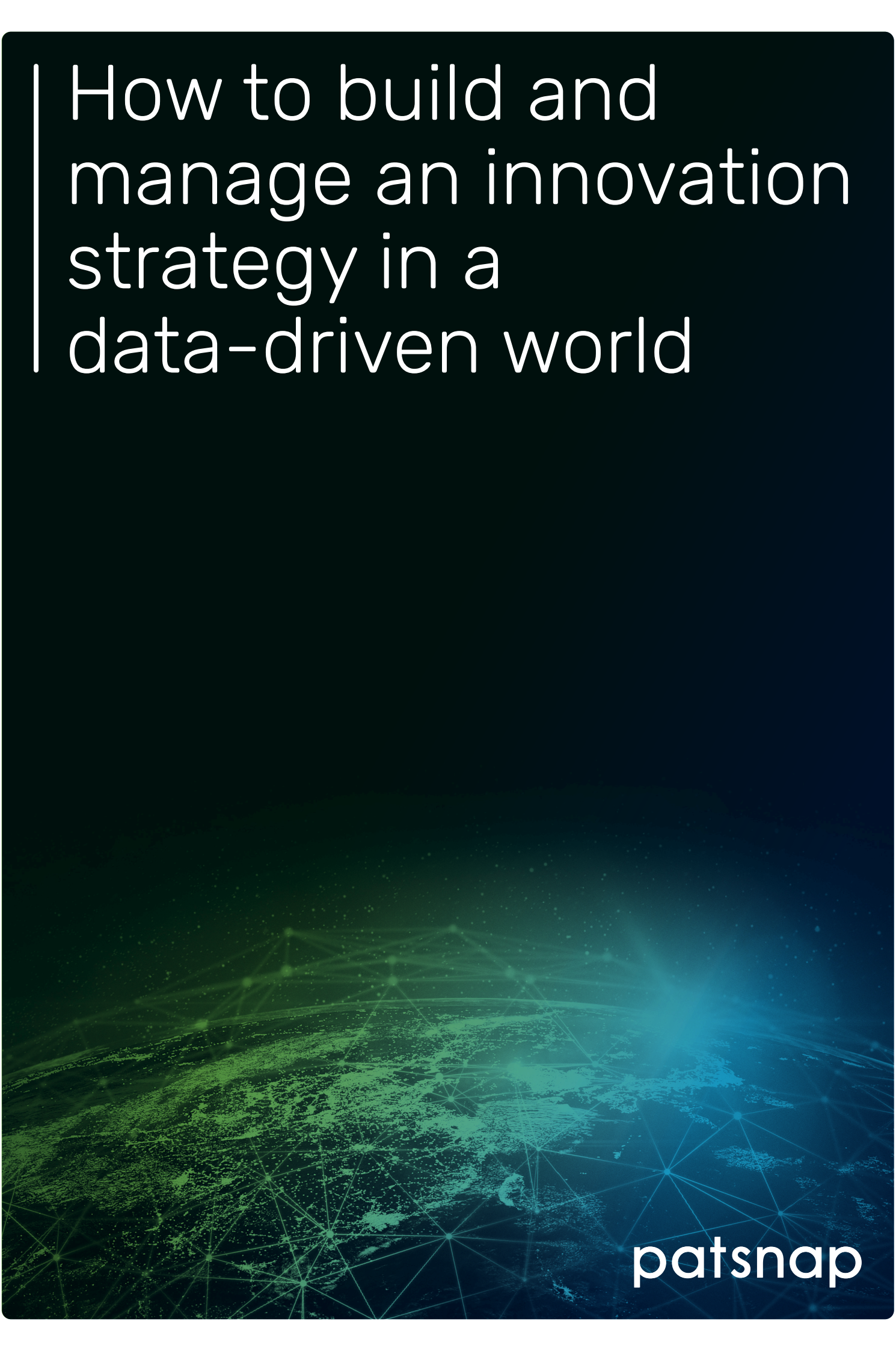
How to build and manage an innovation strategy in a data-driven world



patsnap

Contents

Foreword

Every organization wants to be ahead of the game when it comes to innovation. However, when it comes to supporting, managing and measuring the output of innovation projects, not all organizations are approaching this with the creativity or imagination that is needed to stay ahead.

This becomes all the more poignant when we consider how the world of innovation is changing in the wake of the economy and the availability of more knowledge and data and information than ever before. In this report, we evaluate the concept of connected innovation intelligence and its role in five key questions that need to be answered in order to build and manage innovation strategy in a data-driven world.

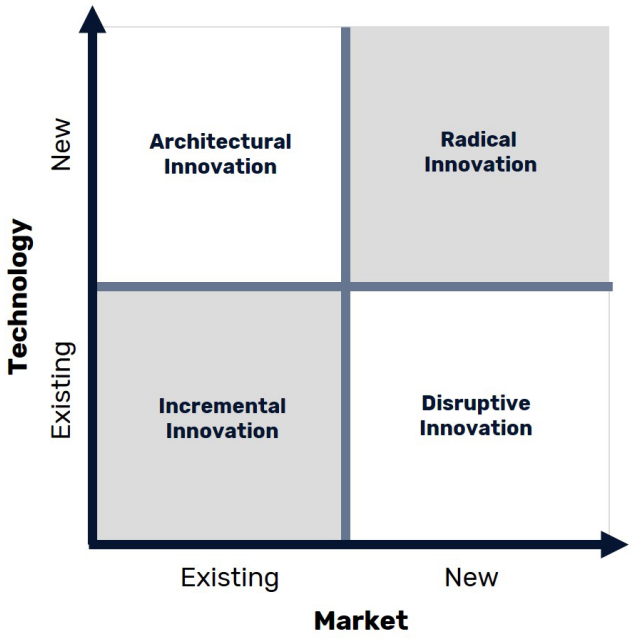
The five questions that organizations need to think about, and answer are:

1. **How many innovation projects should we run and what types of innovation do we wish to pursue?**
2. **What is the attitude towards the desired level of risk the company is willing to undertake in pursuit of innovation?**
3. **What are the objectives and desired business outcomes for our projects and how will we measure these?**
4. **Who is responsible for reporting against the metrics and collaborating with other teams, such as the IP team? (Or: What is the governance structure?)**
5. **What innovation methodology is best suited to the desired outcomes and how can connected innovation intelligence help?**

How many projects and what types of innovation?

Not all innovation is the same. When we think of innovation in the vernacular, we're usually referring to types of innovation known as 'radical' or 'disruptive.'

However, innovation really sits on a sliding scale of 'newness,' defined by a combination of market 'newness' and technology 'newness', as shown in the diagram[1] :



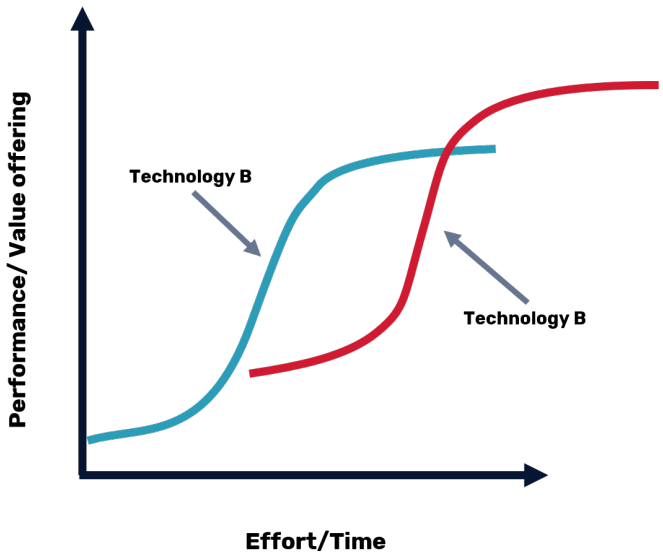
Therefore, innovation that involves an existing market and an existing technology is incremental, while at the other end of the scale, a new market and a new technology constitutes radical innovation.

Incremental innovation

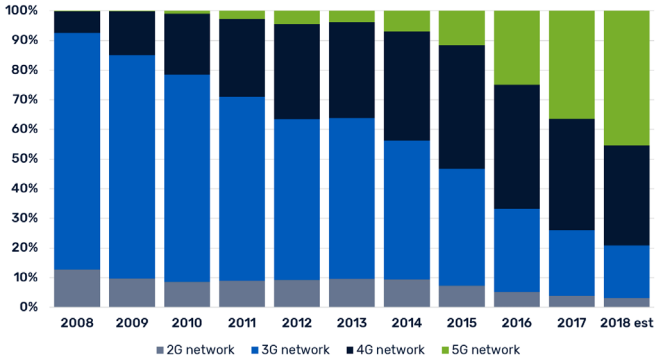
This is actually the most common type of innovation. In this case, an organization is looking to increase its value to Customers through addition or modification of features, functionality or design. This means the innovation continues to serve an existing market and it is based on existing technologies.

In terms of cost, risk and time to execute, this is a fail-fast, fail-cheap, low risk approach. However, it is not without risk. Organizations that place one hundred per cent of resource into only incremental innovation run the risk of missing other opportunities that competitors will capitalise on, or indeed could find that their entire business model collapses under the pressure of competitors' disruptive or radical innovations.

While this option is good for agility in terms of speed of deployment, it is not enough for companies to overcome the inevitable bump in the S-curve of innovation[2], where it could be superseded by a new technology.



Let's take a look at this in the case of mobile phone network technology:



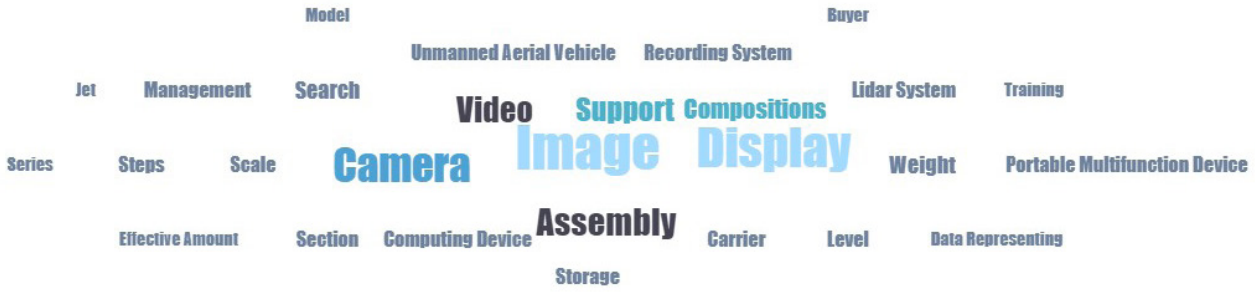
Data shows the number of mentions in patents of mobile generational technologies in the format '2G network,' '3G network' etc."

The chart here shows the latest data in the evaluation of wireless mobile networks. As we can see, as the generation of the technology ages, the number of patent applications starts to decrease and we can see the introduction of the next generation. Advancements in Fifth Generation technologies began as early as 2011, although it is evident on the chart that 4G continued to grow overall share. It did, however, reach its own predictable point on the S-curve, and organizations that were slower in the 5G space will have already lost ground. So these trends must be watched and anticipated in order to find exactly the right moment to direct resources into the right technologies.

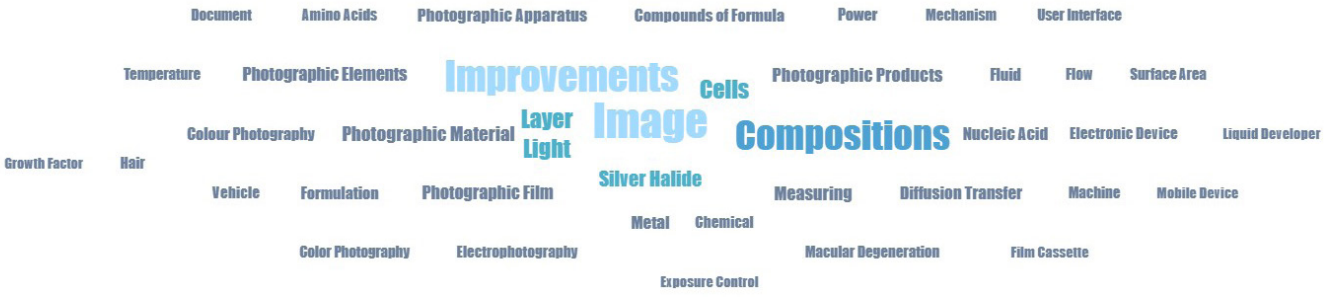
Another way to investigate iterative innovation trends is by taking a look at countries that allow utility model patents – which is not an option in North America or UK but which is used elsewhere in the world, such as China, Germany, Japan and Australia. The rights conferred by utility model laws are similar to those granted by patent laws, but are more suited to what may be considered as "incremental inventions".[3]

Therefore how organizations use utility model patents in these territories, can reveal information about how organizations are protecting their core technologies and their incremental innovations, which may differ from their approach to breakthrough innovations.

Using innovation intelligence to demonstrate this, in the following example, we'll use two word clouds pertaining to photography in Australia. The first word cloud comes from utility model patents only, the second from full standard patents only…



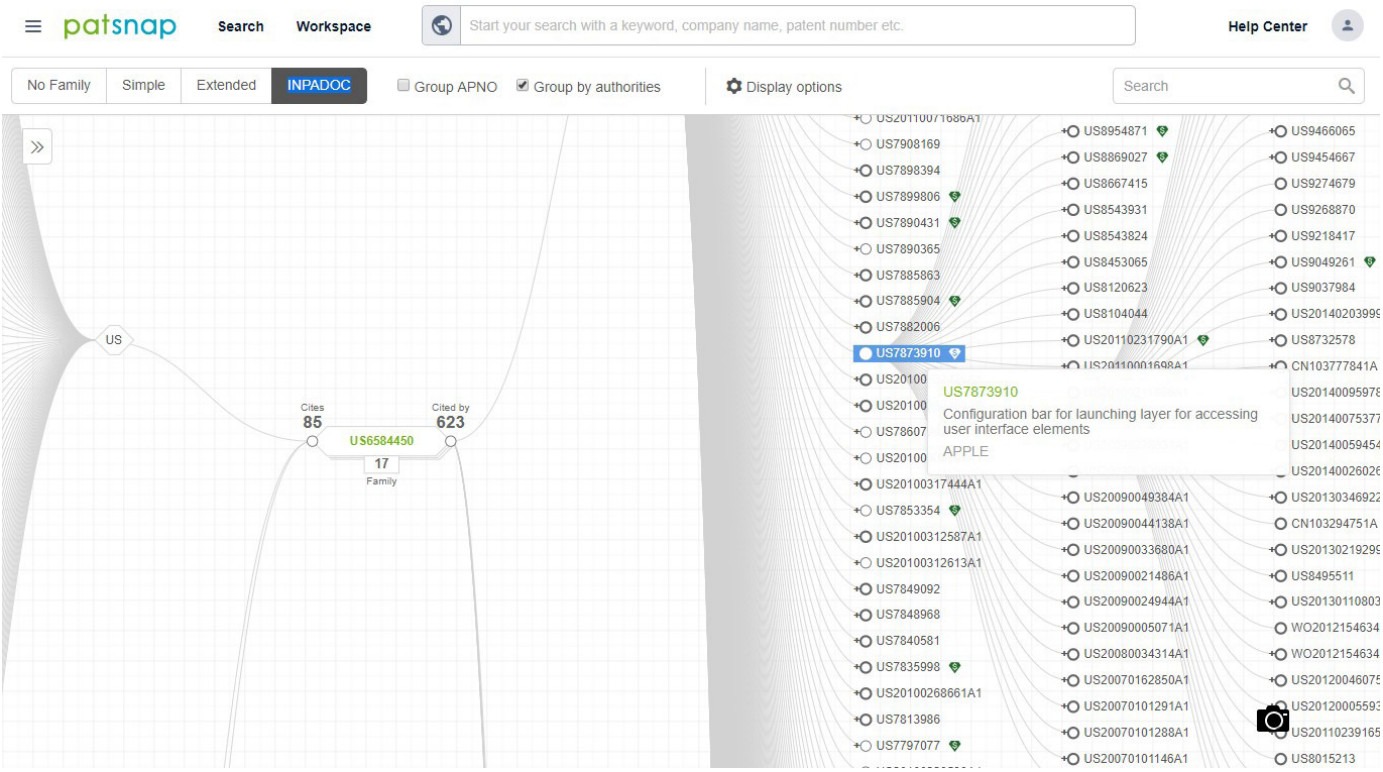
Example of utility model (UM) concepts protected in photography, Australia, Word Cloud



Example of patent concepts protected in photography, Australia, Word Cloud

Our word clouds show that the incremental-only type of patents focus on image, camera, display and broad concepts such as video. In the full patents, however, generally more specific references are made, such as references to materials (or types of materials), including photographic material, or silver halide, acids, liquid developer and the like.

Another way of determining incremental innovations versus radical is through citations, as a paper published on MIT Economics explains: “It is natural to assume that each incremental innovation will cite all previous innovations in its technology cluster.” However, as the paper goes on to explore: “A radical innovation tends to receive more citations, as well as more ‘general’ citations; it will also be heavily represented among ‘tail innovations,’ meaning among patents receiving the highest number of citations.” [4]



PatSnap citation map of US6584450 ‘Method and apparatus for renting items’ - INPADOC family

If we take the famous example of radical innovation, and one of Nexflix’s core patents, US6584450 ‘Method and apparatus for renting items’. . It was applied for in 2000 and is due to expire this year (2020) and the patent has been cited by 284 simple patent families and 623 INPADOC patent families.

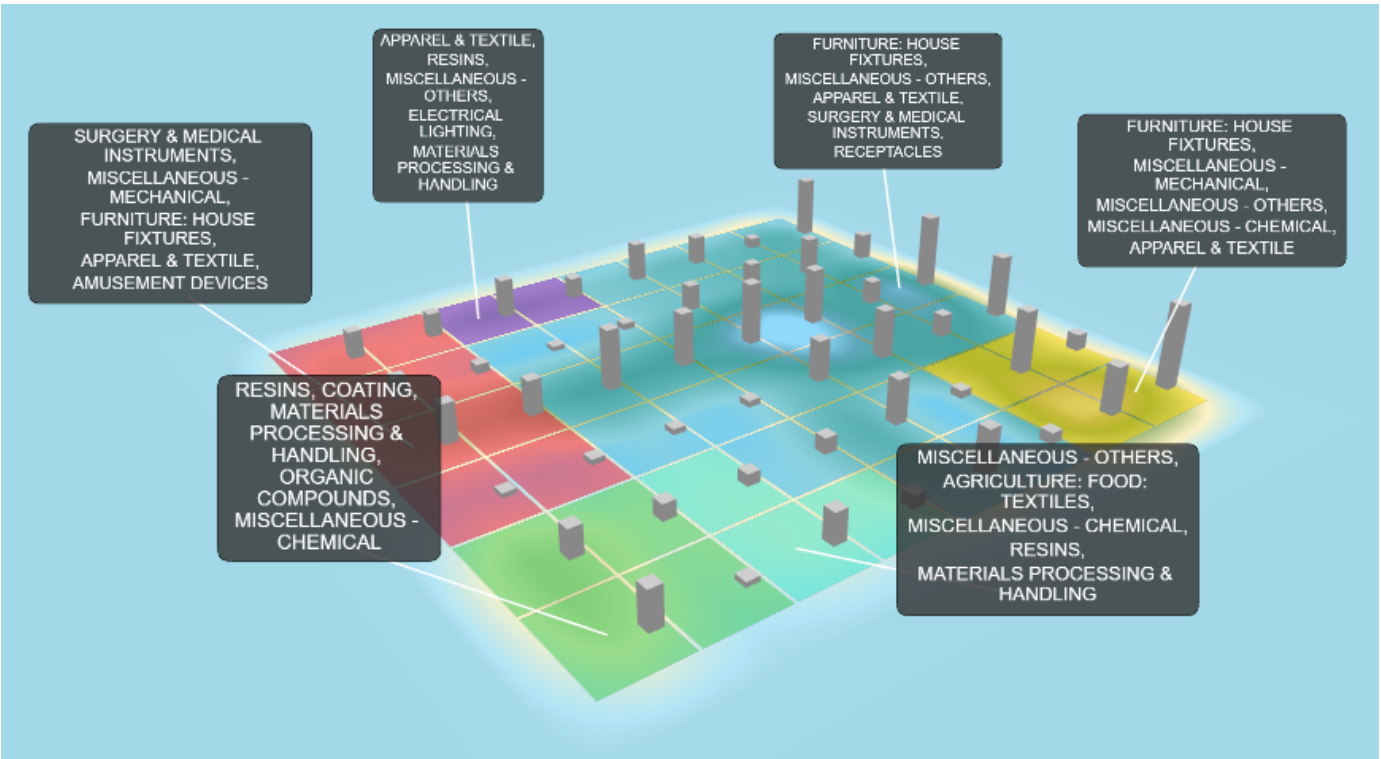
By definition therefore, incremental innovations are going to average out at the lower end of the citation count.

There is a caveat to this, in that some time has to elapse for these trends in citations to occur, so assumptions would have to be checked to remove false positives, especially in terms of incremental innovation. However, it is an indicator that we can look out for – and it certainly then has a bearing on the perceived value of the patent.

Architectural innovation

Architectural innovation involves taking an existing technology, but applying it to a new market.

For example, memory foam, which first had its uses in medical equipment, can be leveraged for consumer goods. In this case, it becomes a mattress – and we can see that on a landscape quite clearly with surgery and medical instruments, as well as miscellaneous furniture and household goods making an appearance.



PatSnap Landscape (10,000 patents) using the search term ""memory foam " OR "viscoelastic polyurethane foam" OR "viscoelastic foam" OR "low-resilience polyurethane foam" or "LRPu"")(NEBR Labels)

This method of creating landscapes of technology terms or areas can help to uncover these adjacencies, or indeed uncover adjacencies that other competitors may have already uncovered.

Disruptive innovation

Disruptive (or sometimes called stealth innovation) refers to when we introduce a new technology or process, but it is based on the existing market. For example, we can consider the mobile phone market and touch screens. In the mobile phone space, the application of the new technology (touch screens) gave rise to the iPhone. Or, in a more recent example, the rise of cloud and the app store creates a company such as Uber to compete in the taxi market.

And while it's important for organisations to look at disruptive innovations, as an article by Patinformatics describes "Electing precise patent allocation percentage for disruptive technologies is difficult. Three well-known examples exist for employee time allocations to side projects and unorthodox innovations.

- Hewlett-Packard allowed employees to spend 10% of their time on wild ideas (leading to the invention of HP printers).
- The famously innovative company 3M allows employees to spend 15% of their time to pursue other innovations (leading to the invention of "Post-It Notes").
- Google allows employees to spend 20% of their time on projects that interest them (leading to fifty percent of the new products launched in the second half of 2005)."[5]

Nevertheless, it is interesting that they have some structure around this – they have identified the need to quantify how time or resource should be being spent. We'll take a look later at how chances of success in terms of disruptive innovation can also be increased by taking a data-driven approach not just in terms of internal targets, but how to use it within an innovation strategy that is supported by external data as well.

Radical innovation

Radical innovation is akin to the moon-shot target, in many ways, as it creates new industries and is based on revolutionary technology. For example, think about cloud architectures. Such a new, emerging technology is the backbone for Netflix and the new area of streaming movies, which then completely upends and replaces the physical rental model based on DVDs - and spells the end of former household favourites, such as Blockbuster video.

We will consider data-driven approaches to both disruptive and radical innovation later in this report.

Types of innovation and strategy

A recommended exercise is to take your innovation pipeline and determine the ratio of projects that sit within each quadrant – if you are focusing 100% on incremental innovation only, questions may need to be asked as to why this is the case and how this should be addressed. Like an investment pot, you'll really want to be covering scenarios across all quadrants for the best chance of long-term success.

Now, in reality, each definition overlaps to a degree – for example, there's always a pinch of incrementalism even in disruptive innovation and it is all part of a sliding scale, rather than having hard, defined boundaries between the quadrants. However, each quadrant is synonymous with a level of risk, amount of opportunity to create new models and an the attractiveness to potential investors or partners.

To uncover opportunities in each quadrant, as we have seen by the data you could look at, you do need to take different approaches to the research and ensure that the pipeline of innovation has a healthy mix, even if you do not proceed with every idea straight away due to its potential risk of failure or potential disruption to the business. So let's think about risk now…

What level of risk is acceptable?

The different types of innovation have different levels of risk attached, ranging from generally low cost, low risk in the incremental innovation quadrant to high cost, high risk in the radical innovation quadrant.

The tolerance for risk therefore needs to be decided at a corporate level so that the correct risk mitigation procedures can be put in place to match it to the innovation pipeline and so the correct resources be made available for that mitigation.

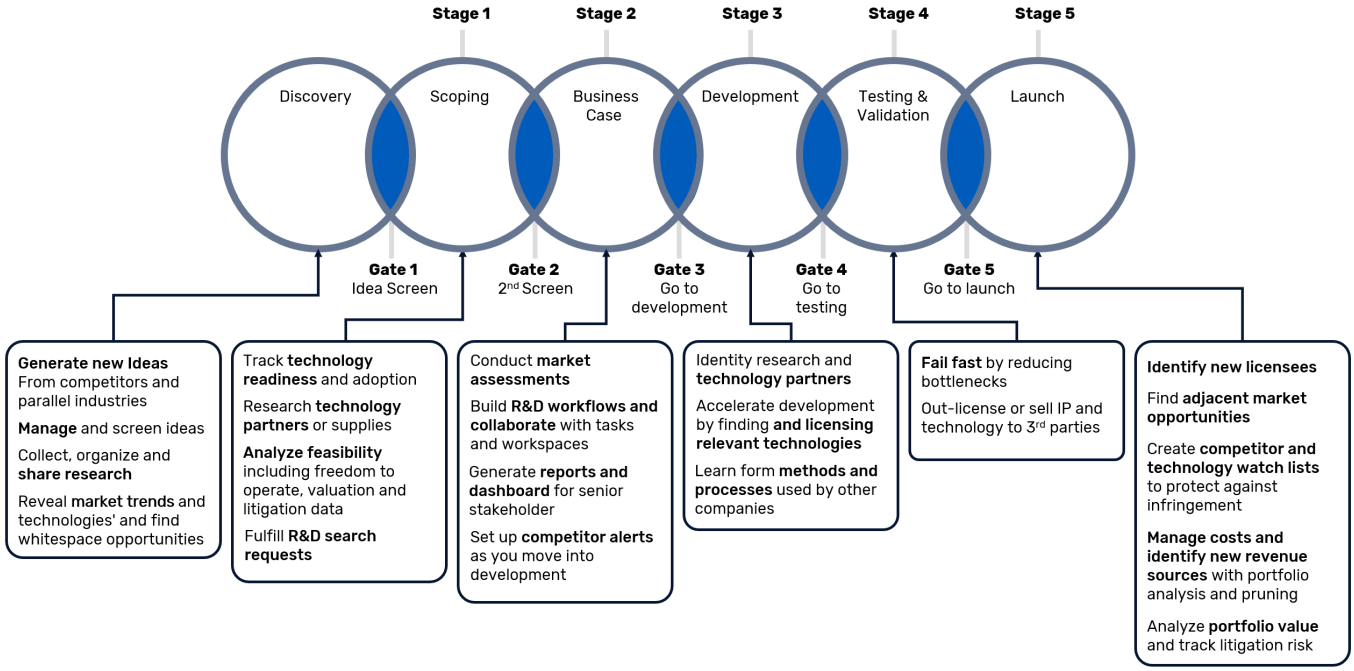
As most companies look for low risk, low disruption, and quickest wins they favour incremental innovation, but this approach can leave them at risk from other quadrants. Each project should be designated a quadrant and the appropriate questions answered about risk appetite and resource allocation.

In terms of innovation projects, the risk of failure can arise from a variety of sources. This could include (but certainly is not limited to):

- There is not enough support in the organization for the new innovation.
- The innovation disrupts or cannibalises the organization's other revenue streams.
- The innovation requires new marketing and sales training, which is not made available.
- The innovation requires new materials, resources or knowledge that the company does not have.
- The innovation is not known to or requested by the end user, so they require education or intense marketing.
- The innovation does not conform to current legal frameworks, or requires changes in legislation – self-driving cars would be a classic example here, but in fact, any legislation-heavy industry needs to factor this risk into the equation.
- Internal threats – what if an employee with knowledge of the riskier, unprotected innovations takes the knowledge elsewhere?
- External threats – what if a consultant engaged in answering some of the above questions leaks the information?

These questions may be asked at each gate during the stage gate process, which itself is commonly used in the innovation process for mitigating risk.[6]

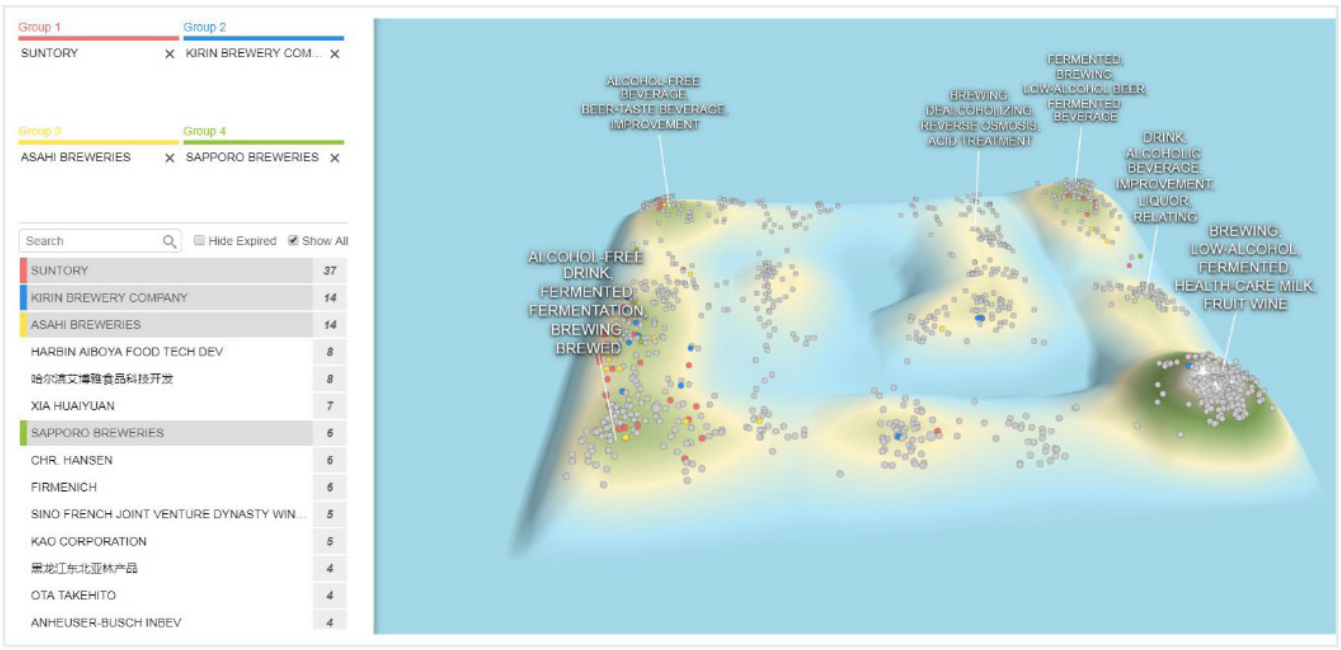
Each stage of the process has, of course, a slightly different focus. However in each case, connected innovation intelligence – for example patents combined with legal data, or a new technology definition combined with patents and scientific literature – could be used to answer questions such as 'is this a truly novel idea?' or 'do we have freedom to operate?' The questions and sources will vary according to the stage at which we are at.



We can see from the chart that connected innovation intelligence (examples of which and how they relate to each stage provided in the boxes underneath) plays a role in each of these steps.[7] We will take three examples from the process – Discovery and Idea Generation, Business Case and Launch. For this illustration, we will use the example of NoLo beverages (non-alcoholic or low alcohol beverages), which is a hot trend at the moment…

Discovery and idea generation

Starting with Discovery and idea generation – we first of all may want to focus on ideas for adjacent technology ideas and gain an understanding of who's already in this space. We could do that using an IP landscape, as per the example shown below:



PatSnap Landscape

By running a landscape and keyword analysis, we find that most of the innovation is within a sector relating to low alcohol health drinks and fruit wines. By diving deeper, we could uncover areas for ideas that may not have been considered before. Or we could look to tackle a different issue – maybe the brewing process or indeed taste improvement. The point is, a landscape can be springboard for establishing new ideas and is one of the ways that idea generation could be approached. We'll take a look at an innovation strategy into which this fits later in the report.

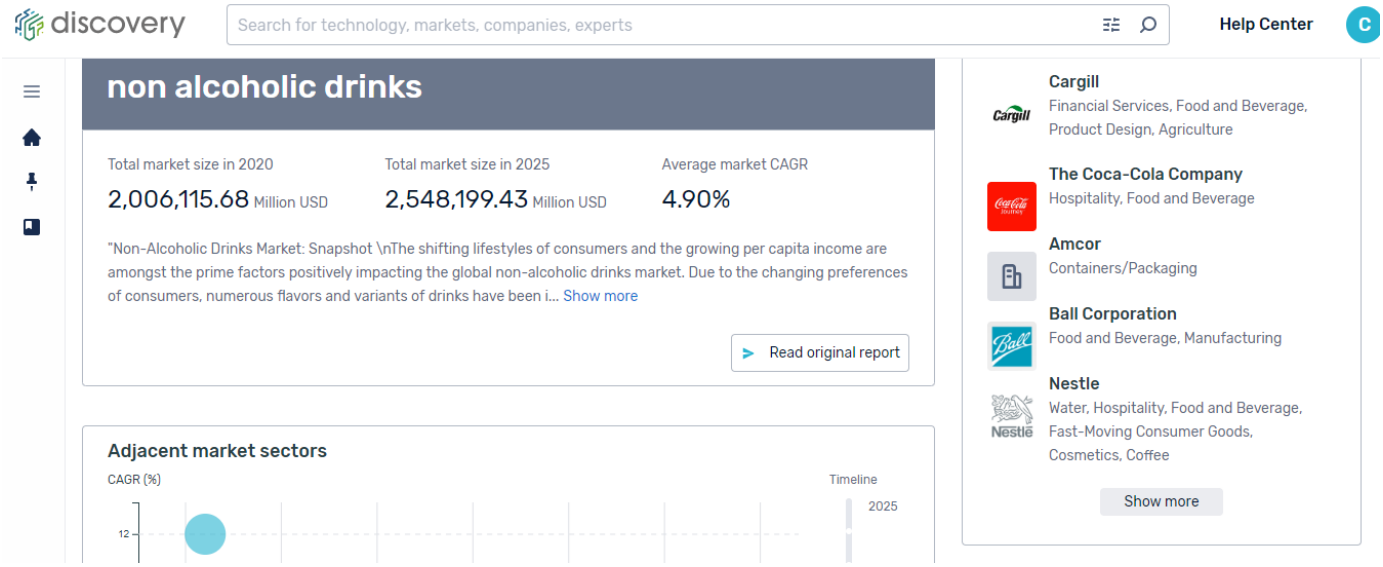
Business case

At a different stage of the process, we may have decided to explore an idea further, but we need to create a business case for consideration, part of which will involve determining market readiness. In this regard, again, connected innovation intelligence can be used. Let's start by firstly just considering patents (on the left) and we have this combined with scientific papers (on the right).

PatSnap Discovery, Patent and Papers search results for the search 'Non-Alcoholic beer'..

In this case, patents show a decline in activity. However, interestingly, scientific papers shows an increase. We can interpret this in a couple of ways – maybe everything obvious based on current scientific research has, by and large, been patented, making it more difficult to find something new and obvious to patent. On the other hand, scientific papers are accelerating their research, which could indicate new opportunities are on the horizon.

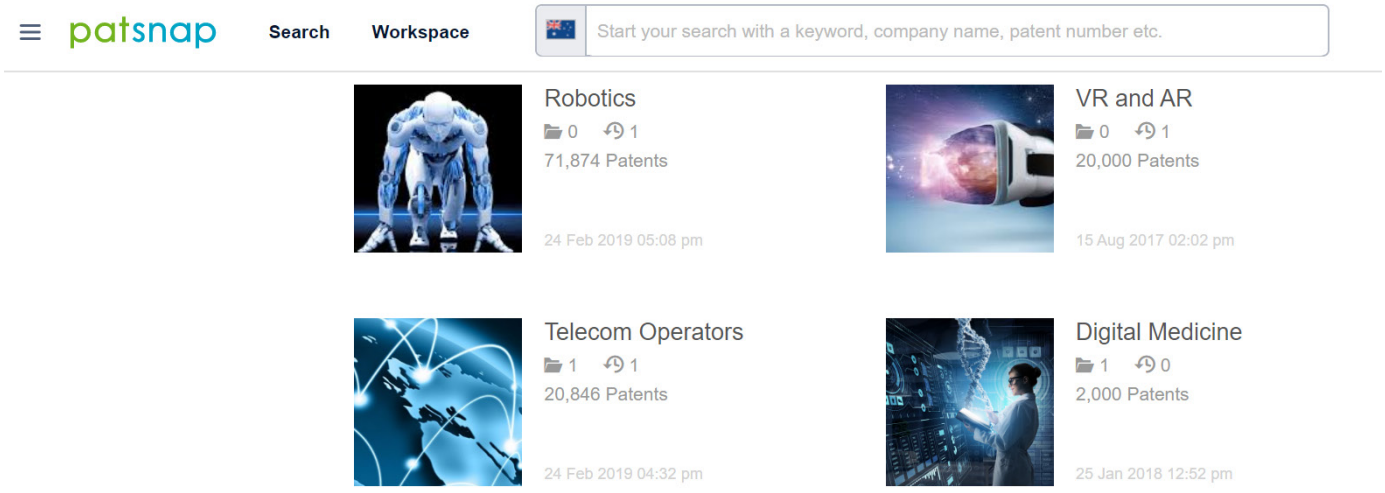
At this point, we may want to refine our idea based on closer scrutiny of the patents and papers behind the trend. Or we may develop our business case research further, using another area of connected intelligence. Let's look now at the market size predictions:



PatSnap Discovery Market sector dashboard for 'non alcoholic drinks'.

At this point, we might want to assess whether the market size is large enough for us to be willing to take the risk on a certain technology. We can use our patent research, alongside non-patent literature to reinforce our decision making. As shown above, with a market of 2.5 million US dollars and compound annual growth rate of 5%, we are better equipped to determine how attractive we find investing in this space.

Of course, this process inevitably leads to the collection and review of vast sums of information and could create bottlenecks or duplication. In this case, it is advisable to use some form of management process to reduce this impact. For example, in PatSnap, it is possible to use a feature such as Workspaces to collect information relating to specific projects and share with relevant user groups and across teams. This is especially important, as the number of projects being created and evaluated increases:



PatSnap Workspaces dashboard.

The benefit of this approach is that engineers or innovators can create Workspaces or collaborative research areas, which can be automatically updated with new information where required, while also being shared with other units, such as IP and legal – so they can begin assessing information or understand the contexts before official requests are made. This makes the process less linear and can create an 'ongoing' review status to dramatically speed up the formal review stages.

What are the objectives?

Each project should contribute to an organization's overall growth strategy objectives and these should be clearly defined at the outset for any engineers, developers, innovators or product teams working on a specific project. The type of objectives are likely to be the 'usual suspects':

- Gain or protect market share
- Contribute to revenue growth percentage (in this case, how much?)
- Create a new revenue stream (again, how large should this be?)
- Provide return on investment (what does success look like here?)
- Increase 'volume' of IP, e.g. a target number of patents, or better still, a number of patents in a specified area
- Increase engagement or create opportunities for end user up-sell
- Pitch for a certain amount of investment

Depending on the type of innovation being targeted and the level of risk that is tolerated, in combination with the objective, or objectives, then different innovation strategies will be deployed to meet that aim.

As we explored, the S-curve is inevitable at some point in time, which means everyone needs an innovation strategy – but it is this link to specific stated objectives that is important. As Strategos elucidates in one of their articles: "Innovation strategy is a set of choices we make about how we allocate resources and develop our capability to achieve the growth goals of the business."

With the business objective, or objectives, in mind, we would need to address the following questions in order to assess viability:

- How can this innovation help towards that objective?
- Is the level of risk appropriate to the outcome?
- How long will it take to develop? (Is it short term gain versus long term gain?) You should use the risk questions and data to help determine this.
- How does the innovation disrupt existing business models?
- How can that be managed?

Once we have assessed the risk and determined the objective and the type of innovation within which the product sits (iterative, architectural, disruptive or radical), then we are in a better position to determine what innovation strategy might be best suited to supporting the success for this. The answer may be that the organization's current strategy is valid; however if the innovation type selected sits in a different part of the quadrant, then it is a chance to review and potentially select another.

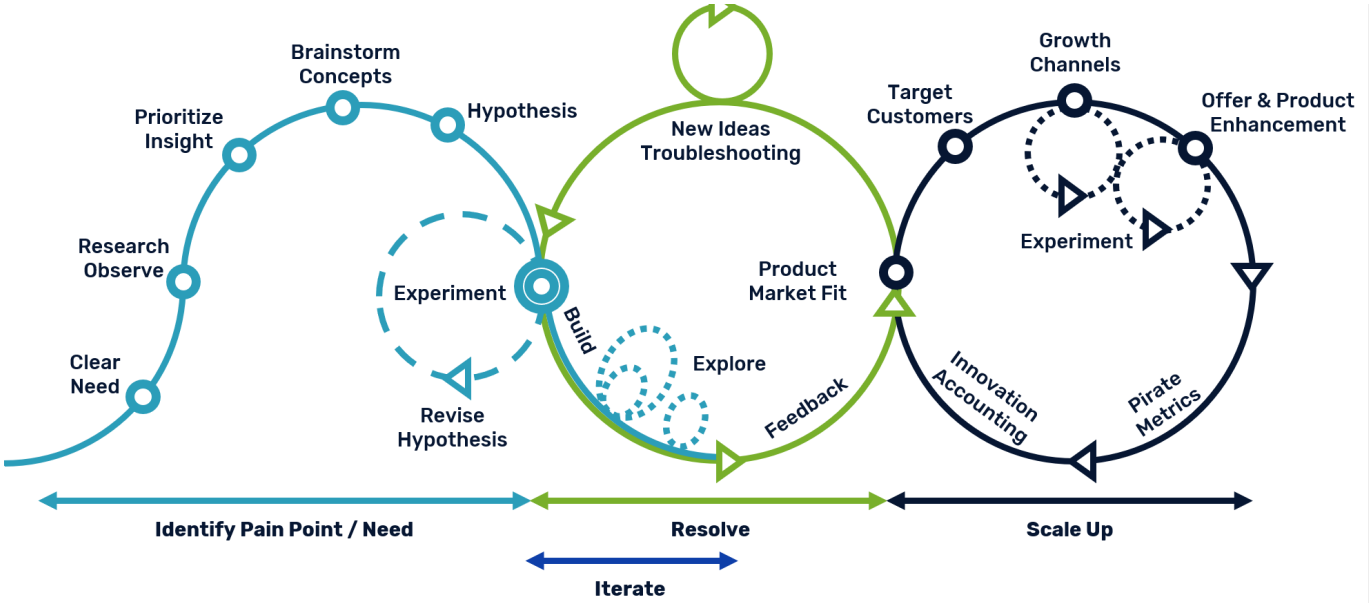
Innovation strategy in organizations may be built upon numerous methodologies – there are hundreds to choose from and potentially adapt to suit your organization. However a handful of more common examples include:

- Agile
- Design Thinking
- Double Diamond Design
- Innovation Engineering
- Lean Start Up / Lean Enterprise
- TRIZ (The Theory of Inventive Problem Solving)

Let's take three examples, in which we have iterative, disruptive and radical innovation objectives as desired outcomes and see how a specific strategy can support these outcomes – and the role innovation intelligence plays within that strategy.

Iterative innovation using Lean Start Up / Lean Enterprise

One option for iterative innovation could be based on 'Lean Start Up' or 'Lean Enterprise.' This is based on the familiar build, measure, learn cycle, a more detailed version of which is shown below.[8]



This is a detailed chart, but let's take one area - 'Product Market Fit,' – which sits in the middle within the 'resolve' section of the cycle. This is important because, as we iterate, we will need to find potential customers or leads to carry out this 'product market fit' research with and then measure how customers might react to your technology.

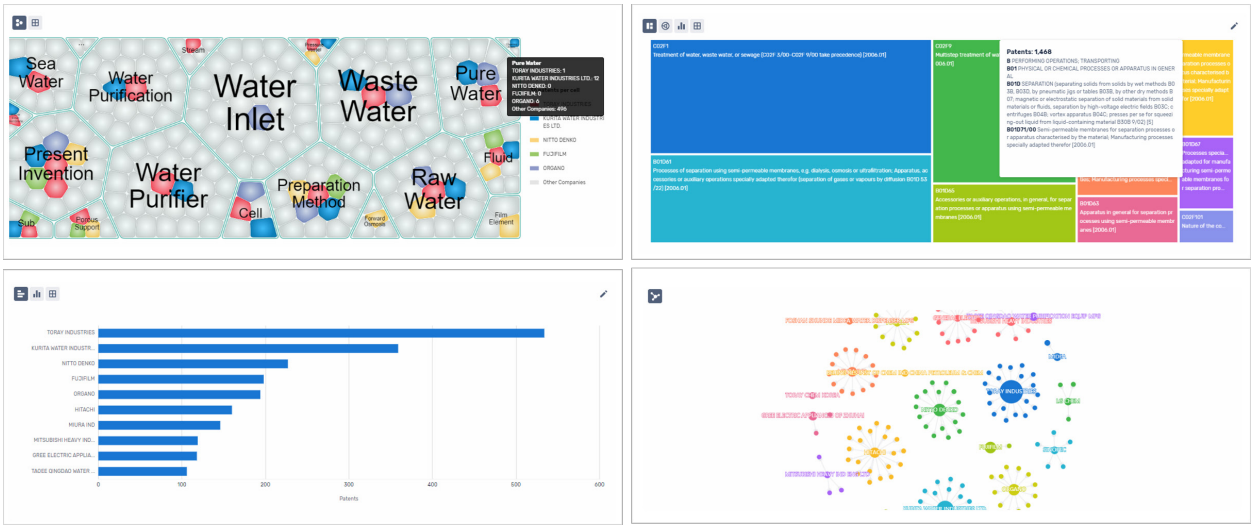
When we look at finding these targets and experts, there are a number of ways of doing this. More traditional methods could include value chain analysis, social media (LinkedIn), networks or blogs and research reports.

Another way, is to apply innovation intelligence and AI, as shown in the example below. If we use the example technology 'Reverse osmosis membrane', in PatSnap Discovery, in this case, an AI-driven platform can utilize its breadth of data including tech blogs, grants, market research reports and create a relationship map to quickly locate companies or experts active in this regard.

PatSnap Discovery relationships map for the search 'reverse osmosis membrane'.

Also, patent data can be used as an effective method of identifying target organizations. By using patent analytics and insights, for example, we can look at adjacent technologies through similar IPC or CPC codes.

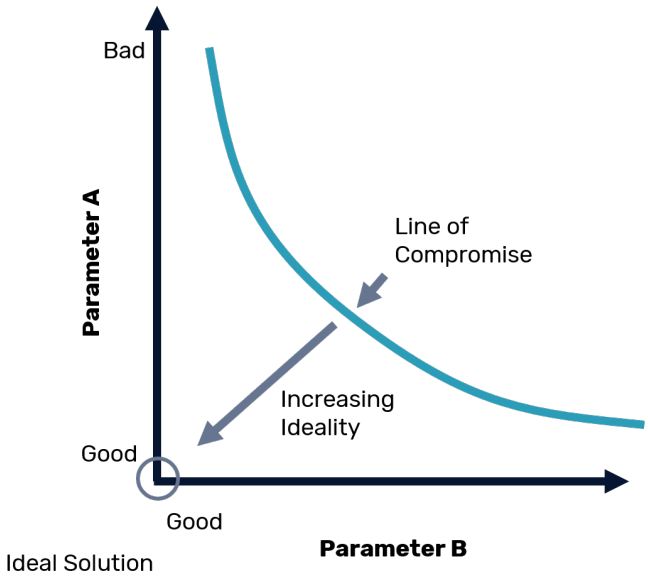
Then, from the assignee relationships we can identify companies that are active in (or have an interest in) the market you are targeting - and where they sit in the ecosystem.



PatSnap Insights, Cell Diagram, Key Technologies, Top Assignees, Assignee Relationships overviews.

Disruptive innovation and TRIZ (lateral thinking)

TRIZ is a Russian acronym (Teoriya Resheniya Izobretatelskikh Zadatch), which translates as 'The theory of inventive problem solving.' It refers to a science-based, rather than a psychology-based approach (such as brainstorming), to innovation. It centres on defining an ideal end state and then analysing the contradictions that prevent a product or solution reaching that end state. Today's products are the result of compromises based on available resources or materials, as illustrated in the diagram.



The TRIZ methodology provides a framework for resolving the contradictions that lead to these compromises. It was actually devised by a patent examiner for the Russian Navy, Genrich Altshuller, who had reviewed 200,000 patents to try and determine what principles led to an innovative breakthrough, versus an incremental improvement.[9] In his time, he had to review these patents and evaluate them all manually. Fortunately, today, there are technologies such as artificial intelligence to not only help the process, but also to go deeper into detail and recut the information according to industries or technologies.

One of the most compelling aspects of following this methodology is that in order to find the solution, it often involves having to find 'knowledge from one industry in order to solve an issues in another – one of the reasons space exploration, for example, is so fascinating is because it involves solving these contradictions and often these solutions have practical applications in other fields. Let's say for example, in automotive, you want to increase the speed of a car. You can decrease the weight of the body by using thinner material, but by using a thinner material, you also decrease the level of safety of the car on impact. However, space technology already had some answers for this problem. Battery technology is potentially another area – you want to store more energy in a single cell, but you increase the risk of explosion in the battery. Nearly every invention has to grapple with these contradictions.

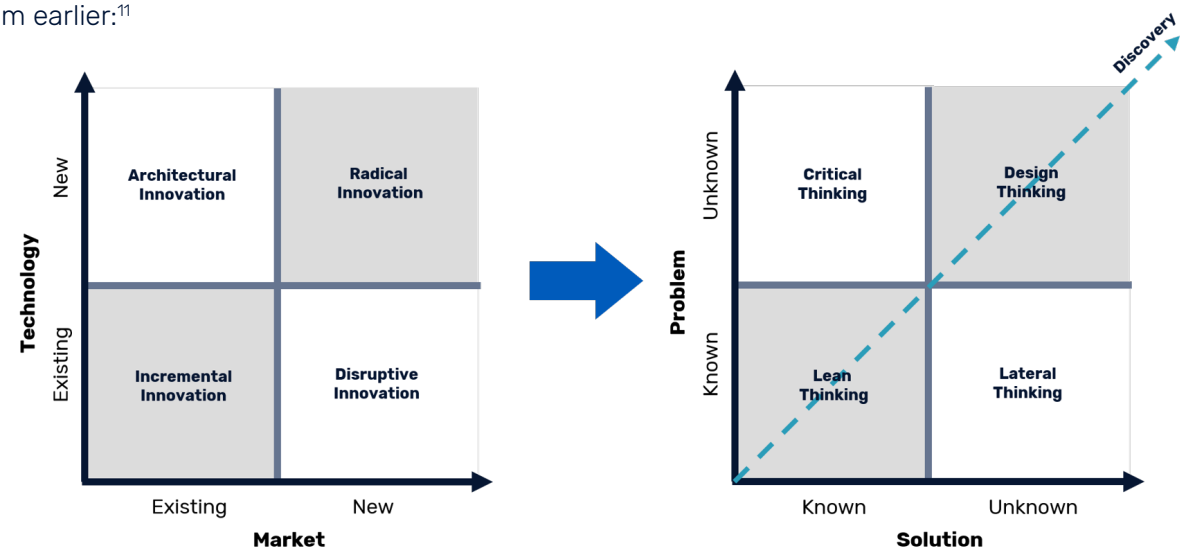
To quote an example from Science Direct in the Electrical Energy and Storage System field: "The basis of the used approach was a patent search involving 150 patents (and patent applications) in the EESS field. These patents were selected by relevance for e.g. the design of the battery's mechanical structure, cooling, electric contacting or assembly. Each of these patents was analyzed in detail regarding the used inventive principles and the technical contradictions solved thereby. After aggregating all identified combinations into an EESS specific contradiction matrix, this matrix was compared to Altshuller's matrix to evaluate the success rate of the given principles in these matrices for solving high voltage battery specific problems.

The main result is a ranking of the most used inventive principles in this field. The benefits of the patents were moreover evaluated considering costs, lightweight and production. Hence, it was possible to create particular matrices and rankings for design tasks in these contexts. A first testing of these outcomes showed positive effects on the generated ideas and on the designers' comprehension."[10]

In the case of this methodology, the advantage of having a global patent database is paramount – especially as many innovative ideas may come from territories such as Japan, Korea and China. Altshuller was confined to Russian patents when he first conducted this type of analysis. Indeed, for the most creative results, the wider the database global coverage, the more creative an answer you are likely to obtain. However, the volume of information being handled and the intricacy of the evaluation mean that an ability to manage this process in a centralised research tool – or a PatSnap Workspace – is vital.

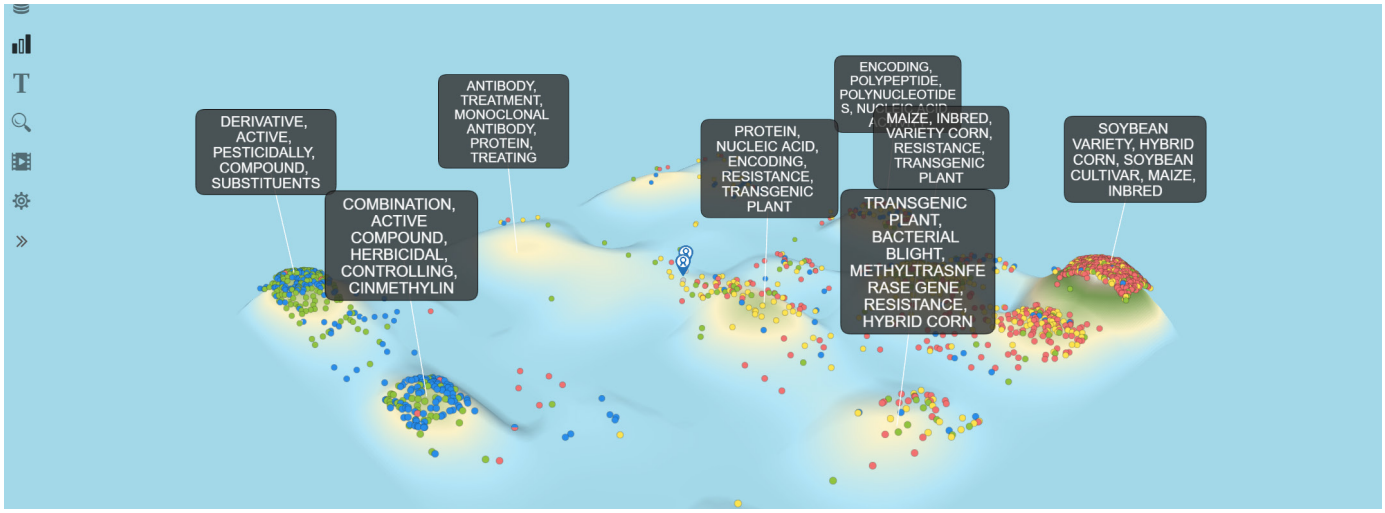
Radical Innovation and design thinking

Design Thinking maps to the top right box of radical innovation, that we showed in our first diagram earlier:[11]



What constitutes radical innovation is something of a billion dollar question. You can see on the grid on the right that it is something of a discovery question. However, innovation intelligence could help frame the thinking around any discovery brainstorms.

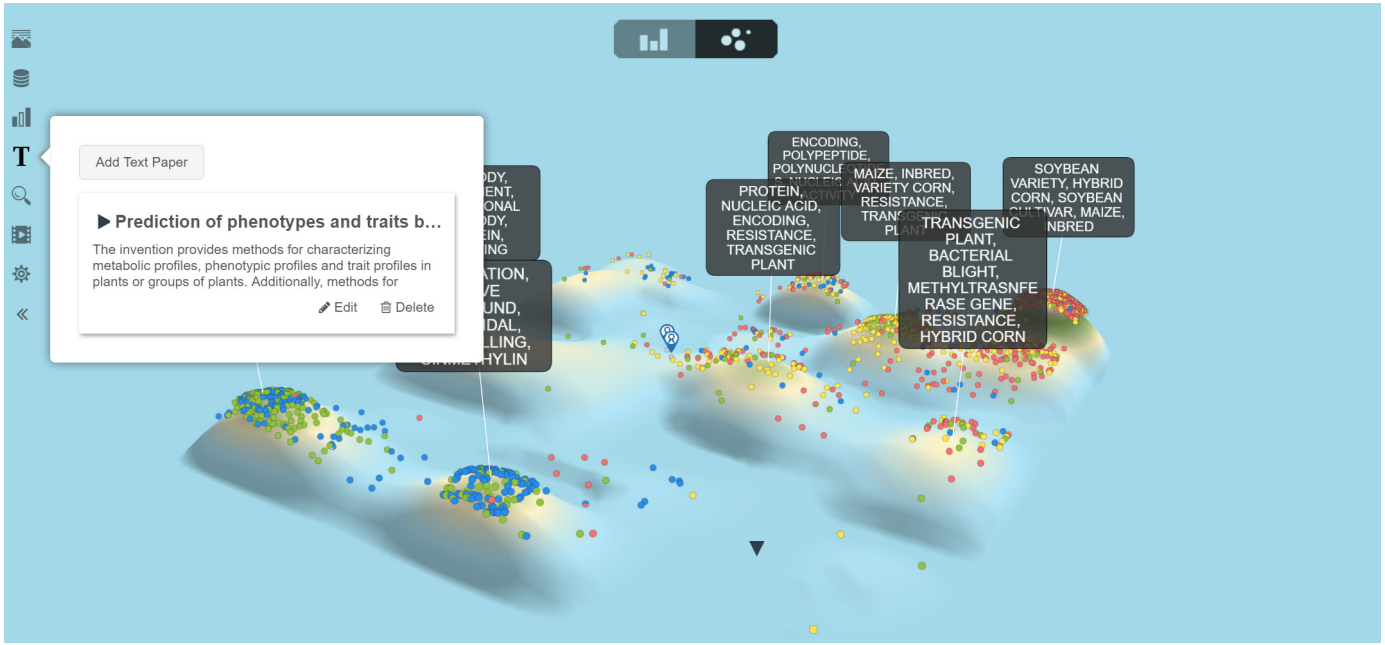
Consider, for example, again an IP landscape. We have an example here, considering transgenic plants and how these patents (represented by the coloured dots) fall on the landscape…



PatSnap Landscape

In this example, we can see in the bottom corner that there is a significant amount of ‘white space.’ However, although we don’t know specifically what is in this white space, we can triangulate ideas around the three sections to the left, right and above. This triangulation is similar to the double diamond method, which is an oft-cited tool within the design thinking toolkit.

By examining the patents in each of the surrounding areas and by combining the concepts from two or more of these areas, it is possible to predict possible inventions that might fit the white space. With today’s technology, it is also possible to then formulate a potential innovation idea and use keyword and similarity analysis to ‘predict’ where the new innovation falls on the landscape.



PatSnap Landscape

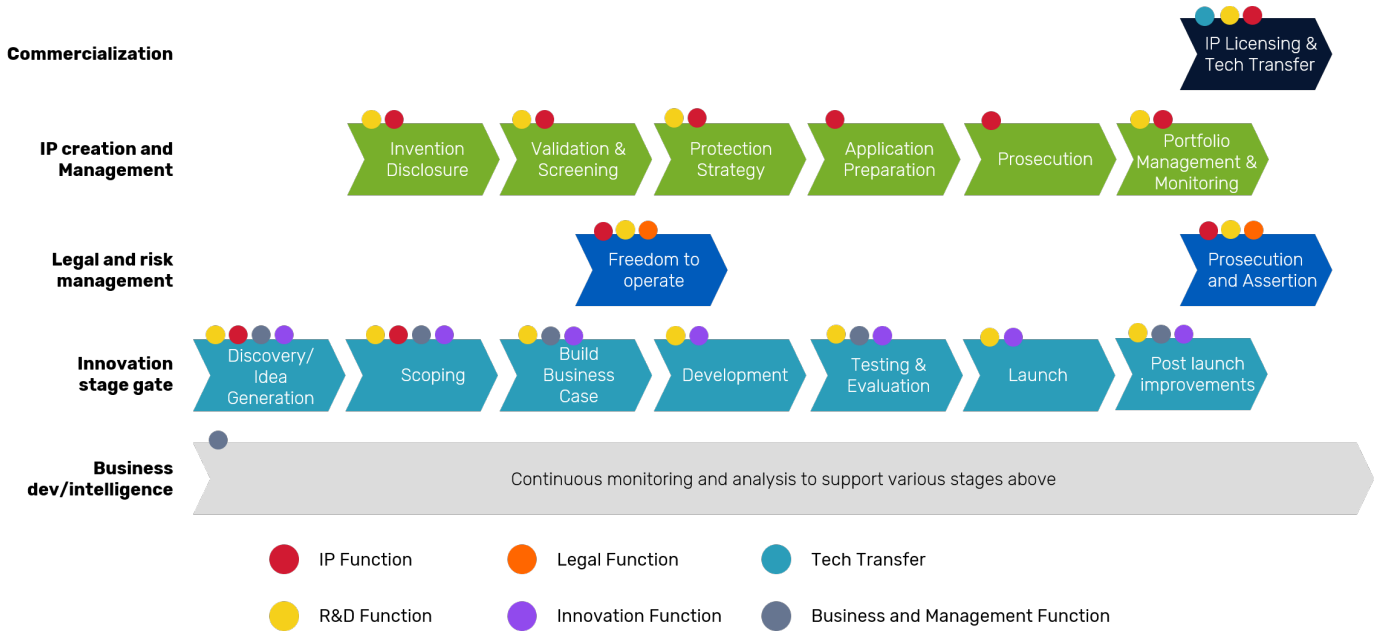
Of course, this may not be the radical innovation that we are looking for – but we have had a chance to start considering what may sit in some of the ‘unknown’ technology territories. Discovering the unknowns is key to this process.

Who is responsible? Innovation strategy needs tight governance

Of course, once we have decided the innovation type, the strategy and the objectives, it needs strict governance in order to ensure success. This could include questions such as:

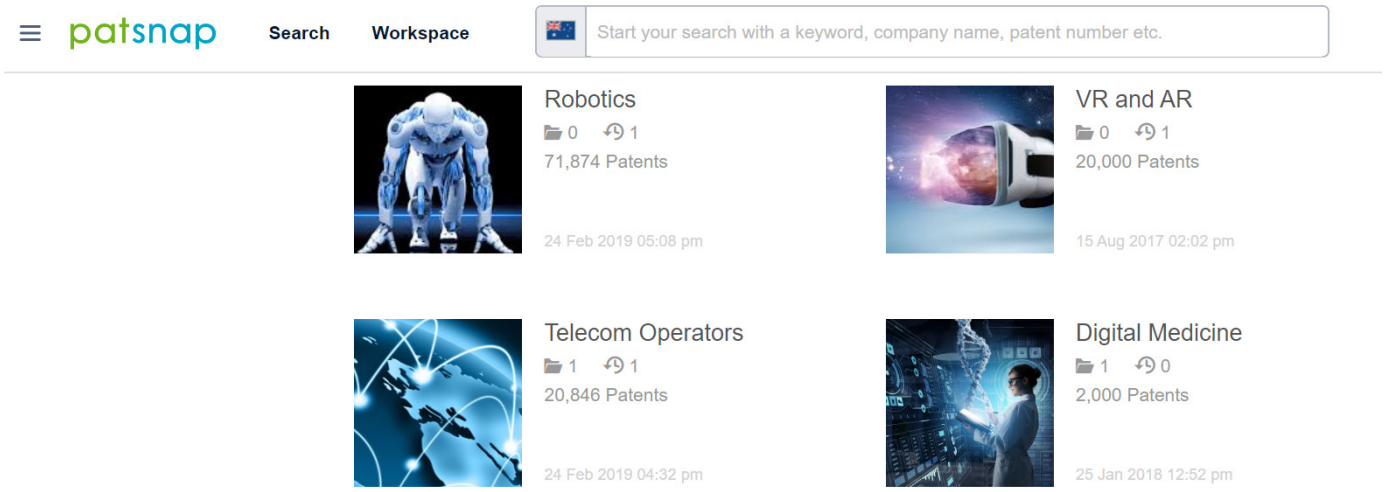
- Who decides how many projects should be running and how should this be set in accordance with company goals and strategy?
- Who is responsible for auditing and determining the type of innovation that is being pursued?
- Who is responsible for determining the level of risk that a company is willing to take with regards to each project and co-ordinating the policies around this?
- Who takes ownership of these risks?
- Who is accountable for setting the objective and whether it is achieved or not?
- Who is responsible for ensuring the correct innovation methodology is selected?
- Who is responsible for managing the research associated with the projects?
- Who is responsible for managing access to the information associated with the research to the projects and ensuring that it is protected?
- Who is responsible for collating information and co-ordinating the workflow between R&D, IP and other teams?

In short, as we can see from this diagram, the process involves cross-functional decisions involving participants from right across the business, from C-level through to legal, product, R&D, business intelligence and marketing. The need to access connected innovation intelligence (and the research associated with it) is valuable to all of these teams at different stages of collaboration.



At the same time, though, the flows of information relating to the production of knowledge and know-how relating to each project, or the creation of each IP asset, need to be monitored and managed.

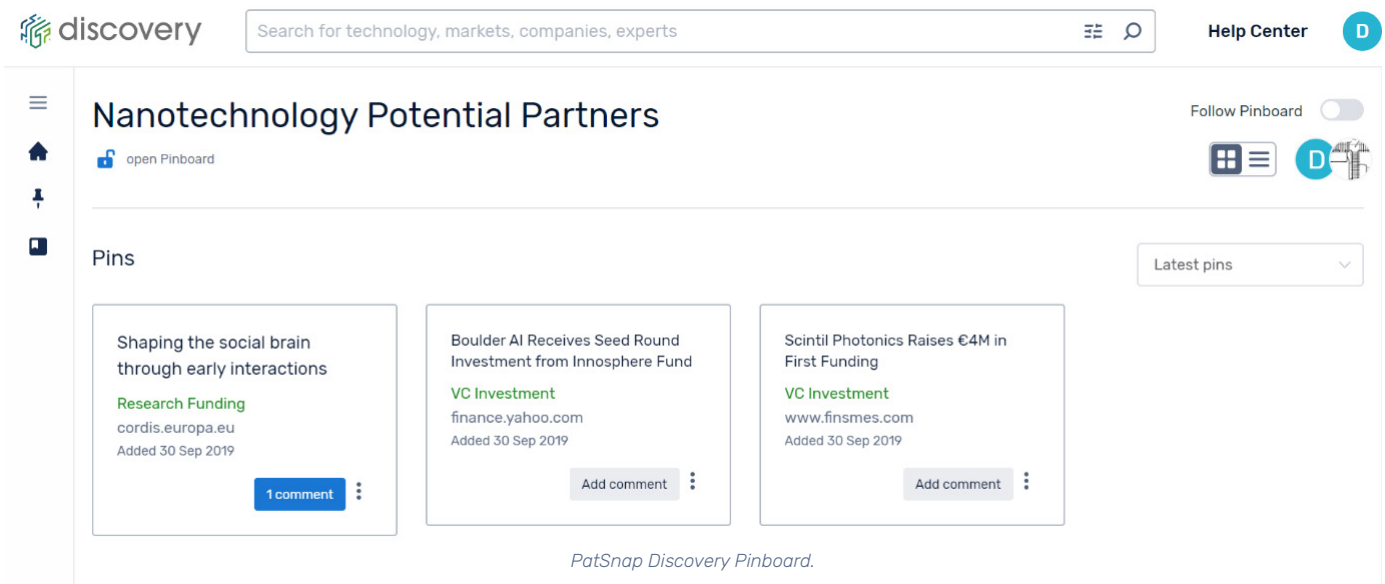
This can be achieved using tools, such as collaborative project workspaces. For example, the image here shows PatSnap Workspaces, which we mentioned earlier:



PatSnap Workspaces dashboard.

So in this case, each of these project areas could relate to an idea - with an objective - within the organization, annotated, and shared across the teams for analysis at any point during the workflow and we also know who has access to the collated information on specific projects.

Meanwhile, it is sensible to create a centralised collection of research, so that effort is not duplicated when conducting non-patent literature research, such as the example we can see below:

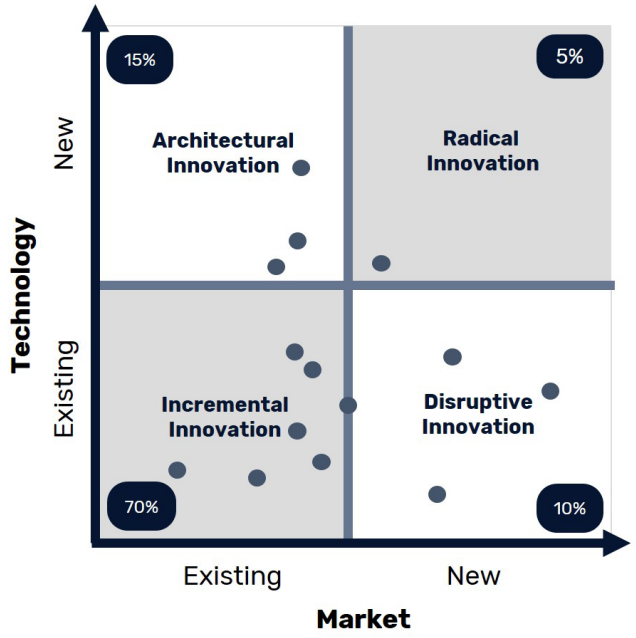


PatSnap Discovery Pinboard.

By adopting this practice, it is possible for cross-functional teams to review the information without having to start the research from scratch, and there is a central point of truth for all the research that has been carried out with regards to a specific innovative project.

Summary: how connected innovation intelligence helps

Our recommendation therefore would be to first of all conduct an audit of all the innovation projects and determine where they sit in the innovation type quadrant, alongside what you would want to target for each quadrant. It might look like something as shown here:



Make sure that the targets and the actual projects match the expectations as defined by the organization's objectives. It's worth noting that the organizations that have projects – or rather intellectual property– in each of the quadrants will be especially attractive to investors as these can lead to additional or new revenue streams. For established companies, it provides an insurance against significant market changes.

Meanwhile, if all your projects are incremental, then it is a chance after the audit to take remedial action.

Next, decide the appropriate level of risk that the organization is willing to take, again using connected innovation intelligence to help answer the questions with data-driven answers and knowledge.

Then, make sure that the correct innovation strategies are in place to support the creation of knowledge according to the innovation type being targeted. As shown, innovation intelligence can be used to help create ideas and should subsequently be used throughout the screening process.

Finally, ensure that each of the ideas are defined with objectives that relate to the overall goals of the business - and that these are measured and reported on.

It is this approach that combines internally collected information and data plus external information and data, plus the use of connected innovation intelligence that can be shared across the relevant individuals in each business unit, that is key to creating a truly data-driven innovation structure – and will be key to survival.

References

[1] https://techblog.constantcontact.com/software-development/types-of-innovation/

[2] https://blog.bearing-consulting.com/2013/01/25/the-s-curve-for-apple-is-flattening/

[3] U. Suthersanen, Incremental Inventions in Europe: A Legal and Economic Appraisal of Second Tier Patents, in Journal of Business Law, 2001, 319 ff

[4] https://economics.mit.edu/files/13176

[5] https://patinformatics.com/patent-strategy-lesson-the-innovators-dilemma-and-patent-committees-guest-post-by-peter-kim/

[6] https://patsnap.highspot.com/items/5a95a2f3af772d1bb07a66ec#9

[7] https://patsnap.highspot.com/items/59e0761faf772d72a877b850#3

[8] https://www.wipo.int/edocs/pubdocs/en/patents/948/wipo_pub_948_2.pdf

[9] https://www.designsociety.org/download-publication/30472/designing_patent_portfolio_for_disruptive_innovation_%E2%80%93_a_new_methodology_based_on_c-k_theory

[10] https://www.sciencedirect.com/science/article/pii/S2212827114007197

[11] https://medium.com/@pavansoni/design-thinking-is-not-a-old-wine-in-new-bottle-7ce108f3fd53

Futher Reading

- https://scielo.conicyt.cl/scielo.php?script=sci_arttext&pid=S0718-27242011000400003
- https://www.vtt.fi/inf/pdf/publications/2007/P646.pdf
- https://economics.mit.edu/files/13176

Using PatSnap's real-time competitor and market intelligence gives you the answers and insights you need to make the right decisions from the start and be first-to-market.

With a steady stream of clear signals to inform each step you take, you gain a smarter and leaner way to explore the right commercialization routes for the right industries at the right time.

This will propel your time-to-market and industry position and can ensure you become a disruptive pioneer with your next big idea.

Take a demo of PatSnap today and see how we can help you separate the signals from the noise to build a rock-solid R&D strategy.

Request a PatSnap demo

Connecting the dots so you can innovate better

PatSnap is a global innovation intelligence platform connecting companies with IP and R&D analytics so they can make better decisions and increase productivity.

From startup to Fortune 500, companies use PatSnap to help meet customer demands, innovate faster than competitors, protect and advance their IP positions, increase R&D efficiency, and identify opportunities across different industries.

With the application of AI and machine learning, PatSnap makes it possible to gain actionable intelligence from millions of global innovation data points such as patents, litigation, investment, M&A, company information, and many others.

With thousands of customers and offices around the world, PatSnap makes it seamless for teams to use its platform and collaborate from anywhere.

Every day, the PatSnap team wakes up with one mission: to help innovators make better decisions. Together, we're passionate about making the world a better place.

www.patsnap.com

patsnap