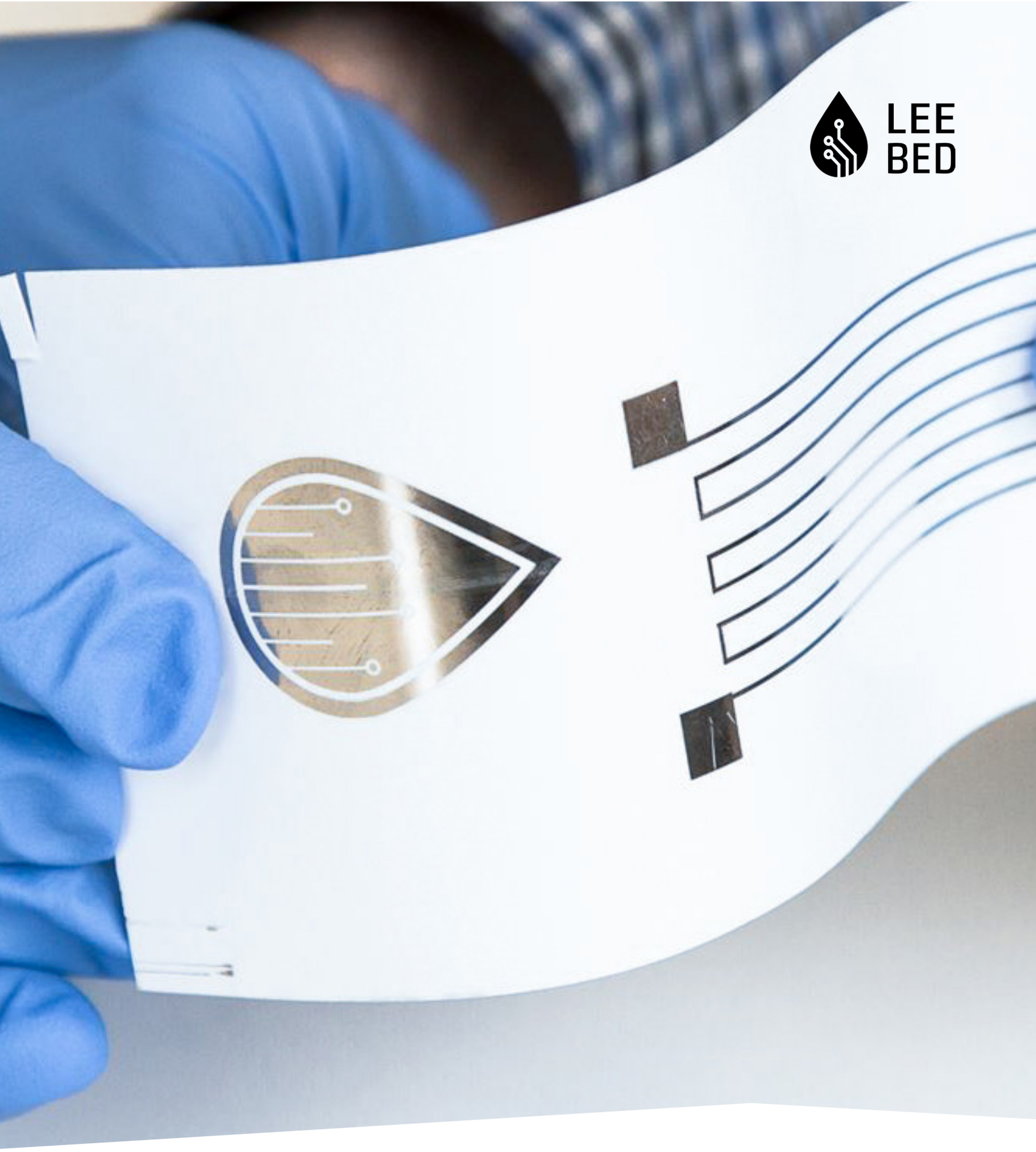


LEE BED

DANISH TECHNOLOGICAL INSTITUTE

PATENT MAPPING YOUR IDEA

Innovation begins with a map of technology

LEE-BED invites enterprises and stakeholders to gain new insight and exploit knowledge from some of Europe's leading RTOs within printed electronics.

An initial assessment of your idea is crucial for a successful application of printed electronics, highlighting technical and commercial opportunities and challenges. Patent mapping, as a part of the initial evaluation of your idea, provides you with a landscape report highlighting the main technological trends, and key research and innovation actors related to your idea within printed electronics. As partner in LEE-BED, Danish Technological Institute (DTI) and AXIA Innovation offer to investigate your technological idea from which you begin your innovation process within LEE-BED.

Global patent databases are a valuable source of information. Bases on global patent databases, patent mapping is an essentially tool for a strategic analysis of the development within specific technological areas. We help you to delve into the key technological and business information buried in the big data of the world's patents.

Patent mapping

- Gives you an **insight** into the market trends of your technology field.
- Helps you to **avoid** entering a crowded market and finding smart solutions.
- Helps you to **identify** your key competitors and gain an insight into their R&D direction – and track them if necessary
- Finds **potential**, world-class partners.
- Provides you with **arguments** - pros and cons - for:
    - Your CFO or (potential) investors
    - Your technology team or CTO on future R&D opportunities
    - Your CEO for identifying possible tech partners.
- **Inspires** you to improve your idea.

You know your idea well and we know the mechanics of big data analysis and the world of patents. The analysis is carried out in collaboration with you. We will guide you to scope your analysis, and we will identify the key technological trends and find some of the players or technologies most relevant to your developing your idea.

LEE-BED

LEE-BED stands for Innovation Test Bed for Development and Production of Nanomaterials for Lightweight Embedded Electronics.

For more information visit: https://lee-bed.eu/about-us

SWAROVSKI

"The analysis has contributed to assessing future business prospects, especially in new emerging markets for Swarovski. The patent mapping directly supported the identification of promising pathways for commercialisation of the relevant project results for Swarovski within and outside LEE-BED.

– Rafael Michalczuk
Senior Technology & Funding Manager, Swarovski

What is patent mapping

Patent data is information about intellectual property rights (IPR). Patents are agreements that provide permission to the patent owners to consolidate their IPR (Intellectual Property Rights).

With a patent a sovereign state or intergovernmental organisation grants exclusive rights to the owner of an invention in the form of a specific solution, product, or process for a limited period. In exchange for the patent, there is a detailed public disclosure of the invention. Patent information is stored in national and international databases. With the IPR there is also detailed information on the technologies, the inventors, the assignees, and the partners. More than 70,000 tech codes insure detailed information. More than 128 million patents are stored in global databases. The databases are updated every day. Inventors often use news searches to make sure that a "new" invention is in fact new. Most patent analyses consist of "news" searches looking for technical novelty value and hereby the possibilities for applying for a patent. Patent mapping has another aim.

Instead, the value you gain is a strategic outlook based on the analysis of thousands or millions of related technologies described in patents. Using big data techniques, the data miners at DTI and AXIA Innovation make a strategic analysis of technological developments over time and place. This type of analysis is referred to as patent mapping. The **overall aim** of patent mapping is to map technology trends, technology solutions, and relevant competitors for LEE-BED clients thus providing the clients with **strategic knowledge** enabling them to further assessment of the possibilities for initiating technological development and commercialisation of the idea. On the following pages you can find more information about our approach on patent mapping.

SWAROVSKI

> The LEE BED patent mapping service, offered by DTI and AXIA Innovation, has provided great value to us in our development project within the framework of LEE-BED. The patent mapping has given us key insights into the technology field, the competition situation and especially also better knowledge of our competitors in the field and potential collaboration partners.
>
> *– Gapp Christof, Head of Mechatronic Development, Swarovski*

What do you get from the analysis

Patent mapping is an effective way of examining technological developments in a rapidly evolving technological field. Figure 1 sums up the key analytical questions and type of outcomes by investigating patents for the specific technology fields.

FIGURE 1: AIM OF THE PATENT MAPPING REPORT

WE ARE INVESTIGATING:

- How many highly relevant patents exists?
- Who have assigned the highly relevant patents?
- Where are the assignees of the highly relevant patents located?
- In which regions do the highly relevant patents apply?

RESULTS:

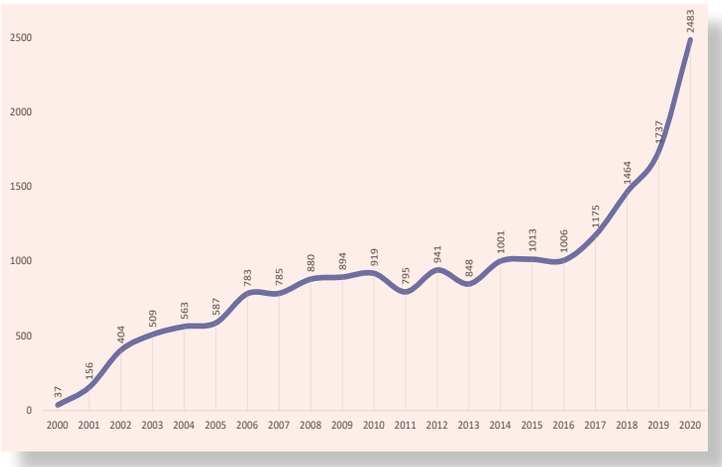
Overview of the technological trends:

- The concentration of patents in the technology field
- Patents of high interest; e.g., as an inspiration or a threat for further technological development

The competition situation

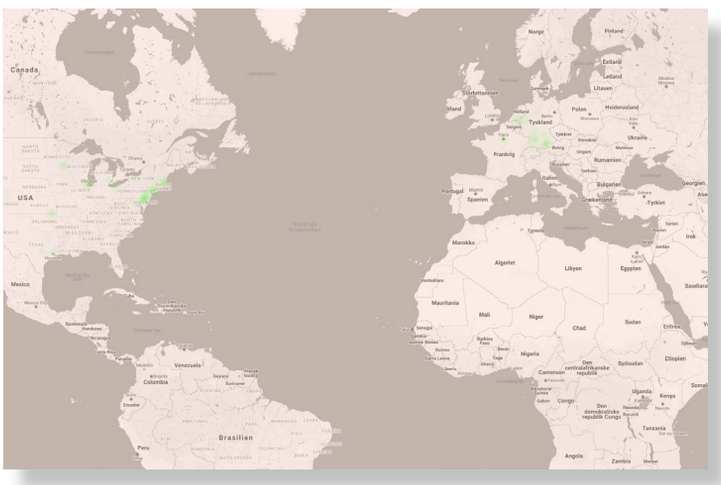
- The numbers of close competitors – or potential (technological) partner
- The location of the competitors
- Technology fields with potential few competitors
- Regions with many relevant patents – technological specialised regions

OUTCOME OF A BROAD SCAN OF MARKET TRENDS



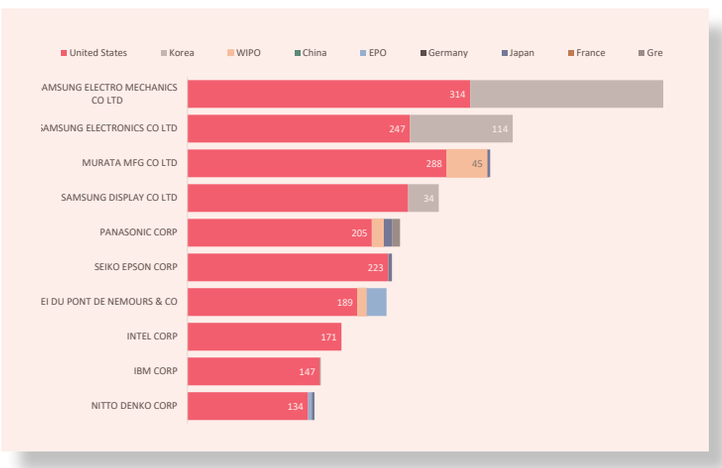
Innovation rate

The innovation rate graph shows the annual patenting trends in the technology field. The innovation rate contributes to the patenting pace of a technology area over a period.
Additionally, the graph shows exactly when the technology came to fruition, and whether the technology is recent, emerging, or heading towards stagnation.



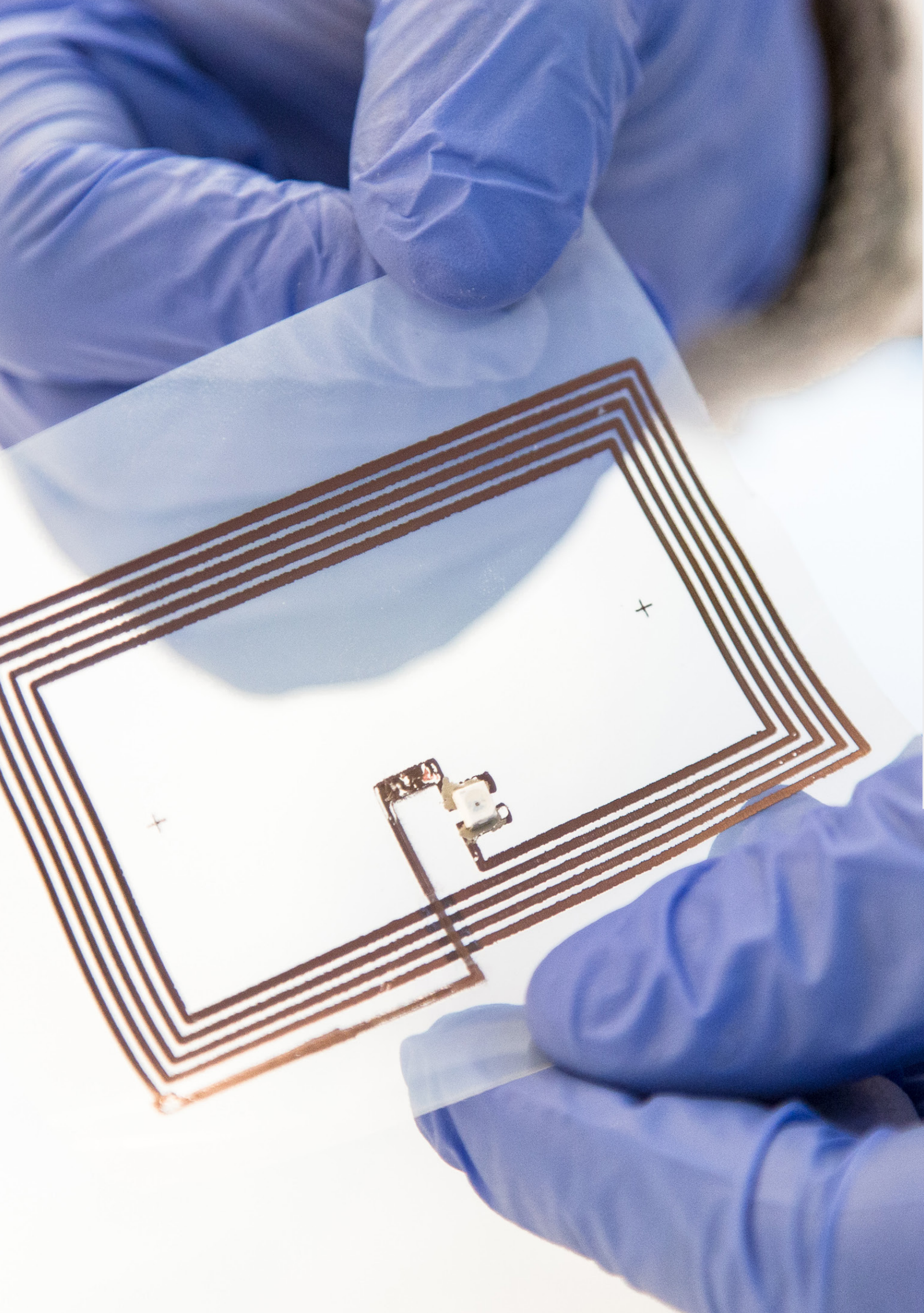
Heat map: Number of patents based on assignee addresses

The geographic breakdowns show the assignees behind patents in the technology field. The map is useful for identifying the territorial markets where the technology field is prominent and commercialized. The specified geographic areas of the map can be delimited to a smaller area such as the USA or Europe. The map is interactive and you can zoom in to see specific assignees behind the patents. The map makers can be grouped according to technology subfields.



Main companies:
Patenting activity by year

The graph shows the portfolio sizes of the top organizations in the technology field. This figure illustrates the leading players across time and the threat of competition in the investigated technology field. This will give you access to useful information about your competitors or potential partners, e.g., whether they have intensified their innovation rate and when.



The patent mapping of a technology field analyses the overall trends across a period. We will provide you with a descriptive overview and a list of selected highly relevant patents for your inspiration. For the descriptive overview, the analysis results in different outputs divided between market, actors, and technologies. On page 7 several examples of possible analyses, related to a specific technology field, are include.

In addition to the analyses related to the overall trends, the patent mapping analysis includes an in-depth insight into some selected highly relevant patent. In collaboration with us, you can take advantage of the most interesting parts of the most relevant patents. Examples of possible outcomes are:

- An indication of novelty of your idea
- Identify specific technologies worth licensing or perhaps purchasing
- Identify the name of inventors in companies or universities that you would like to partner with
- Get an exhaustive list of all your competitors in the market
- Talent scouting: Get a list of active inventors with the expertise in the areas you are interested in. The list can be used for hiring, finding collaborators, peer reviews, event speakers, consulting and more.

However, the patent mapping does not provide the client guarantee of 'freedom to operate' but can be used as a starting point to investigate the risk of any legal damage to owners of any patents. Consequently, the patent mapping includes a disclaimer

Disclaimer

"The outcome of this patent mapping does not guarantee that all relevant patents have been identified. Consequently, the LEE-BED project is not offering the user of this patent mapping any guarantee of any legal damage to owners of any patents"

Process of patent mapping your idea - steps 1 - 4

Our patent mapping analyses are based on a search across 128 million patents. Methodologically, it is crucial to be sure of the relevance of patents so that irrelevant patents do not create too much noise in the search. Based on previous experiences, we have chosen to capture patents by using technical classifications and if no classification exists to delimit the technology field, we use keywords – or both approaches. The advantages in identifying patents by technical classifications are, that it enables a more vary and detailed picture of the technology field and that will increase the level of relevance.

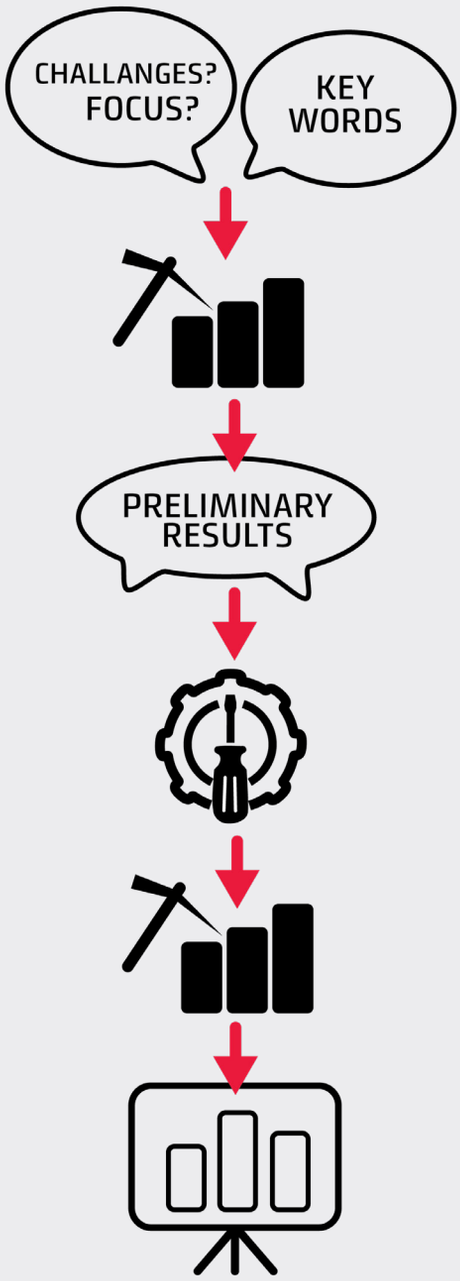
Patent mapping analysis is a collaborative process between you and the patent mapping experts. The process is outlined below:

The first step is understanding your idea or invention. The first task is to scope your idea or invention in close collaboration with us. We do that in a short interview – either face-to-face, in writing or online. We need to understand your new idea or invention and what is important to you to give you the best possible value from the patent mapping. The key words and phrases are crucial for starting the patent mapping analysis. The scoping is an investment of an hour of your time.

The second step is the broad scan of the technology field and is the initial phase of the data mining pro-cess. We will present and discuss the results to make sure that we have identified the expected technology field and related technologies. The data mining process is a trial-and-error process in identifying the core set of relevant patents. Thus, we are in close contact with you throughout the entire process to ensure that we are on the right track, and if the identified patents are irrelevant to you, we need to redefine our search.

The third step is about finetuning the search to identify the patents of high relevance to you. In connection with the presentation of the findings from the second step, we will in a dialogue with you examine the identified patents and initiate an in-deep analysis to appoint patents of high relevance to you. Hereby, the patent mapping brings inspiration to further development of your idea for applying printed electronics.

The fourth step is the patent landscape report presenting the outcome for the patent mapping highlighting the applied technology, technology trends, key actors in the field of technology, etc. We present the report to you either face-to-face or via Teams.

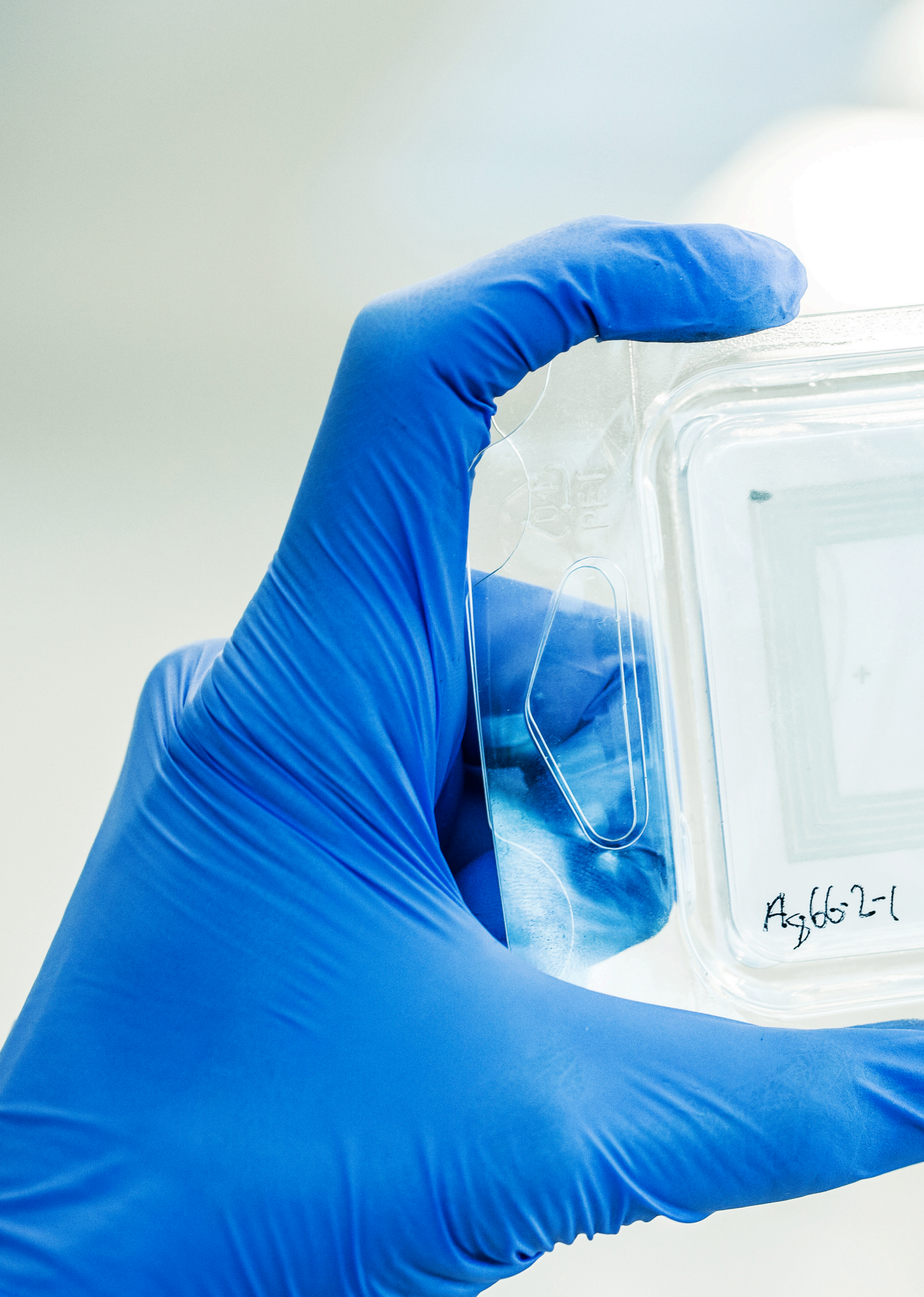


Step 1: Dialogue with company about technological focus and technological challenges to be investigated and relevant key words or phrases.

Step 2: Initial data mining (broad scan).

Step 3: Fine-tuning the search (broad scan and zooming in).

Step 4: Presentation of results.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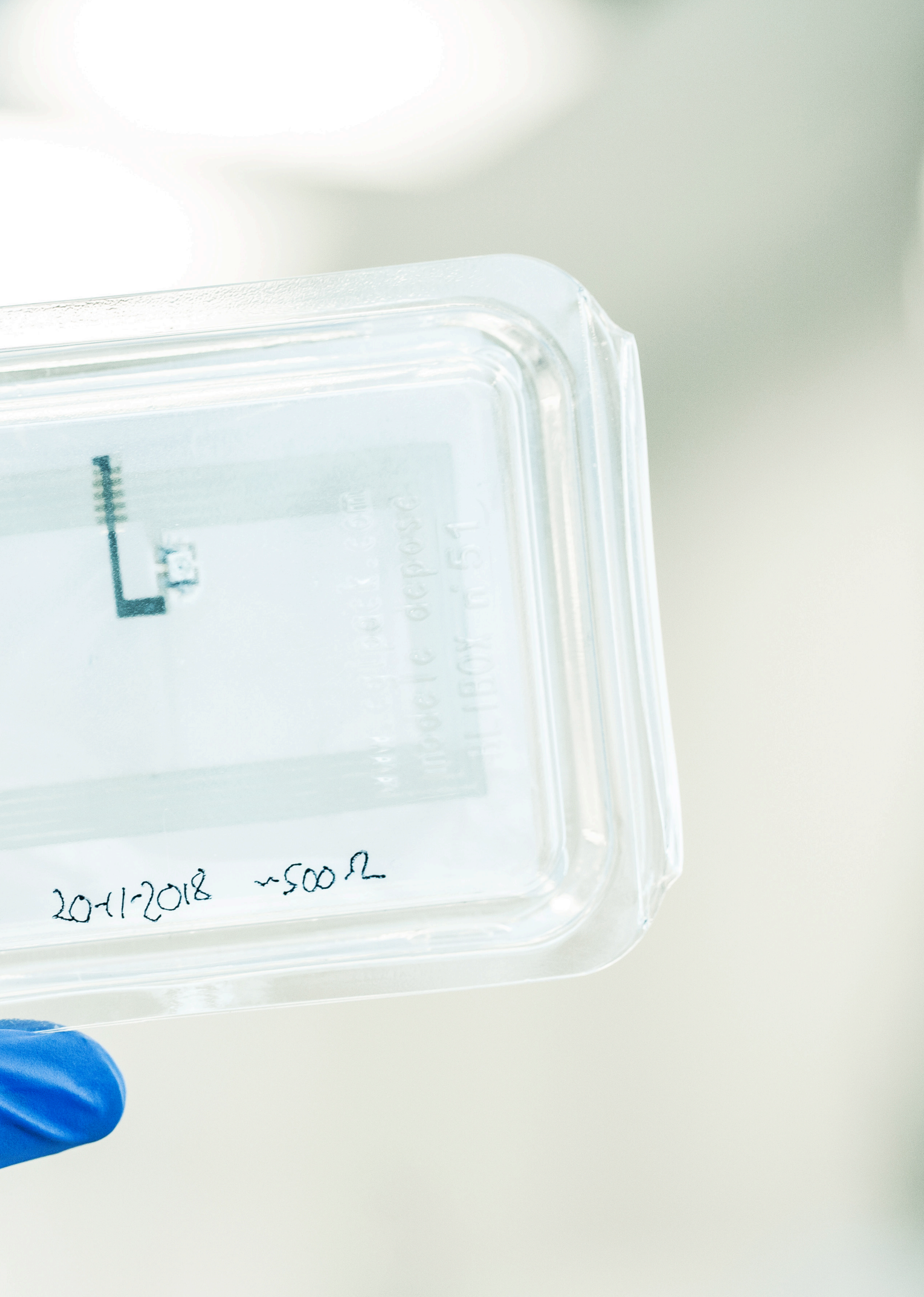
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How you get started

The point of departure for the patent mapping is the information you have provide in the user requirement sheet (URS) document as well as the outcome of the LEE-BED's initial technical assessment of your idea. However, to achieve the best results, we need further input from you to shape the patent mapping analysis of your idea or invention.

The first step is to establish a contact between you and us:

Leif H. Jakobsen
Seniorspecialist
+45 72 20 26 74
lhjn@teknologisk.dk

When contact has been established, we will go right to the first step with an interview. Before the inter-view, we will mail you a few key questions to get started such as:

- How would you apply printed electronics in your idea/invention, e.g.:
  - How shall printed electronics be an integrated part of the product?
  - Which unique properties are linked to printed electronics?
  - What other technologies do you use?
  - Do you know whether there are different names for the technology field?
- Can you think of any close competitors or substitutes?
- Do you have any articles or texts about your invention or idea?

Based on the start-up interview, we will initiate the patent search. Throughout the entire process we will verify the results with you on a regular basis to ensure that we are on the right track and live up to your expectations. At the start-up meeting, we also agree on the schedule for the analysis. Usually, we expect to be ready with the descriptive overview within a week after your initial contact with us – and will then spend a few days to extract the patents that you wish to zoom in on.

Throughout the entire patent mapping analysis, you are more than welcome to contact us with any uncertainties or questions that you may have.

LEE-BED AND DTI

Over the years, DTI has collaborated with Georgia Tech, the leader within tech-mining and their analytical software package 'Vantage Point' and Thomson Innovation to understand tech-mining. Tech-mining is a fast-evolving discipline and new tools for tech-mining such as PatSnap are emerging with impressive visualisation of technological development. DTI and AXIA Innovation are currently working with PatSnap. PatSnap is an innovative and business-oriented datamining tool that creates both comprehensive, fast, and valuable technology and market insights for its users.

DTI and AXIA Innovation are partners in LEE-BED which brings together world-leading European research and technology organizations and industry to establish an Open Innovation Test Bed focusing on nanomaterials and lightweight embedded electronics. The main objective of LEE-BED is to accelerate the development and minimize the risk of manufacturing nanomaterials and lightweight embedded and printed electronics for the benefit of a wide range of European industries. The vision of LEE-BED is to make Europe more competitive than the US and Asia, pushing Europe forward within R&D and commercialization and bringing manufacturing back to Europe.

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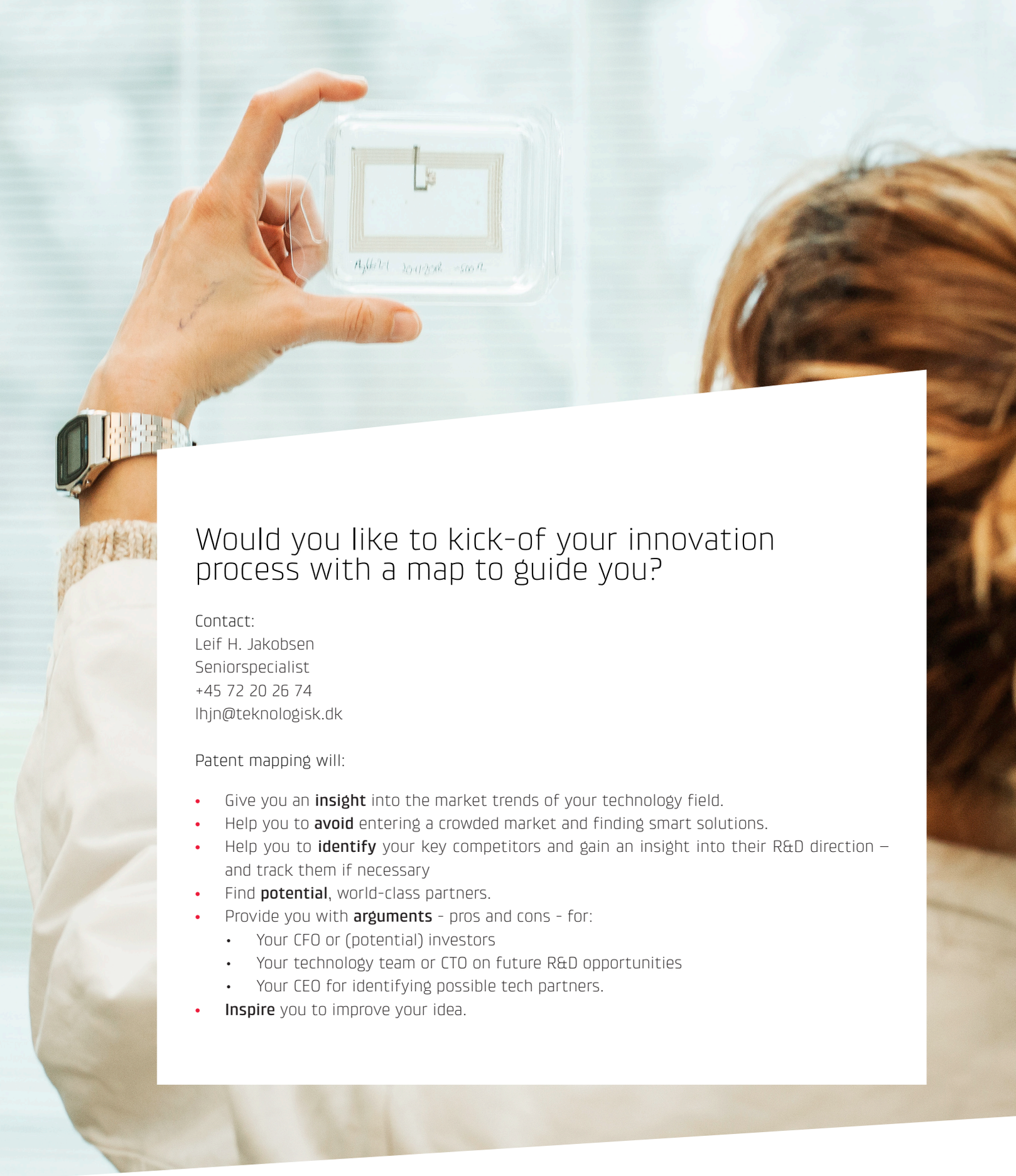
Patent mapping of the specific technology field contributes to ascertaining the state-of-art within a field. Moreover, we will use the patent mapping tools to produce patent statistics for identifying global trends and close competing technologies and companies.



Would you like to kick-of your innovation process with a map to guide you?

Contact:
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Seniorspecialist
+45 72 20 26 74
lhjn@teknologisk.dk

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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 814485

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