given time.
- You can use it to build a business.
- Rent it to existing businesses.
- Exclude all others for using, selling, offering for sale and importing your invention in your country.
- You can completely sell the patent to other company.

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Once you do everything, then you hold a patent for 25 years, 10 years. Then, you decide to whom to sell the patent, whom not to sell it on royalty basis and you can also sell it like a non-exclusive that means to say, I do not sell it only to Shyam, I also sell it to Sita, Rita, Geeta, Mina everybody, that is non-exclusive, the all rights you have. So, you own the invention for a given time whatever 25 years, 10 years, 5 years. You can use it for to build your own business you want to develop a product out of it, you can do it.

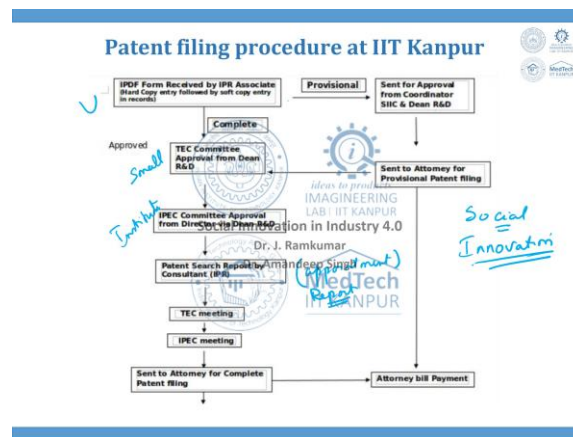
Rent it to existing business, that is also possible. Exclude all others from using, selling, offering for sale and importing your invention into your country, possible. You can completely sell the patent to the other company, that is also possible. These are all the advantages when you try to do IPR or when you try to do patent. All these things you get a benefit.

At IIT, Kanpur we have laid procedure. So, I would like to go through this procedure, so that you can try to have a knowledge about how to file a patent in innovation, it is very very important to have a patent protection. Many a times people have mixed opinion. In social opinion why should I have an IP right. So, I am trying to work for the society, why should I make money out of it.

I said, there are so many ways of doing social entrepreneurship. You can be a non-profit, you can be for profit, you can have a hybrid. So, for all these things, it is good to protect your innovation. So, here there is a IPDF form received by IPR associates. Then, immediately what they do is, they try to have two things, one is complete form, one is provisional form. Provisional form is sent for approval through a coordinator and by our dean signature.

We try to send it to the attorney for a provisional one. So, if it is a complete patent, you have everything ready, the claims are ready, the model is ready, the demonstration is ready, then what you do is, a completed form is there, then it tries to go to a committee. This committee tries to examine whatever you have written it in the format, this is a rough cut. So, it tries to look into the format, it tries to look into the patenting rights.

It also tries to look at the industrial application of the patent, and then it tries to give a recommendation to the dean, saying that sir, this idea, whatever it is, if is been patented by Mr. Ram, is worth while taking to the next step. Then, what they do is, the IPC committee approval from the director via the dean is done, so that it goes for patent search report by a consultant.

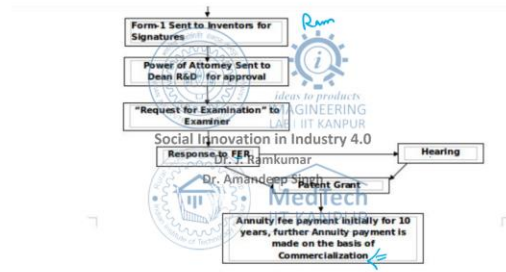


So, we at IIT Kanpur have appointed a consultant. This consultant, what it does is, he will try to get the document from us and then he will try to search it. So, because first you make it, when you make it there is always a possibility that something would have skipped or would have gone under the carpet which would have not noticed.

Then, it is presented in front of a committee. This committee looks for business viability, what is the special claim he claims and other things. Then, after that the committee is approved whatever is the recommendation, and then it is gone to the consultant. The consultant searches for all the patent search independently. With keywords, with sentences, with similarity, index, everything he tries to do it.

Then, he generates a report. Then, what we do is, we have a meeting with two people, and then these two people try to go through it, and then they try to say yes, there is a merit in the case, then it is sent to the attorney for complete patent filing.

## Patent filing procedure at IIT Kanpur



Once it is filed, then the attorney says yes, then it comes to form one, sent to the inventor for signature. Then, power of attorney sent to the dean. So now, the power of attorney is given and the patent is in your name, Ram's name.

But now, what is happening since institute is there. So, now a power of attorney sent to our dean, saying that ok, this is approved. So, now, you please take the power of attorney. Why given the power of attorneys? Tomorrow our institute, this committee will try to see if there is anybody who has infringed. They will try to find out what is the difficulty, and they will try to warn him, or they will try to file a sue.

So, they will try to sue a case. Then, request for examination to the examiners and then what they do is, then the response from the examiners come, hearing happens, the patent is filed. Then, once the patent is filed, you have annual fee. Initially which will be paid for 10 years, then subsequent 10 years it will be done. So, here it is very clear, you will have a third party.

This third party is the committee of dean. So, they approve, then it goes to IPC committee, they get the approval, and then they push it to a patent search. From the patent search, they try to generate a report and the report is presented in front of the TEC committee then, in front of an IEC committee, this is a small committee, this is a institute-level committee. This is small or particular to that patent, and this is institutional standing committee. And then, it is sent to the attorney for complete filing.

So, complete filing money is given. So, here if you see, the provisional patent send to the attorney for doing and again attorney bill is payment. Then, form one signing power of attorney with the dean, then the request for examination to examiners, and then request for a FER, hearing, grant, and then filing. And suppose, once it is filed, then this office also tries to link with the rest of the world and look for commercialization.

## Summary

- Intellectual Property (IP): Legal rights protecting human creations, fostering innovation.
- Copyright: Protects original works; types: literary, artistic, musical, dramatic.
- Patents: Safeguard inventions; types: Utility, Design, Plant.
- Copyright Licenses: Creative Commons enables customized permissions beyond "All Rights Reserved".
- Patent Licenses: Allow usage, production, sale of patented inventions.
- Patent Registration: Prior art search, detailed application, filing, examination, grant.
- IP Maintenance: Renewal, enforcement crucial for protection against infringement.
- Understanding IP: Balancing protection and public interest for creators, innovators, society.

\* Assignment -  
Try to re-identify some technical infringement which has happen in patent in no near past?

To summarize, what we saw in this particular lecture, we saw Intellectual Property (IP) which is a legal right protecting human creation, and fostering innovation.

In under this, you have copyright. Generally, copyright protects the original work, types, like literature, artistic, musical and dramatics. The patent tries to safeguard invention, and there are 3 types of patents one is utility, design and plant. You can have biomedical patent, biotechnology patent, all I will put it under utility patent. So, copyright license, it can be creative common enables customized permission beyond 'all rights reserved'.

The patent license allows usage, production, sale of patented inventions. Patent registration happens with the prior art search, detailed application, filing, examination, and then grant. All IPs which are filed has to be renewed, and enforcement crucial for protection against infringement can be done. So, finally, you have to understand the IP which tries to help in balancing protection and public interest for creators inventors and for society. So, these are the references which I have followed, and I would like to conclude by thanking you.

Before thanking you, I would like to put a small assignment. The assignment for today is, try to see or identify some technical infringement, which has happened in patents in the near past. Try to look into that assignment, try to look in what was the mistake, how did a company, see, Samsung fought with Apple, a big fight. So, finally, Samsung surrendered or Apple surrendered, look at it. So, what is that document, what was the infringement, what was the mistake they did, how are they caught or whatever it is.

So, please try to do this assignment. You have to do some reading, and this reading will help you in trying to understand more of IP and IP protection. Thank you very much.