Patent Search For Engineers And Lawyers
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Lecture - 27
Hands on Patent Landscape (Contd.)

Welcome to the Hands on Patent Landscape search and analysis. In this part of the lecture we will take up the area of the chemical arts, which represents the area of chemistry chemical engineering.

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And, understand with an example how to go about with the patent landscape search.

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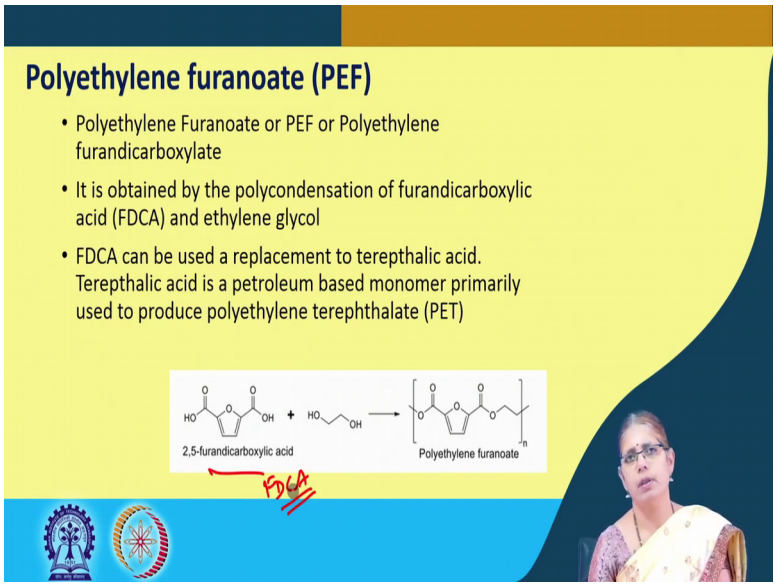

One of the important developments in the area of chemistry is the identification of sustainable material, plastics is a big burden on the planet. Alternatives in terms of looking at bio plastics has become a very important option not only from the point of view of sustainability, it has also caught the imagination of major bottling companies in the world. Here is one example of polyethylene furanoate, which is bringing in a lot of promise to the industry and society in the area of what we call bio plastics or which are called green plastics.

It is very interesting to note that the first patent that was filed in this area goes back to 1951. It was a US patent, it had several process claims and some product claims. This is an interesting area, let us understand how do we do a patent landscape search and analysis in relation to this particular molecule.

The first thing that we need to know is what is the nature of this molecule? How is this prepared? What are the various ways in which this particular molecule can be used in terms of it is applications? So, here again we are focusing on the technology in relation to this particular molecule, often as a patent searcher one has to grapple with the aspect that one may not be from the particular technology area. And, is it that one can actually go about with the adequate way of preparing a patent landscaper patent landscape.

So, the search for patent landscape often brings in this difficulty, because the first step is to look at the understanding of the technology. If you are not from the domain, it may be

good to sit with an expert or a researcher in the area to understand, what is the technology, how is the technology used in terms of development of products? So, that one is clear about the basic aspects of the understanding of the technology.

Today patent searchers work across domains. In fact, some patent search has become very well versed, because of the amount of time they spent in relation to patent search in a given area. Though they are not from that discipline, based on the experience of doing patent landscapes patent searches, they become fairly well versed with the area.

So, it is possible that one can actually though you are not from the technology area one can actually understand that from the point of view of sitting with an expert or a researcher to gather the details of that particular technology. Now, here is a case of this molecule the alternate terms that are used for polyethylene furanoate is polyethylene furandicarboxylate. So, there is a specific chemical name one can look at the cache register cache as information can be obtained, the chemical structure of this particular molecule is also given.

So, what happens it is understanding the basic chemistry in this case is a little important to know the details of the molecule. How is this compound update? As you can see in this particular equation, you have 2,5 furandicarboxylic acid combines with ethylene glycol to form polyethylene furanoate. So, this is a condensation step and it is a poly condensation step.

So, there are n number of molecules that are possible. Why is this become important and it is gaining attention worldwide? Is that FDCA is a replacement can be a very good replacement for terephthalic acid. Where terephthalic acid becomes the starting molecule for generation of what we call polyethylene terephthalate, which are typically the plastics that we see in relation to the technology that is used.

So, pet polyethylene terephthalate production is based on the use of terepthalic acid with ethylene glycol forming polyethylene terephthalate. So, here we are looking at replacing terepthalic acid with FDCA. So, what is greed about it is that FDC a sources can be obtained from plants.

And, so, therefore, this bringing brings in the aspect of bio based starter material which is the FDCA. And so, one can actually get into the area of bio plastics and this is

purported to be sustainable from the point of view of the PEF based manufacturing. Unlike terepthalic acid, which is a petroleum based monomer FDCA can be obtained from biological sources.

So, here you have the promise of polyethylene furanoate to bring in the area of where we have green plastics. Incidentally there are new developments in this area and a lot of companies are operating to capture the area from the point of view of renewable as well as sustainable solutions for the future.

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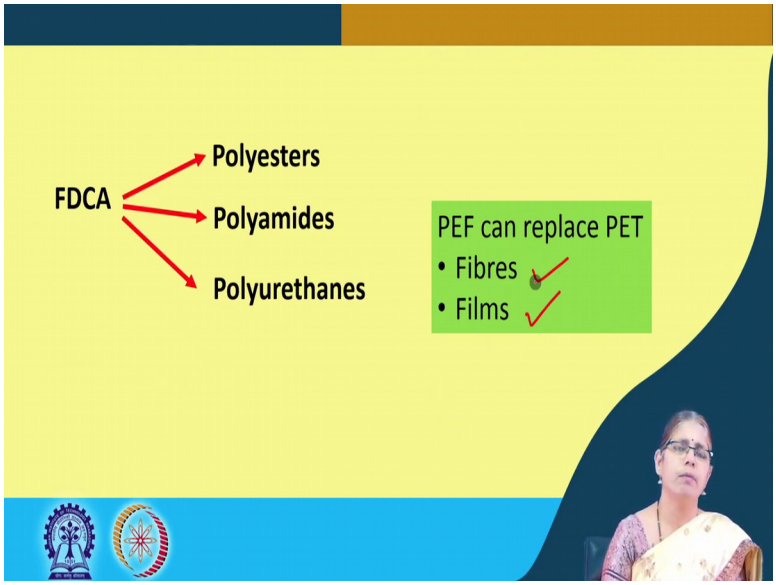

Polyethylene furanoate is bringing in a lot of promise, because of it is unique properties in terms of providing for what we call improved properties in relation to barrier and also the sustainability with respect to polyethylene furanoate and it is utility in relation to several applications. So, if one way to embark on a patent landscape search in relation to this particular area, the starting point will be to look at the developments in relation to PEF, that is the formation of PEF which is already covered by a patent way back in 1951.

So, what are the different derivatives of the molecule, what are the process changes to enhance the formation of PEF those could be improvements in the area. And then use of PEF in relation to developments in relation to making fibers and films. So, here you have basic improvements in relation to the reaction you have the use of this reaction to generate products. So, this is the likely place where we are looking at the improvements in relation to that particular invention.

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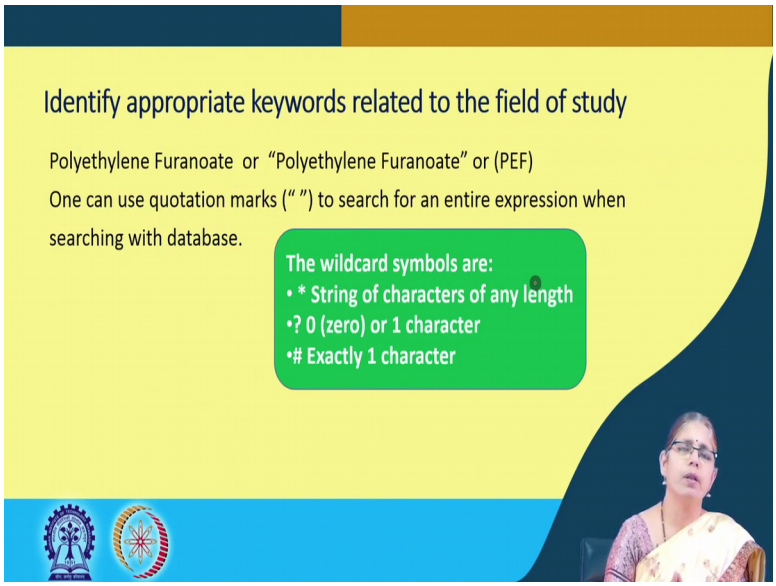

So, if one is looking at embarking on a patent landscape search identifying the keywords would be to look at the alternate terms for polyfuranoate net, use them in relation to the proximity, in relation to certain words, and using a appropriate database for search. Since, polyfuranoate developments also represent certain areas in chemistry one can also look at the relevant IPC codes to build a keyword and a IPC combination search to pull out the patent data set.

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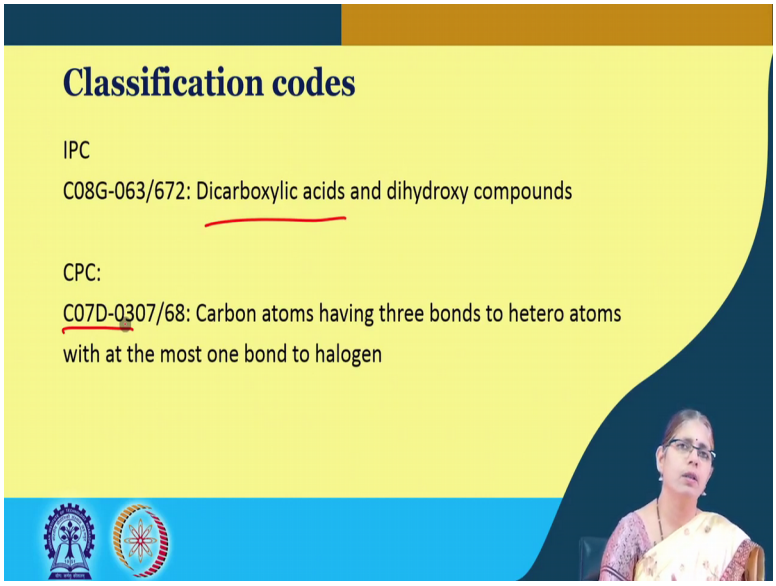

The relevant classification codes for this particular, in the molecule and it is interventions is this belongs to the class of compounds which are dicarboxylic acids. So, one can look at this particular IPC, again based on the carbon the groupings in that one can again look at another IPC, which another code which is a comprehensive code in relation to this class is the C07D, which is under the CPC code. So, one can actually look at the patent data set from this as well.

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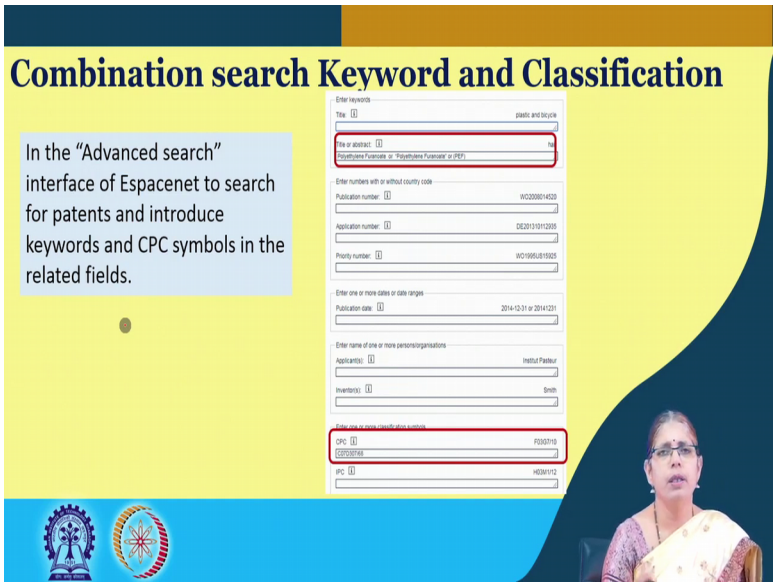

So, for instance one can actually also home in into a specific database. Here we are looking at doing a search at the e space net using the advanced search option. So, in the advanced search option you can actually use multiple fields for carrying out search. So, here we are looking at a keyword, where we have defined the keyword as polyethylene furanoate or even PEF. And, then we using the CPC code of C07D the specific code out of that. And, then when we look at the search we are getting the hits in relation to the data set.

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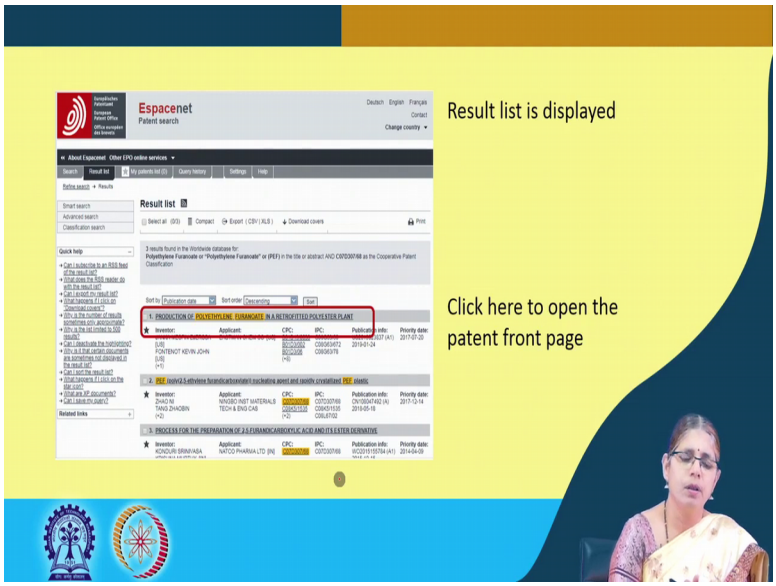

When the results that come out of this database in this case there are only some results which are presented. So, this is the listing of the patents. Once we click on this particular patent, you get the data and the information in relation to that particular patent. And, since highlight highlighting option is available in the Espacenet one can actually right away in the search itself screen out the results by a mere look of the entire dataset.

So, let us imagine there is a display of 25 hits in one page, because of the highlighting option quickly one can actually select out the patents by screening out those which are not relevant. So, one can use this option of ticking off in this box. So, that that patent data set can be downloaded as the specific set of it is.

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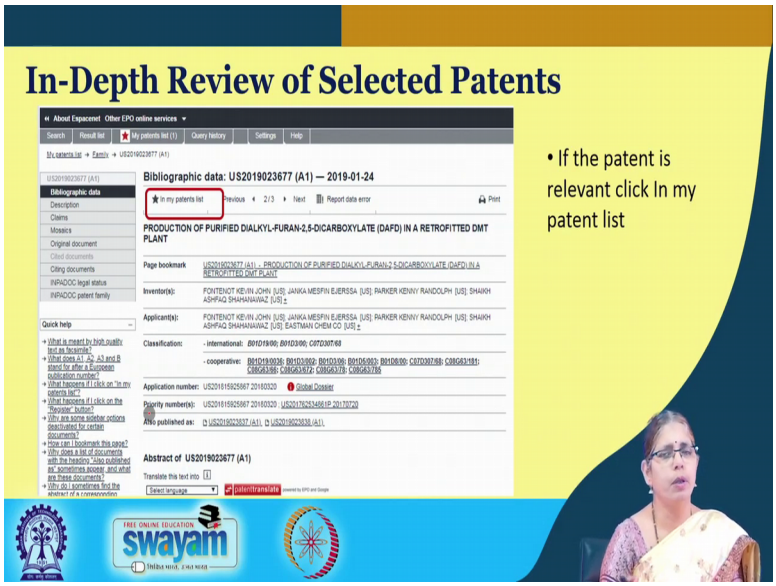

Once you download that the selected patent list based on the screening of the data, you can actually bounce this information into your folder. So, you can create a my patents list under Espacenet and actually keep that into one folder. And, later on analyze it is possible that you may want to review this search and go in to other codes or even refine the keyword. So, those number of searches the results obtained out of those searches can be stored into this my patents list and that is how one can run the search by doing an in depth review of the patent data set

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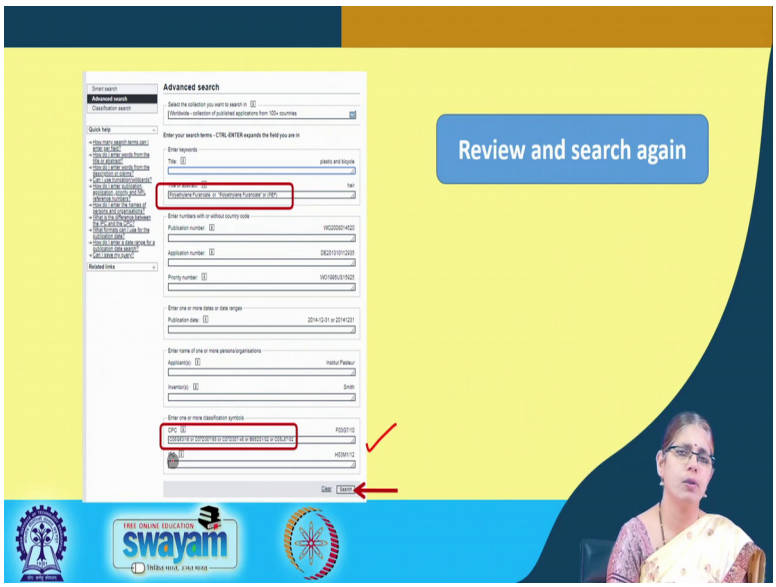

And so, therefore, a review on a search conducting the search again helps you to actually check out and look for is it that you have missed out certain patent. So, ensuring that you have not missed out patents is more important, than have just having certain patents because any type of search will reveal some set of patents, but the question is do we have the adequate patents and the relevant patents for the data analysis.

So, keeping that in mind is important. So, what happens is when we retry the search one can actually put in more IPC codes that is wherever polyethylene furanoate this set of structures are relevant in relation to other IPCs or other CPCs. So, in this case you can see in this particular example where C codes have been placed and also B codes. So, we are asking the database to provide us the entire patent data set in relation to any of these particular CPC codes. So, it is a more in depth search of the data.

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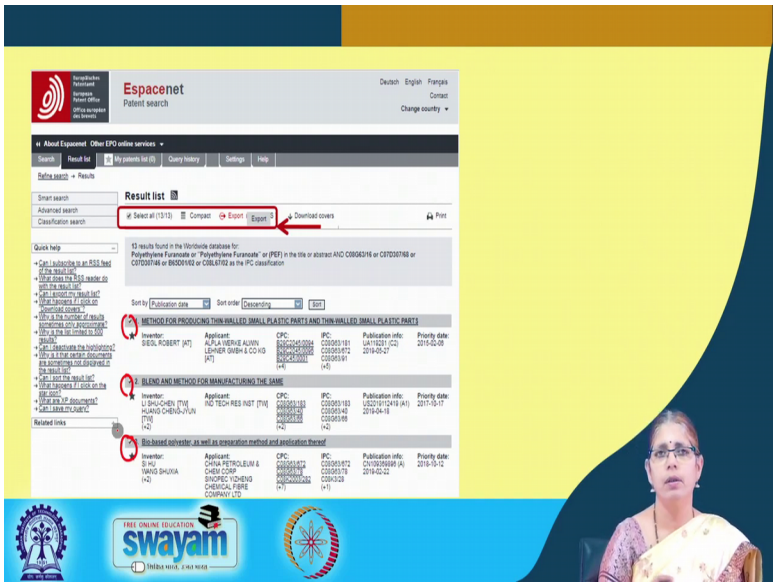

Once you get the information. So, in an earlier case we have got we got very few results, in this case when we have expanded the purview of the CPC code 13 results are presented. So, what do you do? You can actually select out as is shown in this particular in the illustration here. And, then download the information, one can export it in two different formats, which is available from the database and then do an analysis at a later time point. So, this is how the steps can be broken into different time points.

So, when you conduct a patent landscape search, it is done over a period of few days typically it would take anything between 15 days to one month to complete a patent

landscape search sometimes even longer. So, one can actually do the search part of it in some part of the time, since the exporting of data can happen the results the analysis of that can be done at a little later point of time.

So, giving it adequate time is the key for patent landscape. So, it is not good to hurry into making a landscape. Sometimes, after you prepare the landscape you also look at some new technologies that are developed keeping sight of that is also important. So, giving it adequate time helps you to not only understand the nuances of the technology understand the players in the field, what are the technologies captured by these players, the growth of the technology, it may be possible that you may want to review that at a little later time point. So, keep giving it that adequate time is important in relation to understanding a patent landscape the value of it.

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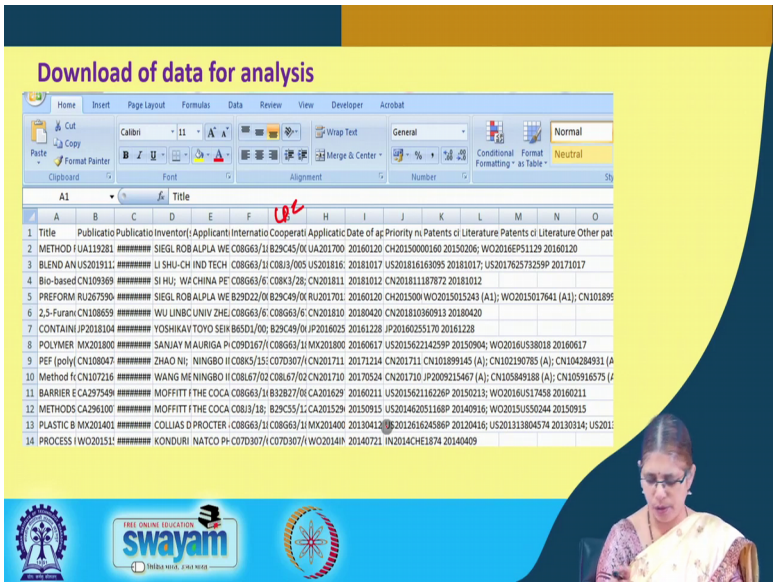

So, here we have the downloading of the data, which is shown in this particular excel sheet, you have the entire information downloaded on that particular patent which means all the categories that are captured by the database are downloaded. You have in the very first row, you can see the different columns, the lining up of the title publication inventor information, applicant information, the international IPC code, G in here it represents the CPC code, the date of application so on and so forth.

So, this excel sheet columns can run into the entire set of information, which is captured as that particular field. So, all the fields that the database captured will be presented in

the excel sheet. So, this is actually the raw data that you are looking at. Now, it is at this stage you might decide on what are the columns that you would consider for the data analysis. If, you remember also in the earlier example when we discussed about 3 D printing, we looked at either by a single field you can draw the analysis, one can also draw it by multiple fields. So, from here is the starting of the data analysis.

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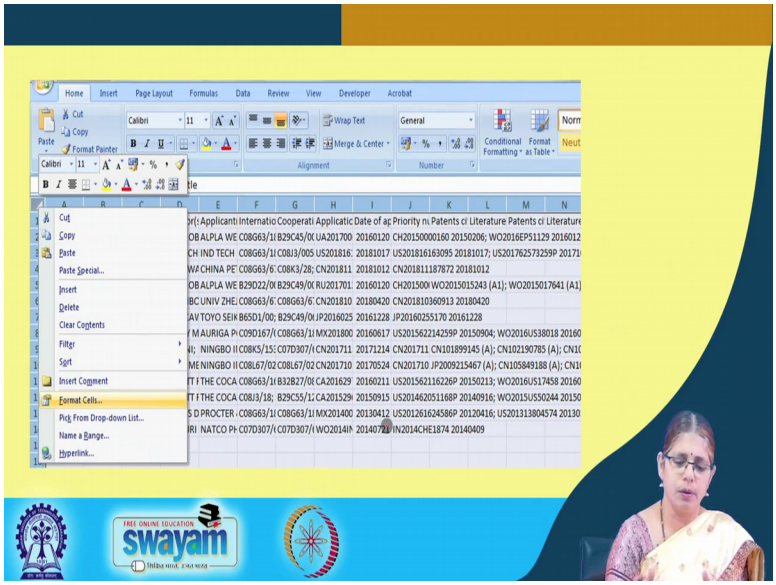

Based on one can also actually format the cells, so that you know you have the spread of data which is presented in a more easier way to work with the data.

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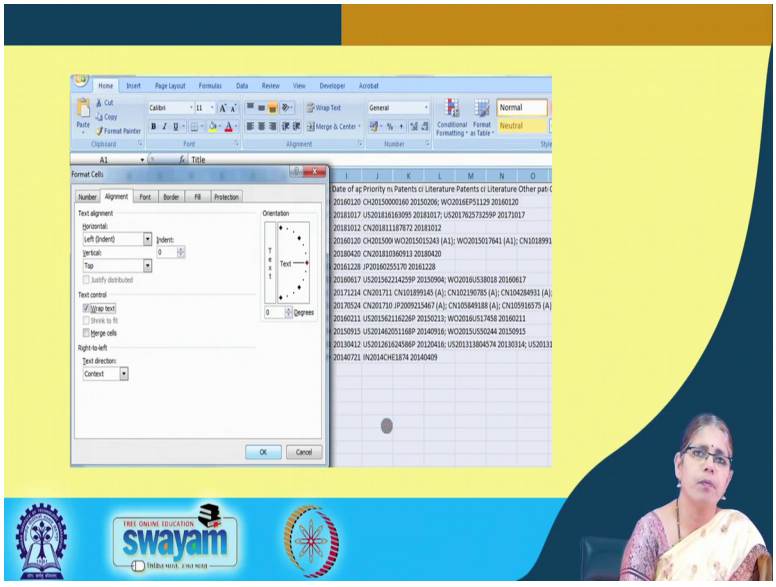

And, this is where one is looking at organizing the information; so that is the first step.

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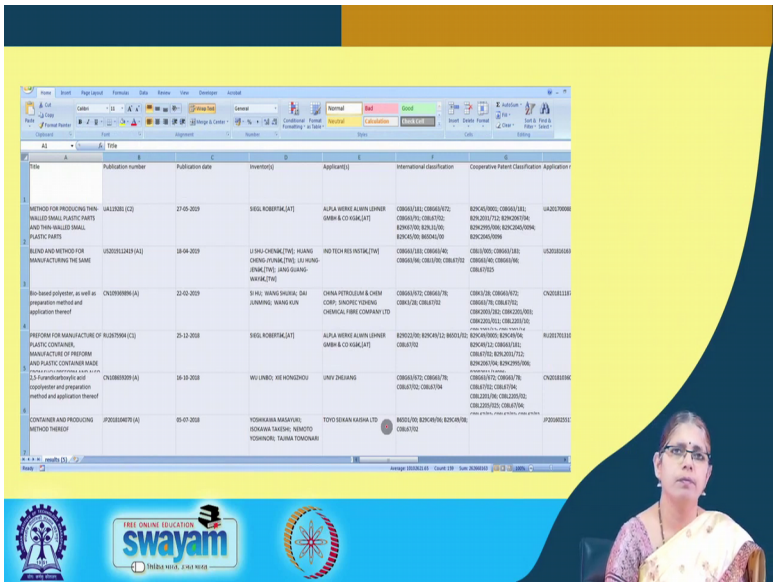

Once you see the data spread, where you are able to see the from the raw data to a little bit of an enhanced view based on the formatting. It is giving you information which you can actually go through in a glance and it is from here that you can now look at the analysis of the data.

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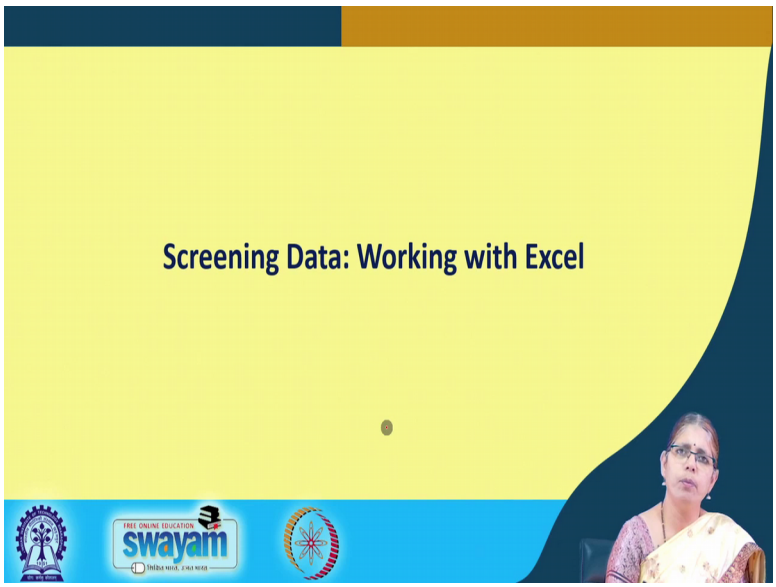

So, the simple way of looking at organizing the data and the analysis of data can be done on your desktop or your personal computer using excel. So, let us understand how to screen the data using excel.

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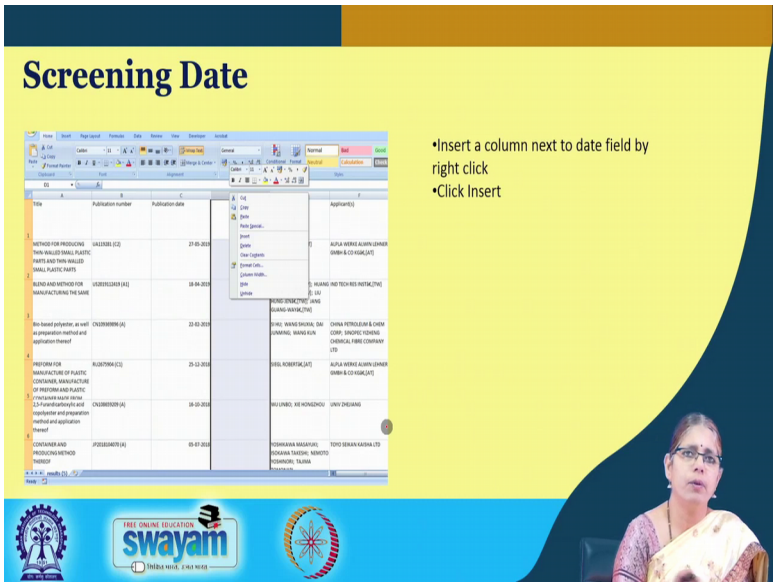

There are different ways in which you can screen the data by using the filter option, where you are looking at the date field. So, you select the date field and then right click and then you can actually insert the value. So, the start period of the data from where it is going to be analyzed will be shown up. So, that data set comes up in relation to that particular date.

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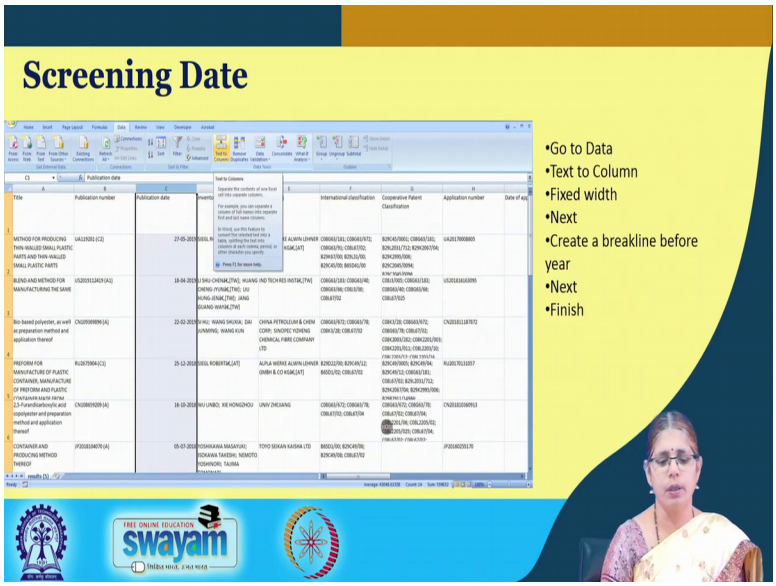

And, here is that representation of that way you are looking at the publication date. So, using excel one can actually organize based on specific fields and therefore, also screen out the data based on specific categories.

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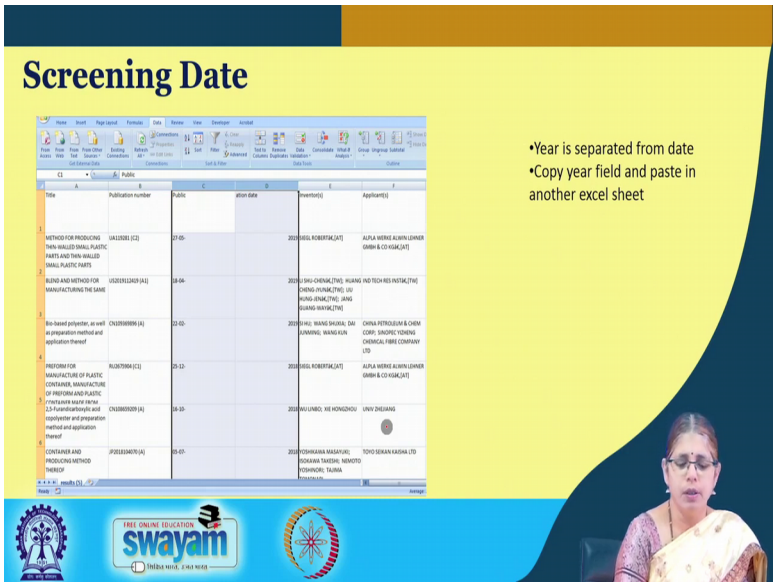

Now, here you have the data represented based on the publication date, based on this we can actually look at the year wise computation of the information. So, from this raw data sheet you can actually open up another sheet where you can actually copy in this information into a column. So, all the relevant columns whichever are the ones that you

are comparing as data analytical points can be copied into another excel sheet. And, then one can actually look at for making the charts or the pie diagrams.

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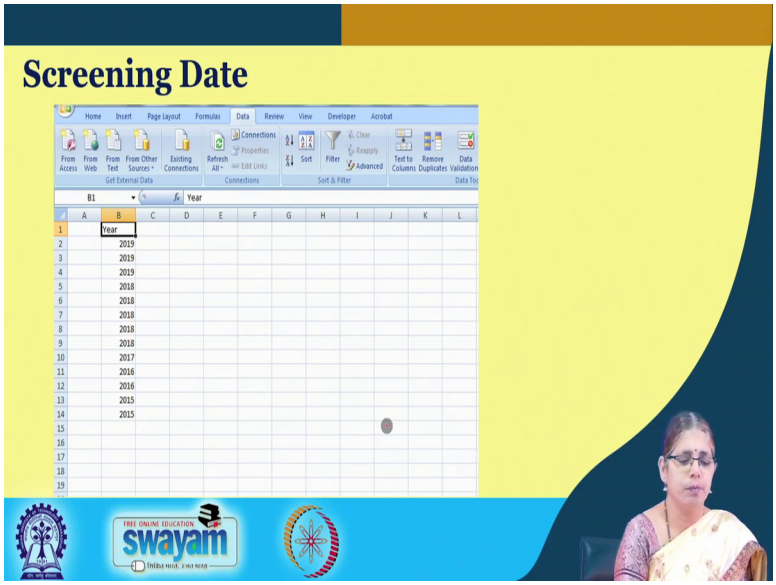

So, here is a simple aspect of copying that year information, so into one column.

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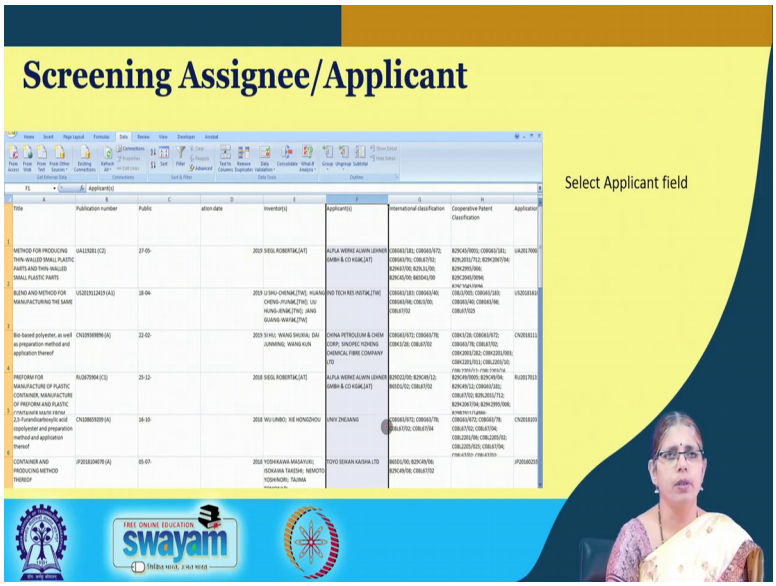

And, then we are also looking at multiple fields. So, one can actually take the applicant information by selecting out the specific column for the applicant. So, the entire applicant information will be ported into a separate one.

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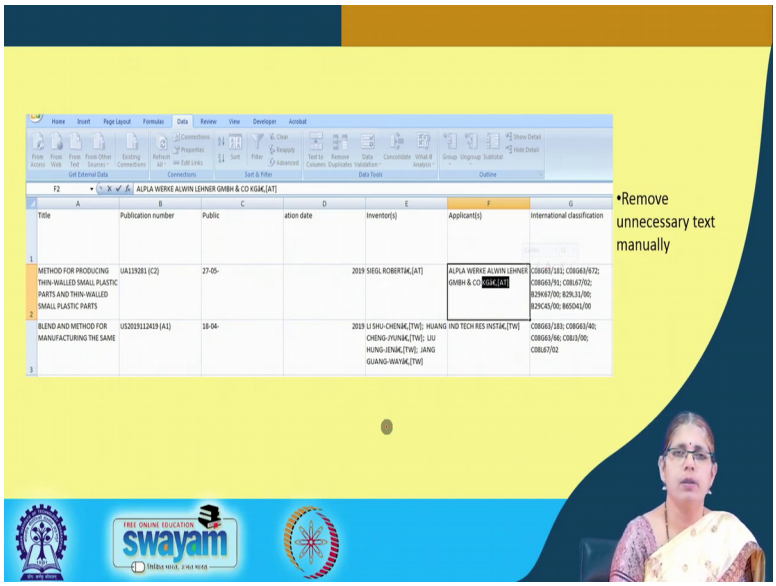

What happens then? It is also possible that there are hits which are not relevant. So, manually also one can screen through and a data set which is representing something within which is a micro level, which is less than 1000 or around 1000 or patents can be easily looked through from a manual screening of the information. So, that those that aspect of it can be removed.

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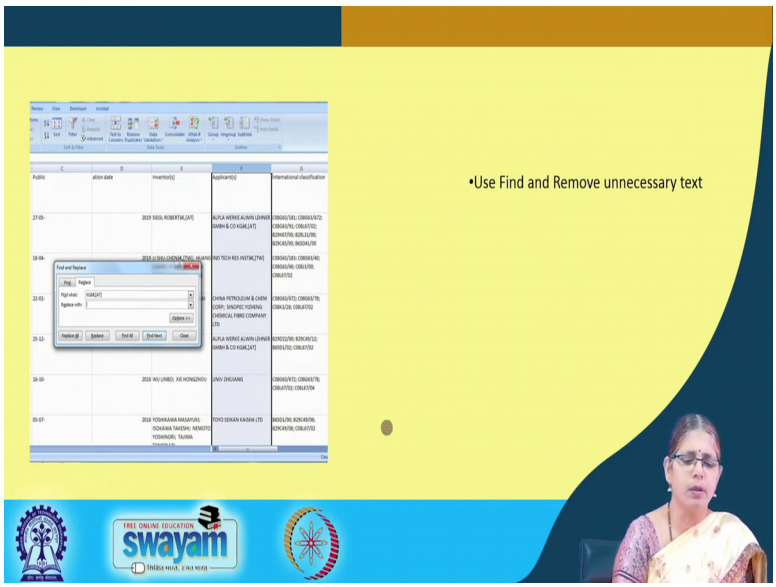

Excel has this find and remove options. So, wherever you see that there is some data which is actually not correctly represented, one can select and remove that information and this is one representation of that in relation to an applicant.

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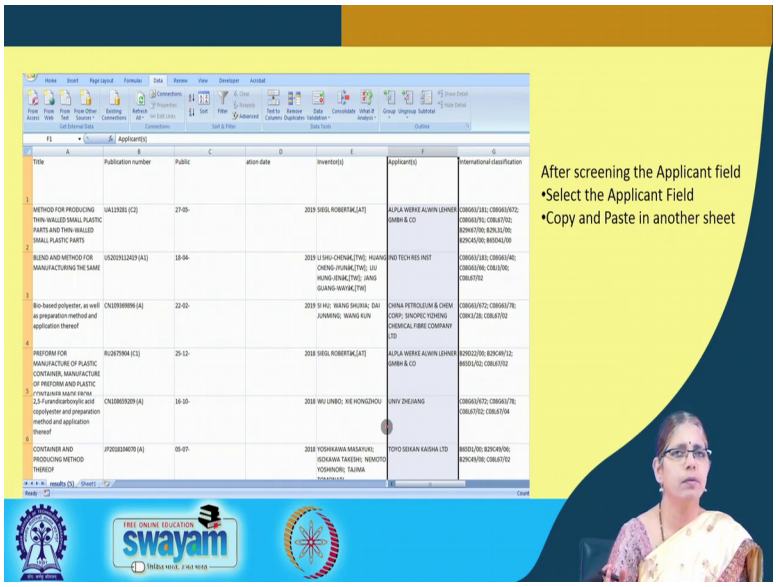

What happens is individually one can select out these particular fields. So, that from the raw data sheet, you are making your individual excel sheets in relation to what you want to compare. So, the entire workbook the excel workbook may represent several sheets where you are doing the comparisons. And, this is how one can use excel spreadsheet to do a very simple data analysis. So, you have also copied the not only the year also the applicant information in this case.

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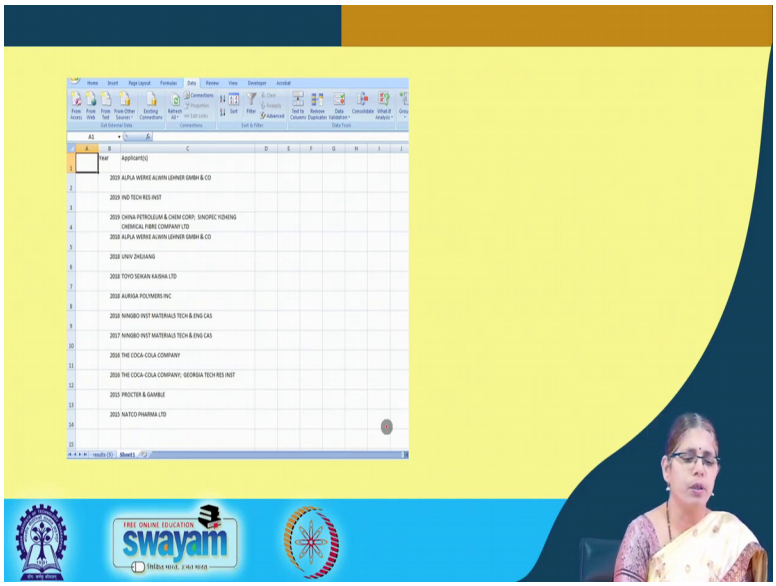

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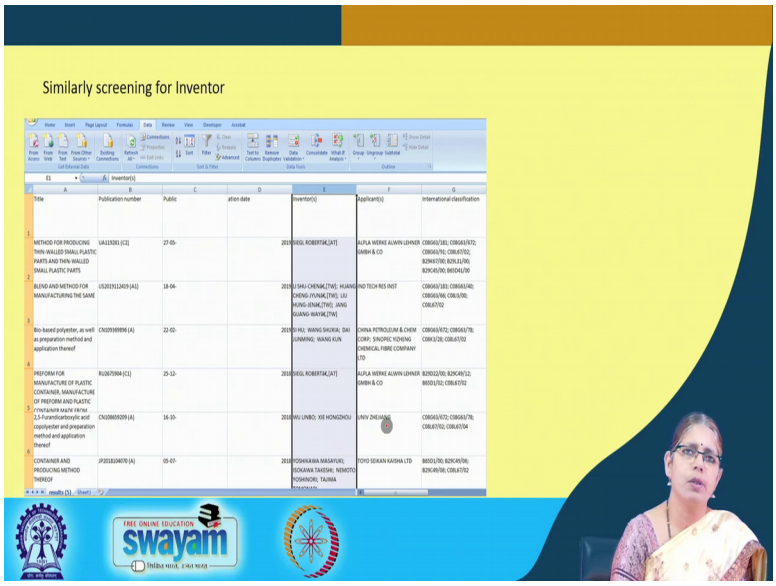

And, then so on and so forth one can also copy the inventor information. So, here there are lot of inventors in relation to different applications. So, inventor information can also be captured.

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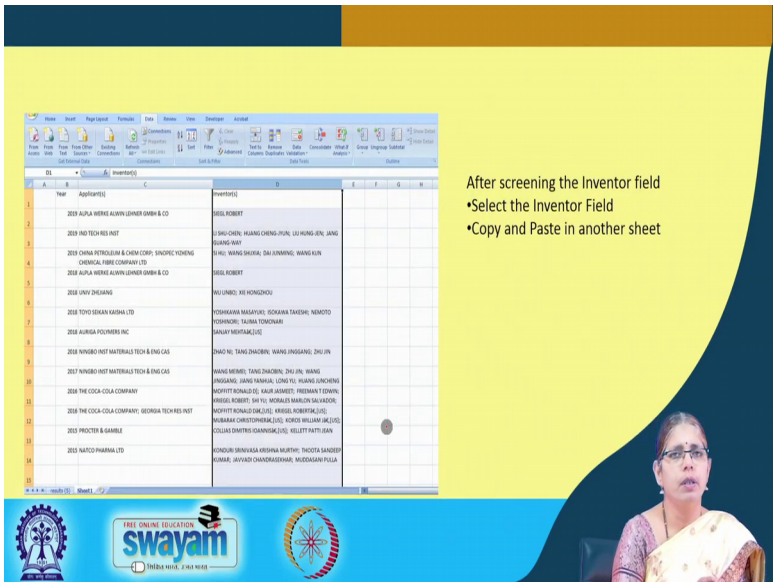

So, this way one can add columns separate columns into the individual sheet, which is part of the excel workbook and then draw the analysis parts.

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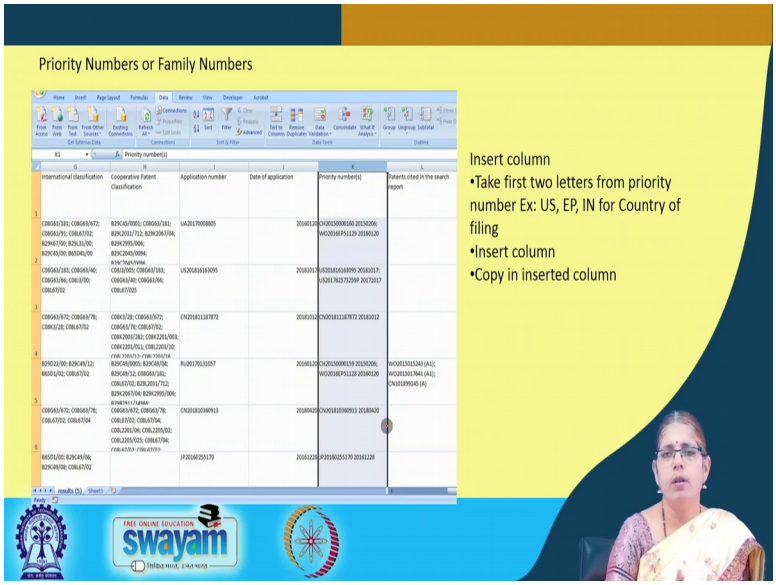

In the earlier instance we have looked at the data in relation to inventor's assignees, priority or priority number is another aspect which can be caught which can be also captured so, information in relation to priority number and country. So, one understands based on that how the spread of the data is. So, this information also can be captured.

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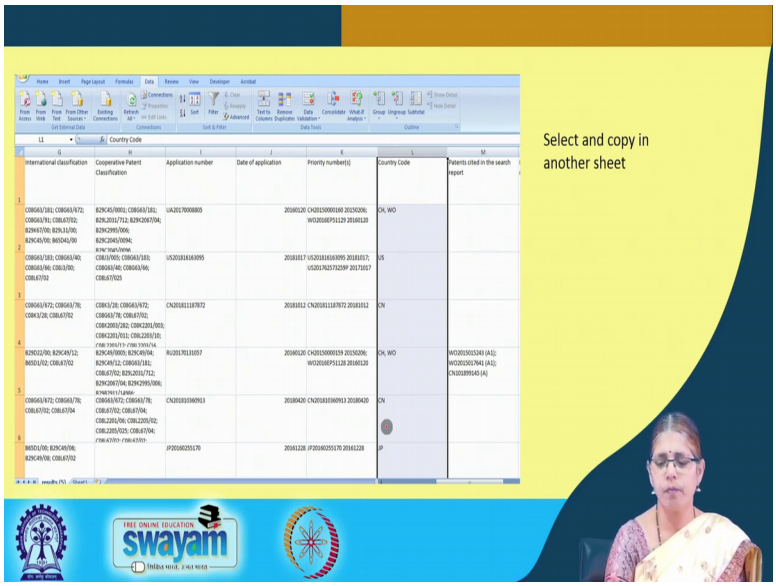

Country codes; so understanding the country codes is important based on the representation of each country.

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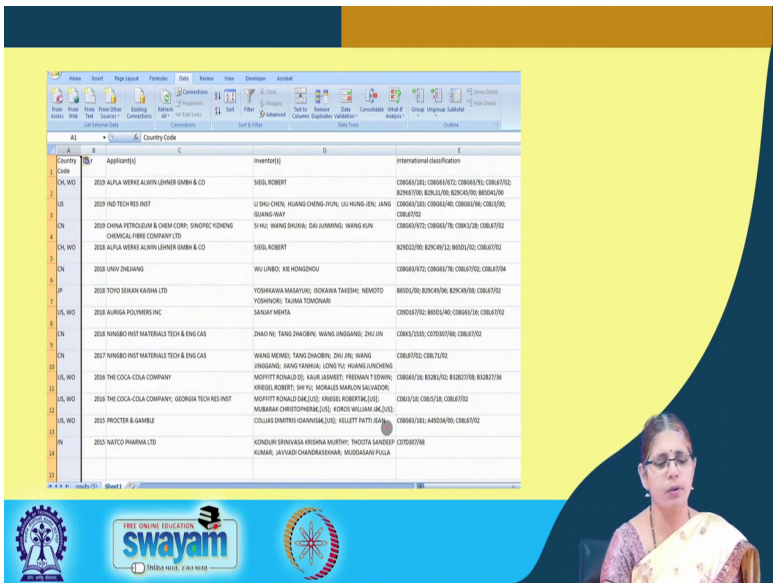

So, one can select out this information as well and actually; so a whole lot of these columns can be arranged. So, before we look at the analysis of data, the organization of data is important we discussed about that in the earlier lecture.

So, this is how we are organizing and since the raw sheet represents columns which are really large in number, it is useful to use the workbook mode where the additional sheets can be opened up and the data can be selected out from the raw data sheet.

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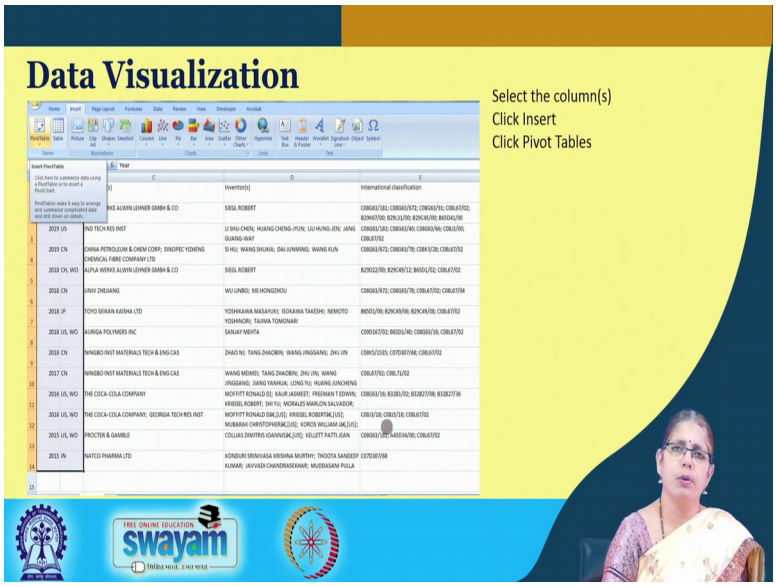

Now, comes the aspect of data visualization. So, here we have the columns placed one next to the other, but how does the data look with respect to the fields of this information. So, what is the correlative information that we can understand? And, this is where one can create pivot tables by selecting out the column and creating the pivot tables.

So, here in this case one can use the excel option of selecting the column. And, then one can insert here in this case we are saying insert with respect to creating a pivot table or even one can create a other options are also available in relation to the data set.

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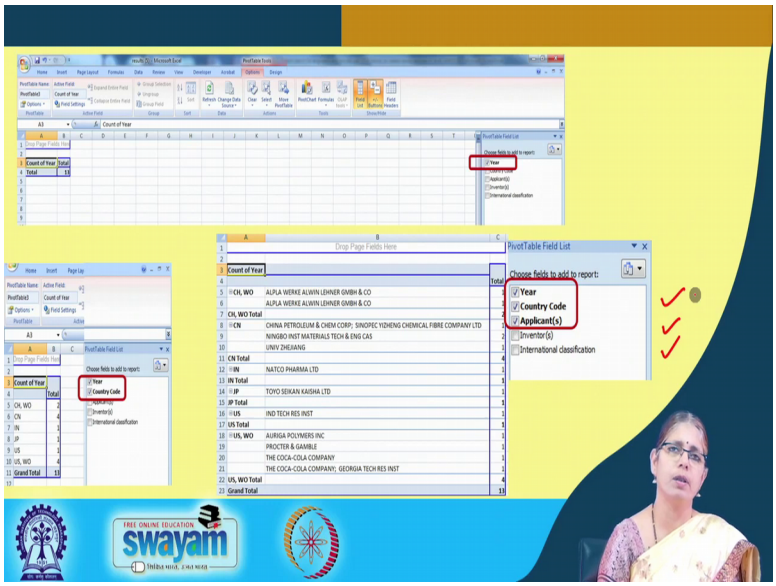

So, this is where the option of choosing the fields comes up. Since, we have already organized the information in that different columns, here one can now select out the specific categories that you would like to for creation of the table. In one instance here we are looking at the aspect of year country code and applicant. This information is what we are interested that the table should represent.

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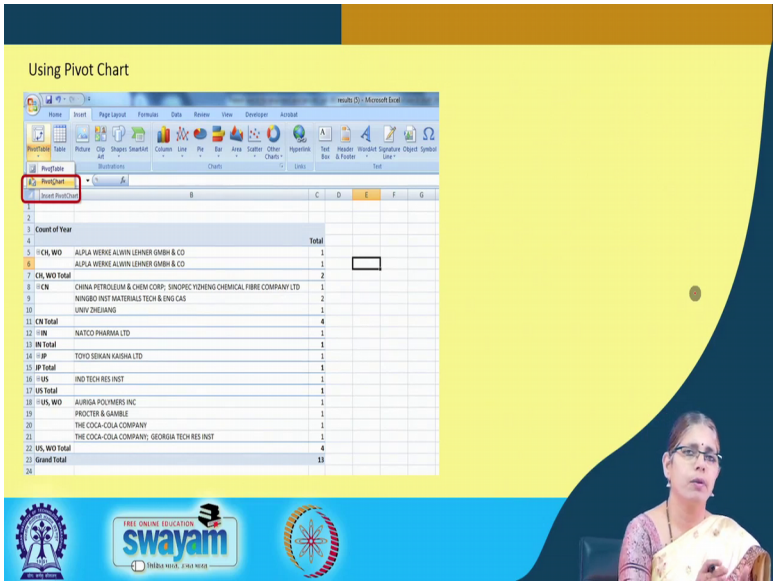

And, you call for click and insert pivot chart and that is where you get the information in relation to.

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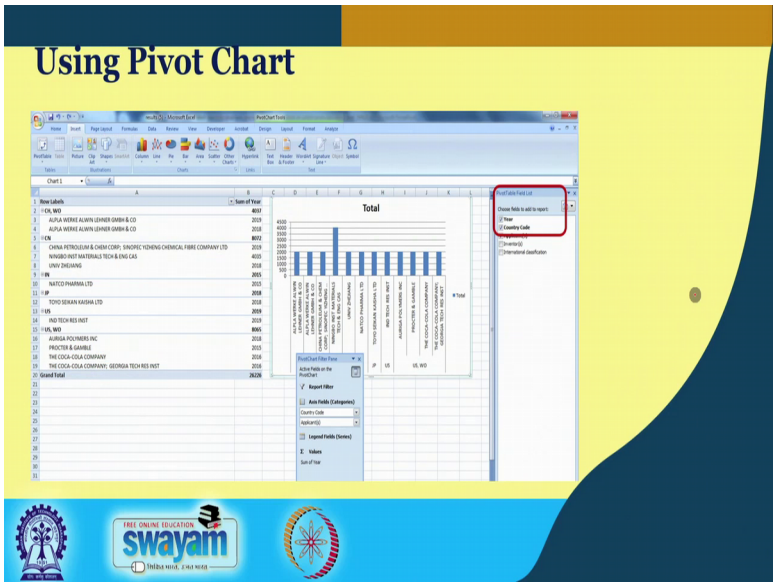

So, here what you see is on one end you have the data and the here you have the chart come up, where you have the information in relation to the patent numbers also the assigning information. So, this is how one can draw n number of pivot charts based on the selected columns, and one can actually add relevantly other columns as well. So, this is where you have the option on in excel. Now, one can also further filter based on specific aspects like you can have you can report specific filters under the under the same option available here. So, this is how one can create.

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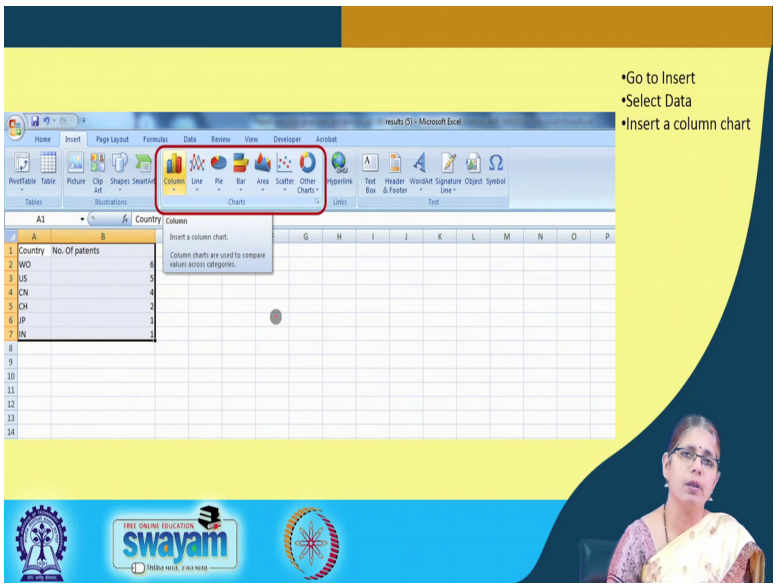

And, all the menu in the option that is available in excel, there are different ways in which you can actually now do the data analysis. By inserting a column chart, drawing a pie chart, having a bar diagram, looking at the area under the curve into of the patent under the particular area, you can have a scatter plot and then there are other ways in which one can organize the information.

So, identifying what is the relevant type of data analysis that you would like to do depends on, how you would like to see the information change with respect to the data. So, one can select out a pie chart where you are looking at percentage representation. So, that is how one can use excel as a good option to create these different plots.

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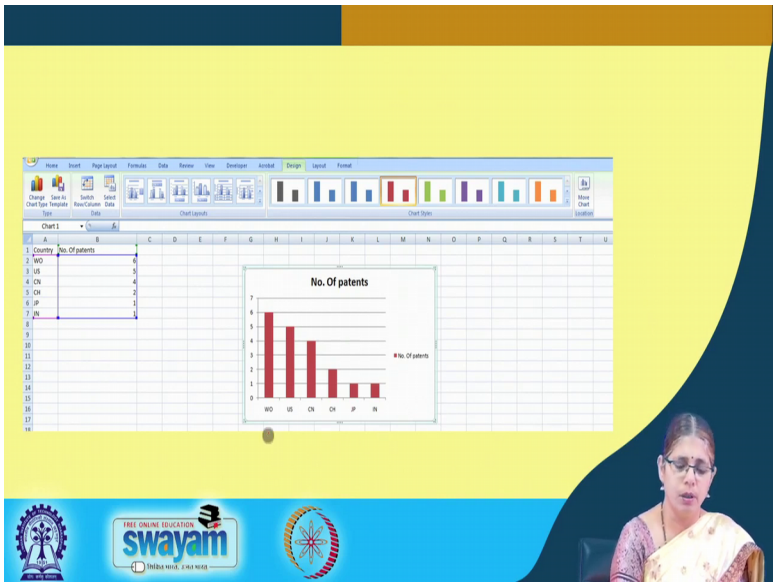

So, here you see a simple way of creating a chart a bar diagram with respect to the PCT publications that represent the area, US publication, China publications and so, that is how you can actually draw these particular charts.

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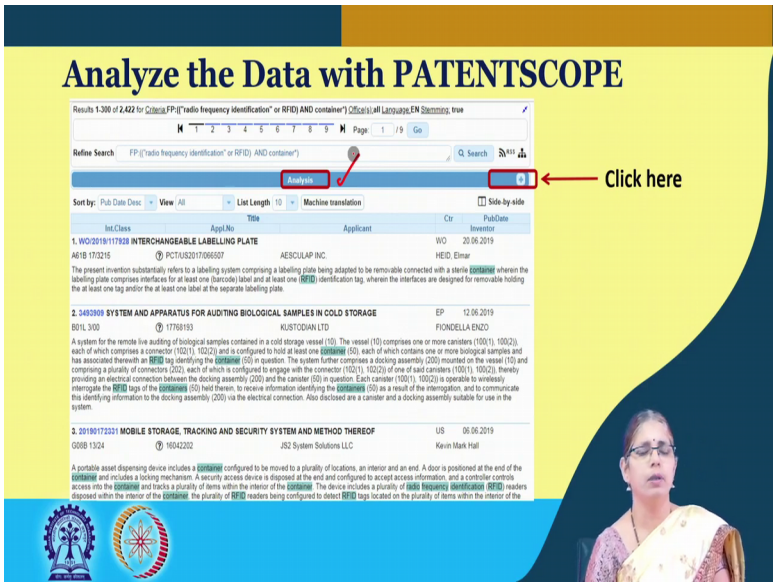

One can go back to other databases and also look at some of these options. So, while in the first instance we took out the information from on the patent, we searched the information at e space net, collected the patent data set, filtered the patent data set, and then used excel as an option to do the data analysis. In the case of the WIPO offers a database called the patent scope which also has this option of analytical tools which are part of the patent scope itself.

So, here there is a link at the patent scope which says analysis, if you click on this particular link you go to the different analytical tools available under the patent scope to do the analysis of the data. And, this is how once you get the number of hits you can select using the option of ticking in the box, those patents one can look for the analysis.

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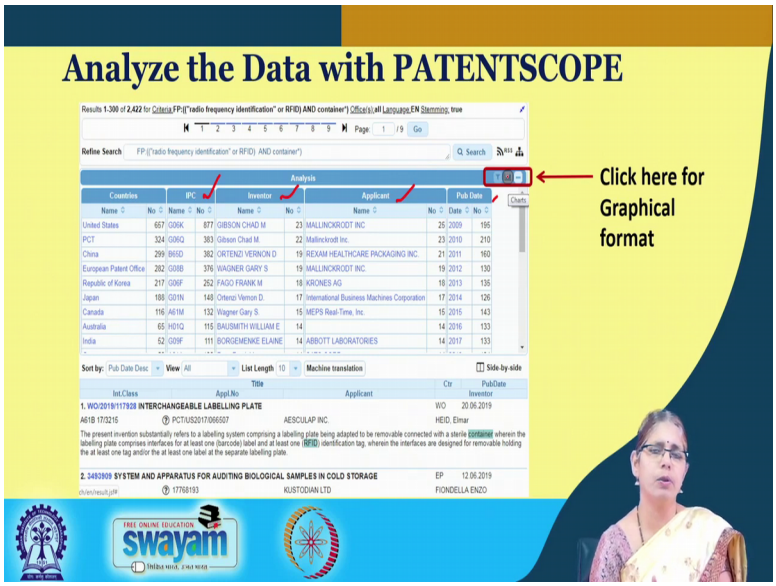

And, this is how one can actually see the columns, which are organized under the patent scope by a way of selecting out the analysis option. So, here you have the country information, IPC information, inventor, applicant, publication rate and so on and so forth. Once, you click on the graphical format you can actually get the organization of that data in relation to a visualize visualization mode.

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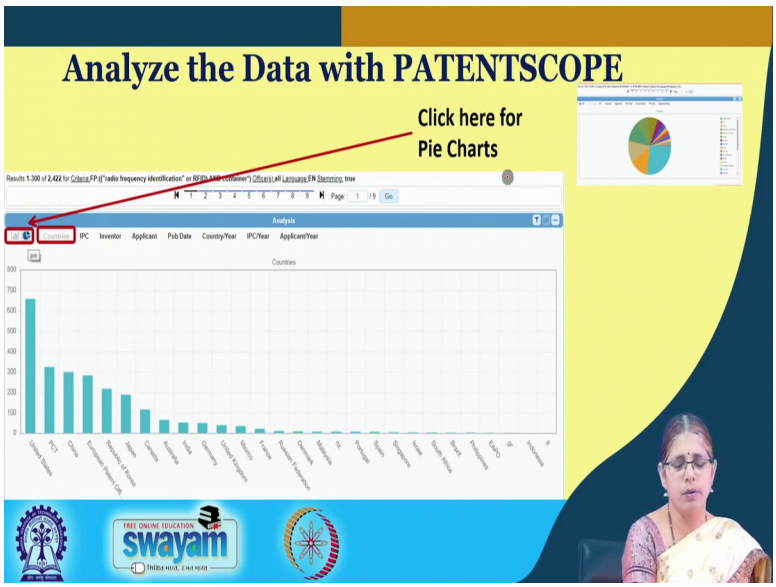

So, here in this case we clicked on the let us say the pie chart. So, you will have the data shown up in the form of a pie chart. In another case you are looking at a bar diagram. So,

patent scope offers this way of analyzing the data using, the visualization tools that it provides under the database.

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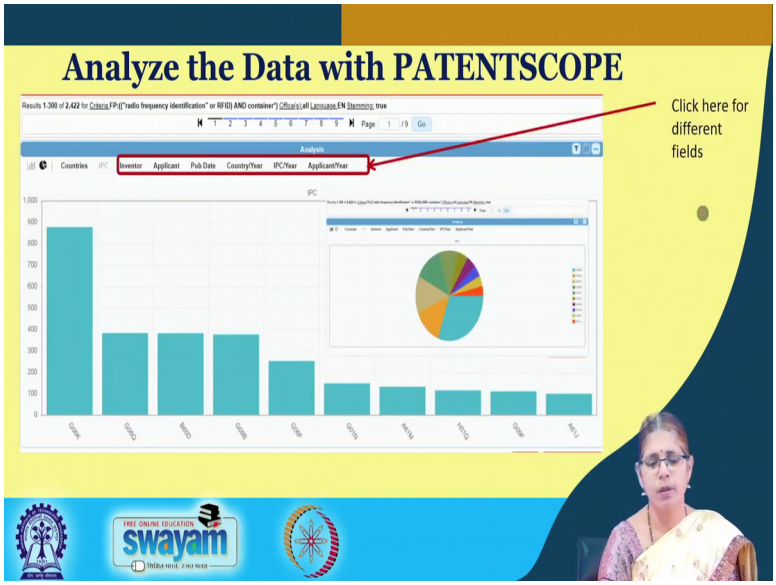

And. So, one can actually also look at it from the point of view of using different fields for the information that you want to see and using the visualization tool. So, in summary what is it that we have learned today from this hands on the patent landscape?

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Depending on the area whether it is mechanical or chemical understanding the technology, the developments and applications in relation to the technology is a key step

in preparing patent landscapes. One needs to keep in mind the keyword and the IPC course, the relevance of doing an in depth search in relation to patent landscapes. Identifying the right type of search methodology, defining the database time limits.

Review is a very important and critical step for collecting the patent dataset. There are a host of data visualization tools that are available as a part of free databases also Microsoft Excel provides a great opportunity to look at the analysis with respect to the different data points that are there in relation to the patent landscape search. It is also important to revisit the patent landscape depending on the growth of the technology.

So, inclusion of new technology areas may be necessary before you present the landscape report either as a part of research or even as a part of submitting that so, that a business can. So, that business can take decisions so, the value of patent landscape search can come in different ways. From the point of view of providing clear insights into particular areas as a patent searcher there are certain best practices that you need to keep in mind when the patent landscape is done, it is important to have a date stamp.

So, clearly mentioning the data time point is important, because it is possible that few months down the line, if you are looking at the same patent the landscape, it may mean different things understanding these standards in relation to a technology is important, because incorrect representation will mean that the landscape will have the value which is not realized from the point of view of the lack of objectivity in cataloging the information.

So, understanding the technical terms understanding the way the keywords are represented in the technology these are very important. So, a patent landscape is actually more like conducting research in a given area. And so, therefore, takes some amount of time and given that scenario the nuances of patent search that we have learnt must be kept in mind, because patent landscape search is one aspect of the type of patent searches

Thank you.