Hello everyone and welcome to this webinar on the business use of patent information.

My name is Alex Riechel, and I am joined today by my colleagues in the TISC team.
As you may already be aware, patent information is not just a valuable resource for identifying research opportunities, determining the patentability of an invention, or avoiding infringing others’ patent rights.

It can also be a valuable source of business intelligence for entrepreneurs and businesses.

It can help identify competitors or partners in a specific field of technology, give an indication of their research and development activities or broader market trends and opportunities, uncover research collaborations, and much else too.

Today we’re going to focus on the analysis of sets of patent documents rather than in-depth evaluation of individual patent documents, which can equally be an important way to learn about a competitor’s research and development activities.
To help illustrate how patent information can be used to gather business intelligence and which challenges you may face in doing so, let’s look at an example scenario. In this scenario you’ve been contacted by a sewing machine manufacturer who would like to learn more about its competitors.

In particular, the sewing machine manufacturer would like you to help it answer the following questions…
1. Who are main innovators in our field of work?
2. In which other areas of technology are these innovators active?
3. In which markets are these innovators particularly active?
4. How has their innovative activity evolved over time?
We can reformulate these questions as tasks for you to carry out.

The tasks will be as follows:

1. Retrieve a set of patent documents in a specific area of technology, namely sewing.
2. Analyze the set of documents by applicant name
3. Analyze documents associated with a specific applicant by technology, patent office at which the documents were filed, by publication date, and by publication date.
So our first task will be to retrieve a set of patent documents related to sewing.
You will recall that many different ways exist to express concepts related to a specific field of technology, including using keywords, classifications or codes, formulas, structures, sequences, and images.

As a result, you may be able, and indeed may be obliged, to use different ways in order to retrieve documents related to a field of technology in which you are interested.
For example, everything you see here is a way of representing paracetamol, a common cure for headaches.
For this scenario, let's use patent classification to retrieve a set of patent documents related to sewing.

You will remember that patent classification has a number of advantages over using keywords. These advantages include the fact that patent classification is independent from terminology and jargon, and changes in terms used over time, as well as independent of language.

So it doesn’t matter whether an inventor chose to use one or another term to describe his invention in the field of sewing or was writing in Arabic, Chinese, or English. If the document was classified by a patent examiner, it will be retrieved if you use an appropriate patent classification symbol in your search.
But how will we find an appropriate patent classification symbol?

The official publication of the International Patent Classification, or IPC, is the authoritative source for the IPC and provides a multitude of useful tools and features to help you find appropriate IPC symbols.
One feature is the “catchword index”, which contains several thousand technical terms and matches them with corresponding IPC symbols.

We can open the catchword index by clicking on the “Catchwords” tab highlighted here in red.
Once we have opened the catchword index, we will have to find the right section of the index.
“Sewing” will be found in the section starting with “Sensitive”, highlighted here in red, and before the next section starting with “Sheep”.

So we will select “Sensitive” from the different options.
Once we’ve selected “Sensitive”, we will have to scroll down to the appropriate catchword.
Among these catchwords is “Sewing”, which conveniently matches with the field of technology in which we are interested.

It is possible that you will not find a catchword that exactly matches the term you came up with for your field of technology. In this case, you may want to think of other terms that could also be related to the field of technology.

But in this case, we can simply select the IPC symbol "D05B", matching the catchword “Sewing".
Clicking the IPC symbol “D05B” will take us to the symbol in the IPC scheme, which broadly contains many types of devices, machines, and elements used in sewing.
If we look closely, we can see an arrow, highlighted here in red, next to the IPC symbol. This arrow links us to another important feature of the official publication of the IPC, namely the IPC Bridge.
The IPC Bridge is a portal to a number of tools through which we can find out more about a specific IPC symbol, including titles, or descriptions of what a given symbol means, in different languages and corresponding symbols in other patent classification system.

It also allows us to use the symbol from which we are “bridging” to carry out searches in a number of different patent database systems, including PATENTSCOPE, the free patent database service provided by the World Intellectual Property Organization.
For this scenario, let's use PATENTSCOPE to do our search using the IPC symbol “D05B”, since it has a broad coverage of patent collections and an important feature that we will use to carry out the tasks assigned to us by the sewing machine manufacturer.

Clicking on “PATENTSCOPE” will take us directly to PATENTSCOPE to carry out a search using the IPC symbol “D05B”.
As we can see here, we have retrieved a significant number of results, sorted here by publication date.

So now we’ve completed the first task assigned to us, retrieving a set of patent documents related to sewing.
Our next task is to analyze the set of documents by applicant name to identify top innovators with whom our sewing machine manufacturer may be competing.
Coming back to our search results in PATENTSCOPE, we can select the “Analysis” feature highlighted here in red.
Selecting the analysis feature will show us a frequency analysis of a number of different fields, laid out by default in table format.

The most frequent contents of a given field appear at the top, so these tables show us the top 10s (or more, according to our settings) for each field.
As you can see, one of the fields is the “main applicant” field, which represents the first-named applicant on the patent documents in our search results.

The first-named applicant is often the company for an invention claimed in a patent document was made. However, it is possible that multiple companies were involved in the development of an invention and thus named as applicants, where the second and subsequent would not be designed a “main applicant”. 
Here we've got a list of the top applicants, or rather main applicants, in our search results.

These top applicants may be important competitors for our sewing machine manufacturer, since they appear to be prolific innovators and likely hold extensive patent rights in the field of technology.
Let’s take a closer look at some of the companies in our list of top applicants.

In fact, it appears that one company, namely Juki Corporation, appears multiple times under slightly different names, including its Japanese name.
This takes us to our first challenge when analyzing sets of patent documents according to applicants (or inventors).

Often applicants will appear in patent documents under various spellings, for example in different languages, with and without indications of their type of business, and with or without abbreviations.
Let's take another look at our list of top applicants.
One of the companies on our list of top applicants is “Duerkopp Adler AG”.
Dürkopp Adler AG was the result of a complex history of name changes, changes in type of business, and mergers and acquisitions, starting with the founding of Koch & Co in Bielefeld, Germany in 1860 and including more recently the acquisition of Dürkopp Adler AG by the Chinese SGSB Group.

Countless patent applications have been filed by the subsidiaries and predecessors of Dürkopp Adler AG, which could be included in the number of patent documents to be attributed to the company.
This raises another set of challenges, namely name changes and subsidiaries and predecessors.

Not including results for the same company under a different name or its subsidiaries and predecessors could give us a false impression of their patent filing activity.

Certain patent database systems attempt to address these challenges, name variations, name changes, and subsidiaries and predecessors, in different ways.
They may attempt to match them based on similarity.
Or they may harmonize names.
Or they may assign unique codes to applicants.
They may also include subsidiaries or predecessors within the results of a given organization.
Another challenge you may face when analyzing sets of patent documents are the presence of patent families within these sets. Patent families are groups of patent documents that relate to the same invention or several closely related inventions. They are generally defined as sharing one or more common "ancestors", or priority documents.
As we can see here, the Charles Draper Laboratory filed multiple patent applications for the same invention, namely a "Method and Apparatus for Detecting Improper Stitches for a Chainstitch Sewing Machine", after initially filing a patent application in the United States.

If we were to count each individual patent document here individually, it would lead us to count the same invention multiple times and thus overestimate the actual innovative activity of Charles Draper Laboratory.

As a result, we may prefer to count patent families in a set of patent documents rather than individual patent documents. Certain database systems can help us do this by grouping patent documents into patent families. When evaluating your results, it is important to keep in mind whether your results have been grouped into patent families and, if yes, how your results have been grouped, according to which patent family definition.
A related challenge stems from differences in patent filing practices among patent offices.

Legal and procedural differences (for example requirements concerning unity of invention, or how closely a set of inventions must be related in order to be claimed in a single patent application) can mean that numbers of patent applications may not be comparable among different patent offices. All else being equal, a patent office with stricter unity of invention requirements would, for example, tend to have a greater number of patent applications than a patent office with less strict requirements.
So now that we've taken a look at some challenges we may face when analyzing a set of patent documents, let's move on to our next task, namely examining the patent portfolio of a specific applicant by technology, patent office, and publication date.

Doing so will allow us to get an idea of the different areas of technology in which a company is active, which markets it is targeting, and how its patenting activity has evolved over time.
Let’s go back to our search results and take things up from there.
For this next task, we'll have to carry out a new search, so let's select the “Search” menu item highlighted here in red.
We can choose from a number of different interfaces, including the simple, structured (or field combination), advanced, and cross-lingual semantic search interfaces. But for this exercise, let’s use the advanced search interface, so that we can take advantage of its powerful and transparent query features.

From the “Search” menu, we’ll select “Advanced Search”, highlighted here in red.
Doing so will take us to the advanced search interface.

As you will notice, the query language is set by default to the interface language. The query language is important, since if you have selected the stemming option, PATENTSCOPE will search for variants of your search terms in the query language, unless you have selected “All” as the language.
As you recall, one of our top applicants in the field of sewing was Juki Corporation, which appeared multiple times under slightly different names, including its Japanese name.
Let’s collect all the different ways in which this company appeared in our analysis result as possible search terms.
You will notice that the English names under which the company appeared share a common root, or stem.
We can represent these variants using a wildcard operator, as you may recall from other webinars.

We should also treat the terms as phrases, using quotation marks, or inverted commas.
We can join our two resulting search terms using the OR operator, since they can be considered synonyms for each other and we would like to retrieve documents that contain one or the other term, not necessarily both.
Finally, in order to avoid false hits, such as mentions of Juki Corporation in the description of a patent document, let's also specify that the terms should be found in the applicant name field.

The applicant name field is represented in PATENTSCOPE by the “PA” field code, where the terms to be found in the field should be surrounded by parentheses, or brackets, and a colon should be used to separate the field code from the terms.
With our search query prepared, we can simply go to the advanced search and paste our search query into the query box highlighted in red…
…and then click the “Search” button.
As you can see here, we have retrieved nearly 5000 results, representing individual patent documents from different patent collections.
We can use the built-in analysis feature again to give us an overview of our results.

As you may remember, one of our tasks was to find out in which areas of technology this company is active.
The fields of technology can be represented by patent classification, or here the main IPC subclasses.
The top IPC subclasses represent:

1. Sewing
2. Printed circuits and electrical components
3. Handling thin or filamentary material, for example sheets, webs, cables (but also possibly threads)
4. Measuring
This takes us to a further challenge we may face when analyzing sets of patent documents, namely that a different fields of technology may be related to the field of technology in which we are interested.
The field of sewing has evolved dramatically from the simple thread and needle.

So if we want to explore this field of technology, we may want to include mechanical, electrical, or electronic aspects of sewing machines in our search, capturing such aspects as thread feeding or circuit boards.
Let’s move on to our next task, namely examining the patent portfolio of Juki Corporation by patent office.

Doing so can give us an indication of the countries or regions in which Juki Corporation sees market potential, including possibly opportunities to manufacture or sell its products.
Again, we can look at our analysis results, to see the top patent offices at which Juki Corporation is filing its patent applications.
The top patent offices, include Japan, China, the Republic of Korea, United States, Mexico, Singapore, and the European Patent Office. A number of patent applications have also been filed through the international patent filing system, under the Patent Cooperation Treaty, or PCT.
But as we can see, the vast majority of patent documents in our set of patent documents have been published by the Japan Patent Office and other Asian patent offices, which may suggest that Juki Corporation sees the Asian market as particularly important for its products.
Finally, let's complete our last task, namely examining the patent portfolio of Juki Corporation by publication date.

Doing so can give us a picture of the historical evolution of patent filing activity by the company.
A common saying is that “a picture is worth a thousand words”, or in this case dozens of numbers.

So let’s go from the table view to the graph view by clicking the “graph” radio button highlighted here in red.
Now we can see the dramatic difference in filing activity by Juki Corporation at the Japan Patent Office and other patent offices.

As a next step, let's select Japan for our analysis to address the problem of double-counting inventions belonging to the same patent family.
Doing so will filter our results, so that we only include patent documents published by the Japan Patent Office.
As a next step, we’ll select the “Pub Date”, or publication date, tab.
Now we can see the patterns of patent filing by Juki Corporation in Japan over time, which seems to suggest a significant drop-off in the last two years, taking into account the fact that patent applications are generally not published until 18 months after their priority date, or date of first filing and that several months still are ahead of us in this year.
I’d like to conclude with two tips.

Firstly, for any patent search and analysis, it is important is to keep in mind which coverage is provided by the patent database system you are using.
You need to be aware which patent collections are included, which time period is covered, which type of patent documents are included, which parts of a patent document you are able to search, and which languages (including names) are available.

For example, if your patent database system does not include India in its patent collection, your results will not allow you to draw conclusions about patent filing activity in that particular country.
As a result, it is critical to refer to the documentation on the patent database system you are using.

This will tell you what your search results might be able to tell you and more importantly what they cannot tell you.
Secondly, you need to keep in mind that a company that develops a particular invention need not be the same company that commercializes it.

For example, many companies could be considered “idea factories” that do not actually create products themselves but license their inventions to other companies that do.
To sum up, let’s look at the tasks we’ve successfully carried out.

1. We’ve retrieved a set of patent documents in a specific area of technology, namely sewing.
2. We’ve analyzed the set of documents by applicant name.
3. We’ve analyzed a set of documents associated with a specific applicant by technology, patent office, and publication date.
These tasks have allowed us to help our sewing machine manufacturer answer the following questions:

1. Who are main innovators in our field of work?
2. In which other areas of technology are these innovators active?
3. In which markets are these innovators particularly active?
4. How has their innovative activity evolved over time?
We've also looked at a number of challenges we may face when analyzing sets of patent documents and some of the ways in which we can address these challenges.
With that, I’d like to thank you for following this webinar and invite you to keep in touch with the TISC team by email at tisc@wipo.int

I’ll be taking a few minutes now to answer any questions that may have been raised during the course of this webinar.

Please feel free to ask any questions you may not have had the chance to ask earlier.