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White Paper

Designing the Future

How Innovation will Follow the Footsteps of
Procurement



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Introduction

Knowledge monopolies don't exist anymore

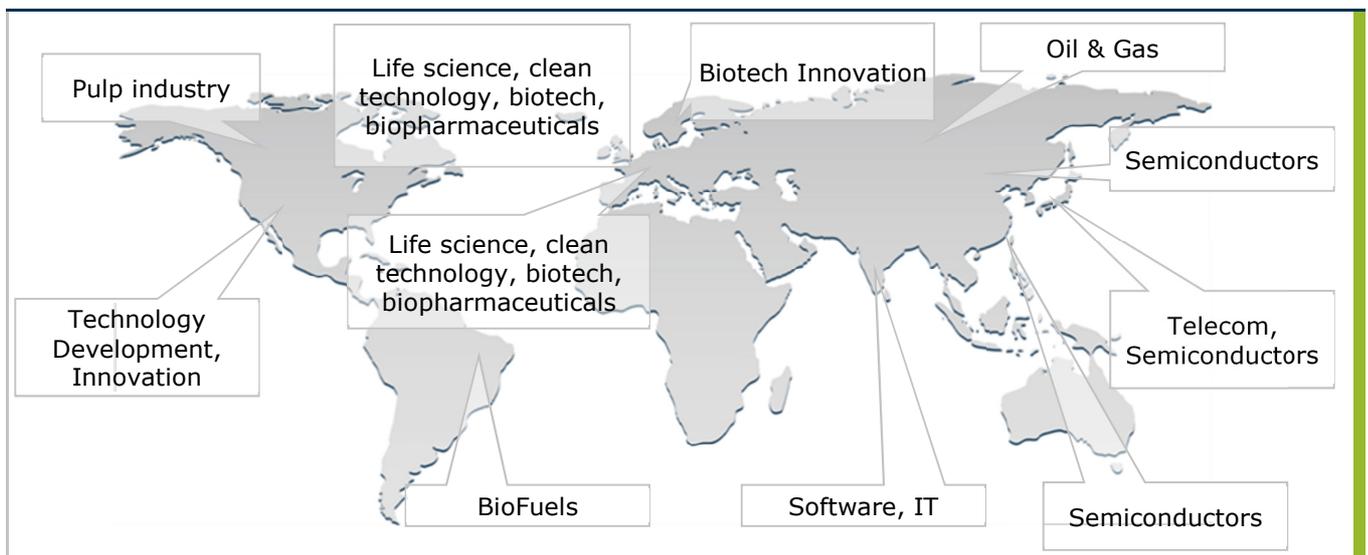
Pharma giant Eli Lilly has 40,000 employees in 143 countries, and R&D facilities in eight countries. Despite the well functioning machinery, six out of its last 16 medicines were a product of collaboration with external partners. Eli Lilly has identified ten new opportunities for co-creation. In an intensely competitive and high-risk pharmaceutical industry, Eli Lilly has done well to adapt to the future.

The success of Eli Lilly lies in the early initiatives it took to complement its R&D. In the 90s, Eli Lilly adopted Alliance Management and Technology Scouting programs. Eli Lilly looked at scouting as new way of conducting business, and converted itself from a traditional Fully Integrated Pharma Company (FIPCO) into a Fully Integrated Pharmaceutical Network (FIPNET). Every year Eli Lilly evaluates more than 1000 ideas from all over the world, and is increasingly becoming a "preferred partner" for many small research companies.

Scouting for innovative ideas is no more a serendipitous encounter; but a must-do activity for any organization keen to explore opportunities to grow. P&G, BASF, Novo Nordisk, and Deutsche Bank are examples of companies that have set up innovation/technology scouting departments. These departments, often collaborations between Marketing and R&D, need to identify external opportunities and convert them into successful products/solutions.

The evolution of innovation scouting, its methodology, pit falls, and some best practices for conducting it, are discussed in this white paper.

Figure 1: Innovation map



Source: Evalueserve

Globalization and innovation were traditionally seen as two separate topics, however, in the last two decades they have united in a way that has created a new set of challenges and possibilities for organisations. This became possible due to inexpensive communication technologies, technology outsourcing, research collaborations and manufacturing alliances.

Globalization of innovation has facilitated the adoption of an open attitude towards innovations. The responsibility of R&D managers has also broadened and includes innovation design rather than product creation. Off late, scouting has become a strategic initiative across organizations.

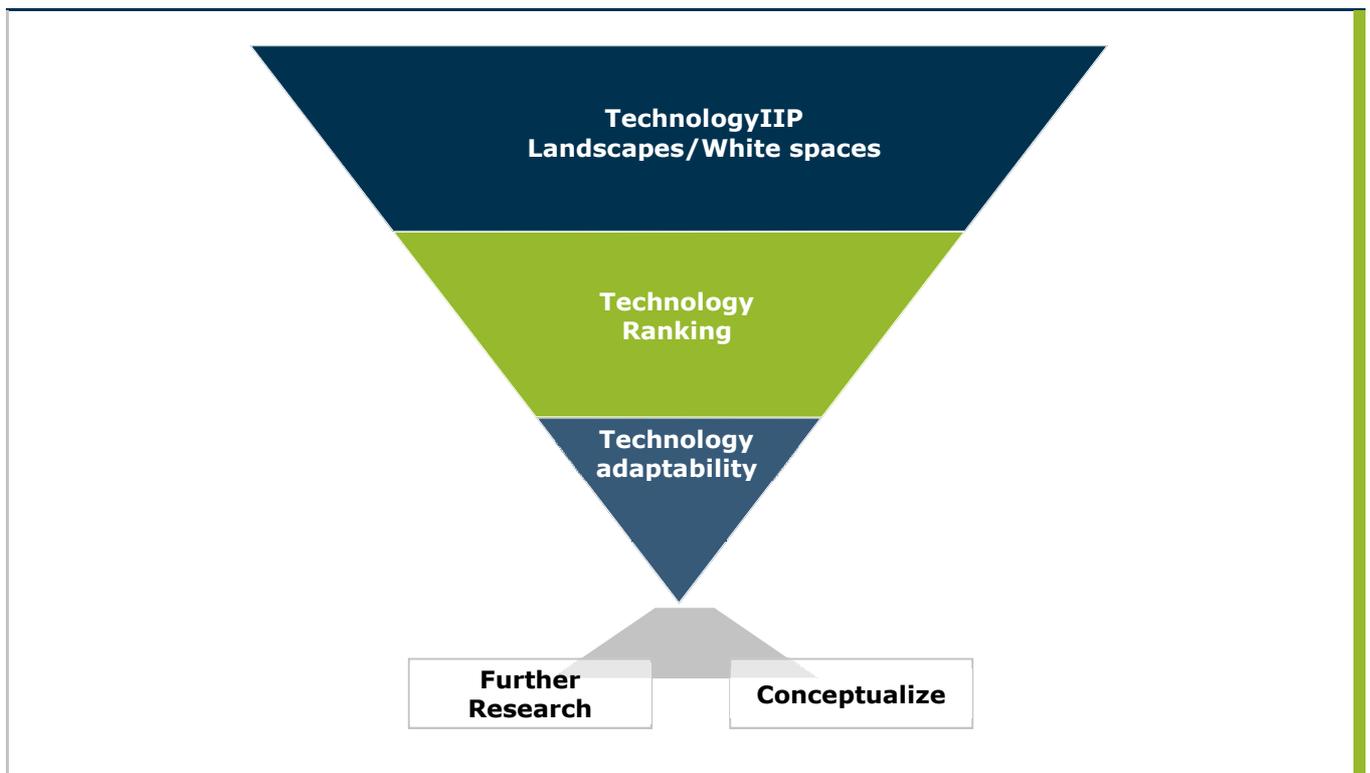
Given that scouting is a relatively new business practice, several challenges surround the execution of this process.

Innovation Scouting

A stepwise approach

The first step in a standard innovation scouting process is opportunity identification. Opportunities can relate to new technologies (for example, touch-screen technology), business models (for example, value-added services), and/or new markets/applications (for example, the use of automobile technology in marine applications). This step also involves fronting multiple channels that could generate opportunities. The channels may be investigated by studying scientific (including patents and journals) and business literature (including websites and case studies), monitoring competitors, taking part in relevant conferences, and speaking to experts.

Figure 2: Standard Scouting Process



Source: Inspired by Deutsche Telekom analysis

Once the opportunities are collected and put in an (virtual) idea box, the ideas need to be evaluated. Innovation designers need to carefully scrutinize each opportunity and rank them on various parameters. Some parameters for technology evaluation may include:

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- Technological impact - Does this technology have a positive impact on my product/process?
- Business potential - How much saving/growth can I achieve?
- Maturity - Are there products based on this technology in the market to indicate that the technology actually works?

Similar evaluation criteria can be framed while assessing business models and new applications. The output of this step is a list of opportunities ranked for further evaluations, and a discarded list of opportunities that failed to meet the criteria. However, it should be noted that even discarded opportunities could prove to be useful in another scouting initiative. It is critical to have a bespoke idea box that could act as a repository for future use.

The next step is to evaluate the short-listed opportunities to further prune the options. Some of the criteria that may be considered at this step include:

- Is the technology transferable to my business?
- What is the need/payoff of adapting this technology per my processes?
- Is the transition time period short enough to out see any frontier technology under development?

The selection criteria should be ruthless at this stage, and opportunities that meet the business case, rather than the "beautiful solutions", should be selected.

Lastly, an internal technology transfer of the selected opportunities takes place. Usually R&D and Marketing take over at this stage, and work with opportunities that either act as an inspiration, or, are mature enough to be licensed-in.

Scouting is often an unmanageable process

When it comes to actual implementation, the text book approach often fails. Resource intensiveness of the process and a lack of understanding of the underlying objective contribute to the failure.

Opportunity identification alone involves a constant inspection of scientific literature and a variety of other channels. Often, the scouting department does not have enough resources to conduct such vast landscaping projects, and have limited budgets to engage external consultants. Therefore, often such initiatives fall flat once the true scope emerges. It is important to note that the process itself is robust; however executing it is a challenge. Organisations that do manage to complete the process sometimes end up with multiple options for consideration, and all drive towards different business strategies.

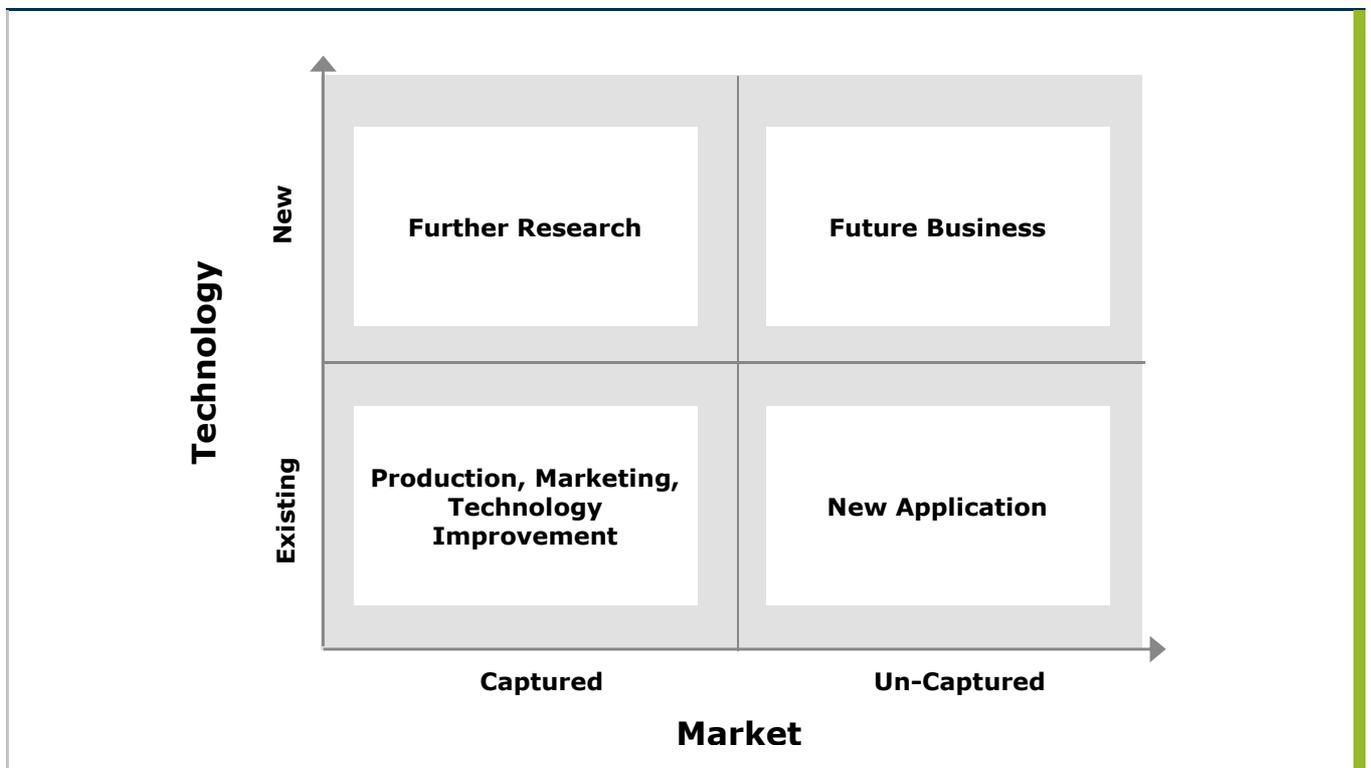
What should an organisation do in such cases? Should it put off this ambitious exercise, or consider a smarter and more focused way to implement it?

Smarter scouting has a focus on the end objective

The scouting exercise has a broad spectrum, and therefore, the context behind conducting it needs to be clearly understood. Consider the Technology versus Market matrix in Figure 3. Any company's future business strategy can be represented in this simple matrix. The matrix depicts the following options:

- Captured markets versus existing technologies: This strategy focuses on improving the current product (used broadly to encompass services also) portfolio in current markets
- Captured markets versus new technologies: This strategy focuses on introducing new technologies in current markets
- Un-captured markets versus existing technologies: This strategy focuses on expanding the reach of owned technologies in new geographies
- Un-captured markets versus new technologies: This strategy focuses on identifying completely untapped and fresh opportunities to grow business.

Figure 3: Technology Versus Market: Understanding the Innovation Objective

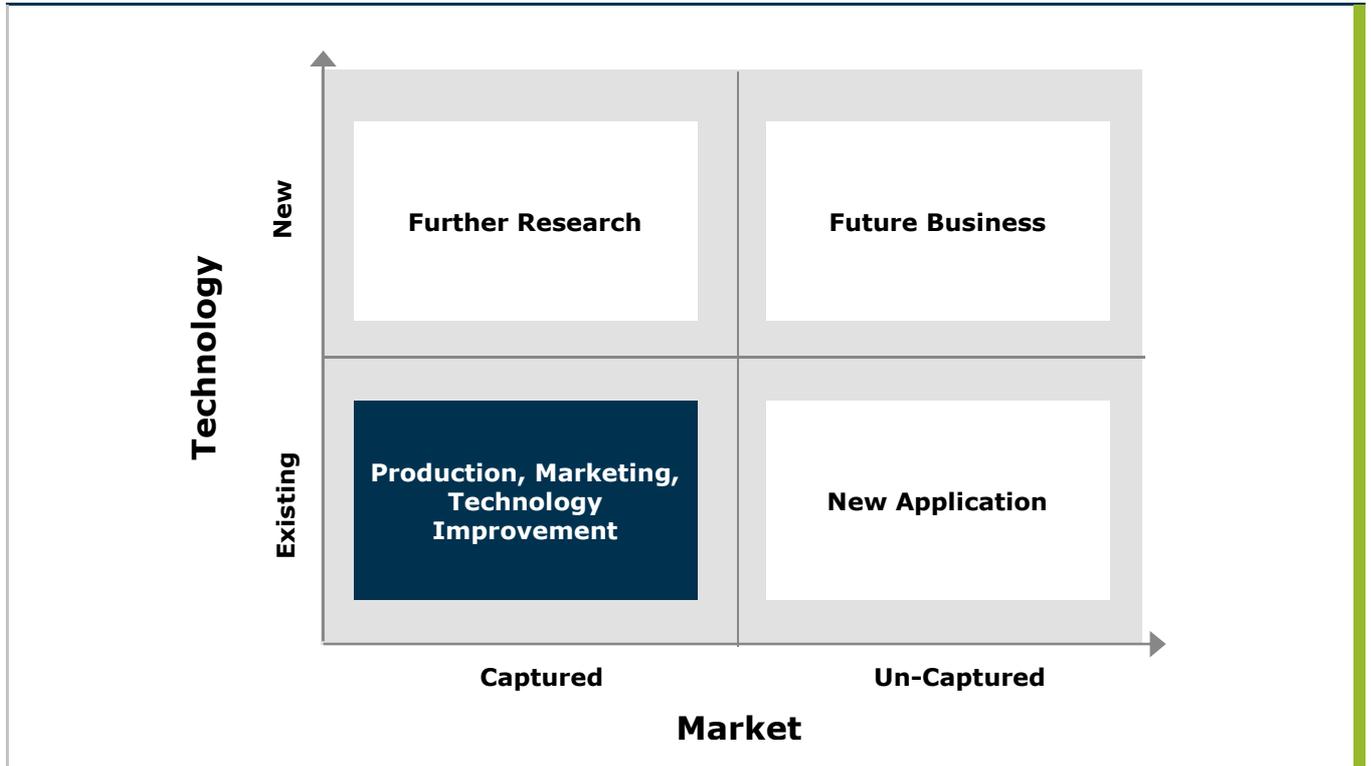


Source: Evalueserve analysis inspired by PARC

An organisation may focus on one or more strategies. Innovation scouting could play a key role in implementing any of these strategies. Depending on the end objective, the approach to scouting will vary and has to be customised accordingly.

Customising the scouting process to each innovation strategy

Figure 4: Captured market versus existing technologies



Source: Evalueserve

Organisations usually have a target customer segment and product offerings specifically catered to meet the demands of this segment. In a majority of cases, the competitor landscape has been charted out; production processes have been neatly defined, and supply chains cautiously examined. The focus is on gaining a larger share in the defined target segment, and retaining the existing customers. The challenge is often to launch better versions of the existing products, and address existing limitations. Any technology improvement should not impact the existing production processes and should have a faster time to market.

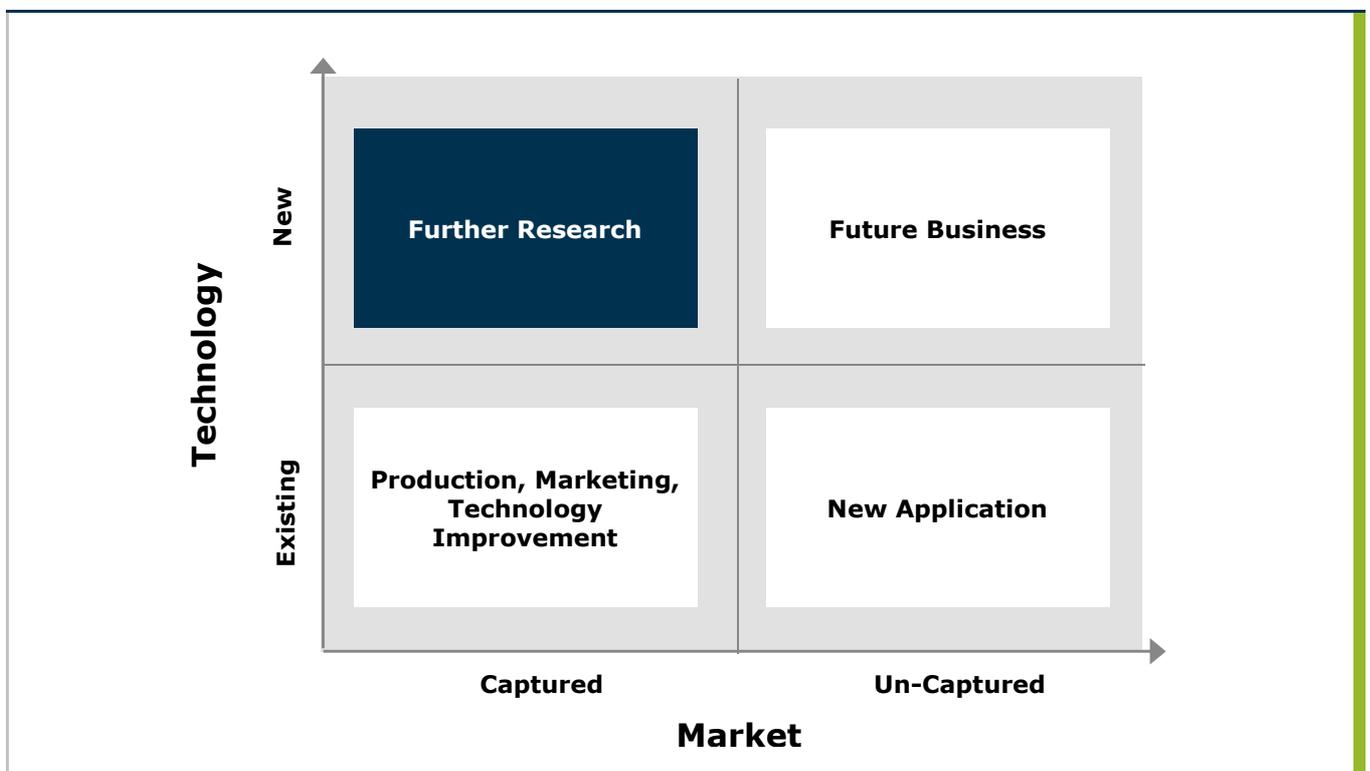
The aim in such cases should be to monitor solutions and advancements in parallel industries. Product managers can be quick to identify easy-to-borrow-solutions.

While scouting for solutions from other industries, a “genealogical approach” should be followed. Simply put, such an approach involves tracing the problem to its root; examining the spread of the same challenge across various industries; and learning how other industries solved it. Consider the two billion dollar wind turbine industry. Counted as an eco-friendly energy provider, the industry is now being hugely discredited for its short-sightedness. The key material in constructing wind turbines is carbon fibre composite that cannot be recycled and creates toxic emissions when burned. In principle, when a turbine is operating, it produces green energy. But once de-commissioned, it creates a huge environmental problem. The industry could possibly learn a thing or two by tracing the use of carbon

fibres in parallel industries, and analysing remedial steps taken by these industries to counter the challenge. A diligent study would point towards the aviation industry that also uses carbon fibers. The aviation industry tried to counter the challenge by reusing the composites. The solution involved breaking composites into granules for use as filler materials across various applications, such as in asphalt. Cement producer Cemex is another example. In order to substantially reduce CO2 emissions, Cemex tapped into the use of substitutes from the sugar and rice industry.

To summarise, organisations focusing on improving current products are often scouting for incremental technological advancements that are easy and fast to implement. Innovation scouting could help in finding solutions for technical challenges, and scientific literature is often a good starting point. The key is to adapt a smart scouting approach by narrowing down the field of research to related industries that are governed by the same drivers and challenges as the subject industry.

Figure 5: Captured market versus new technologies



Source: Evalueserve

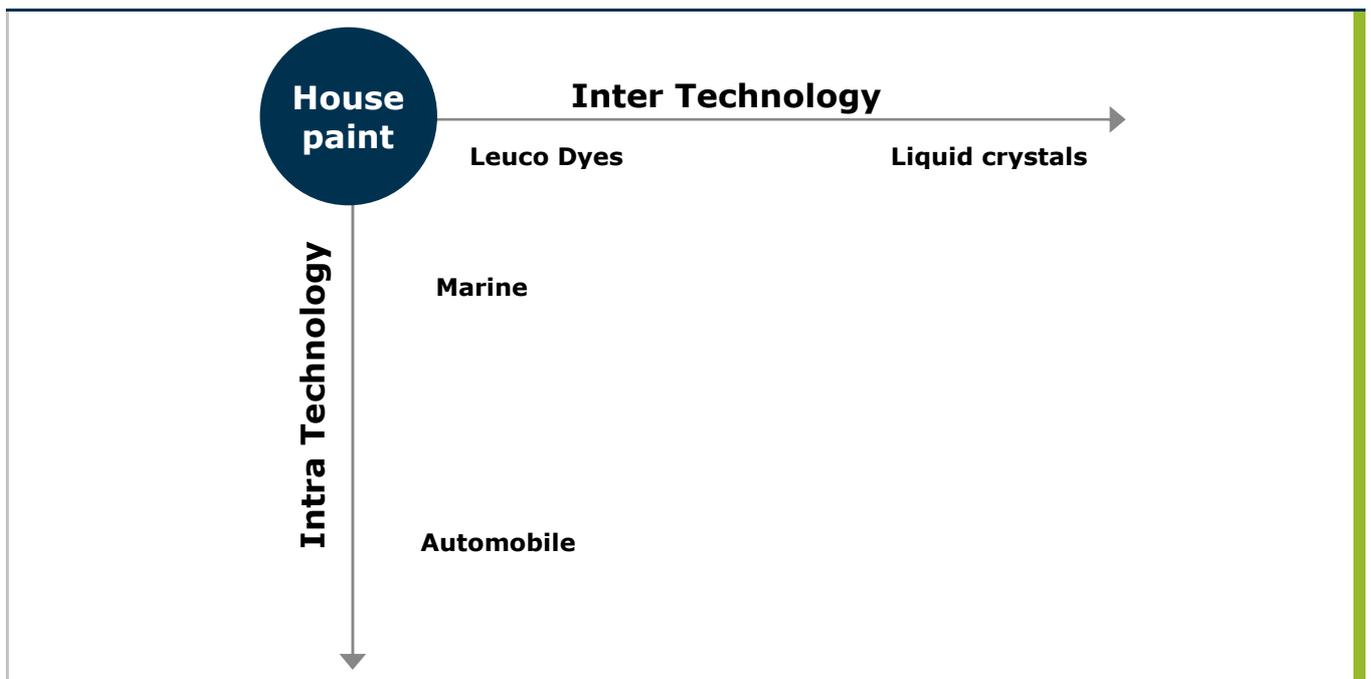
Whereas improving existing product/technology base is an immediate need across organisations, proactive organisations often aim to pre-empt competition by introducing new technologies in captured markets. For example, televisions are ubiquitous to the point of reaching saturation. However, recently 3D televisions flooded the market and were targeted towards existing customers. Mobile phone industry will also cash in on this technology and launch mobiles with 3D displays.

Consider an example of a fictitious house paint manufacturer, Olive. Olive wants to introduce a differentiating house paint in the market. One among the several ideas could be a color-changing house paint. The color of the house paint could change with the outside temperature, or ambient light in a manner that it is lighter in the day time and darker during night, may lead to considerable savings in

heating/cooling costs for the house owners. The aesthetic features accompanying the color changing feature would be a bonus. The solution may be identified from two approaches: intra-scouting and inter-scouting.

Intra-scouting aims at capturing innovation in other industries, whereas inter-scouting aims at looking at other parallel technologies for inspiration. In the case of Olive, intra-scouting would include looking into different paints and coatings used across industries, such as marine paints, automobile paints, and art school paints. If the solution is found in another industry, but the same technical field, the adaptability factor is considerably higher. For example, careful examination will reveal that color-changing paints already exist in the automobile industry. On the other hand, if intra-scouting fails to yield results, the team should start with inter-scouting technique. Inter-scouting would include looking into parallel technologies where such an innovation might exist. For example, leuco dyes (used in mood rings) and liquid crystals have the ability to change colour with temperature. The next question is to check whether such solutions are transferable to the subject industry, i.e., house paints.

Figure 6: Intra-scouting and Inter-scouting examples

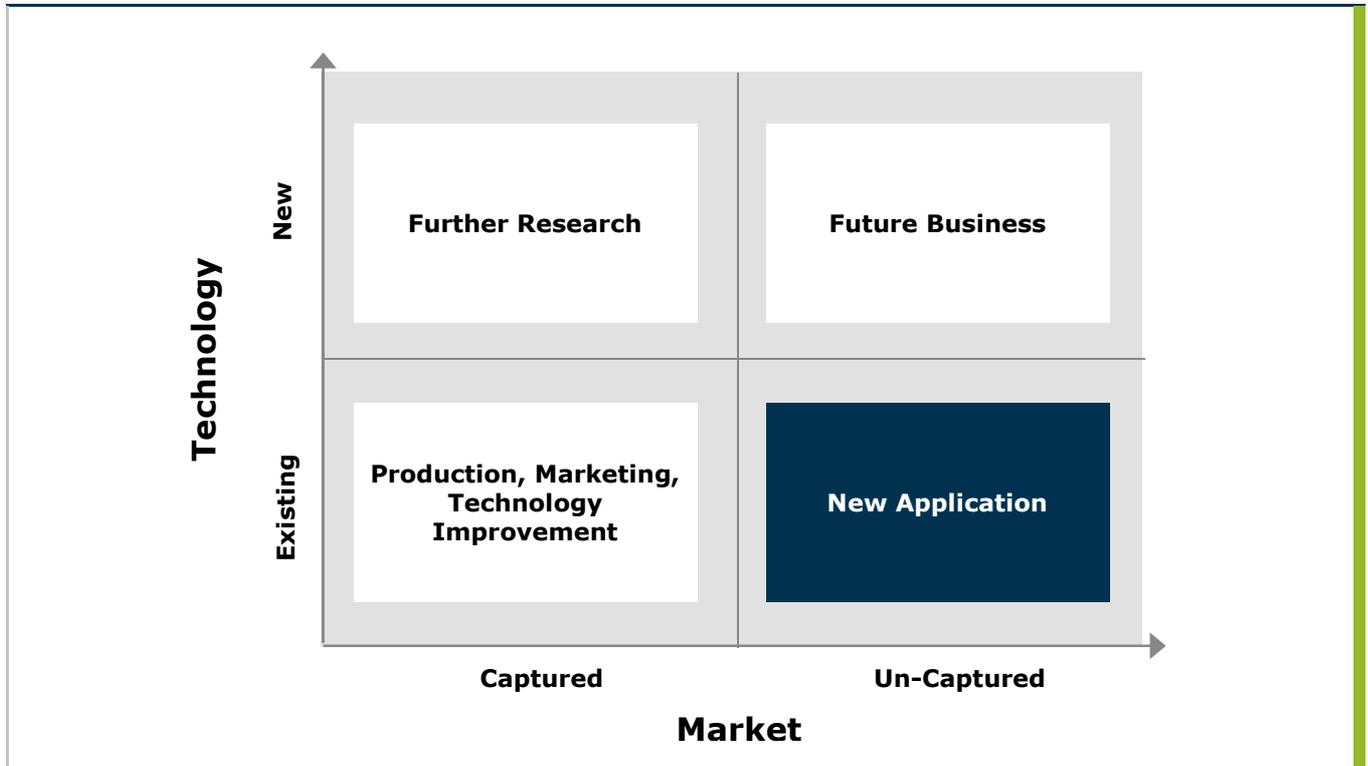


Source: Evalueserve

The intra and inter scouting approaches would be less taxing on resources also since the first step is to quickly scan the same technical field – an activity that can be conducted by technical experts within the organisation.

Scouting from new or existing technologies?

Figure 7: Un-captured markets versus existing technologies



Source: Evalueserve

Viagra is one of the most successful drugs produced by Pfizer. Though initially created for treating high blood pressure, the drug was found to be effective in inducing marked penile erections during clinical trials. Pfizer marketed Viagra as a drug to treat erectile dysfunction, making Viagra a blockbuster. Such fortunate encounters abound the pharmaceutical industry.

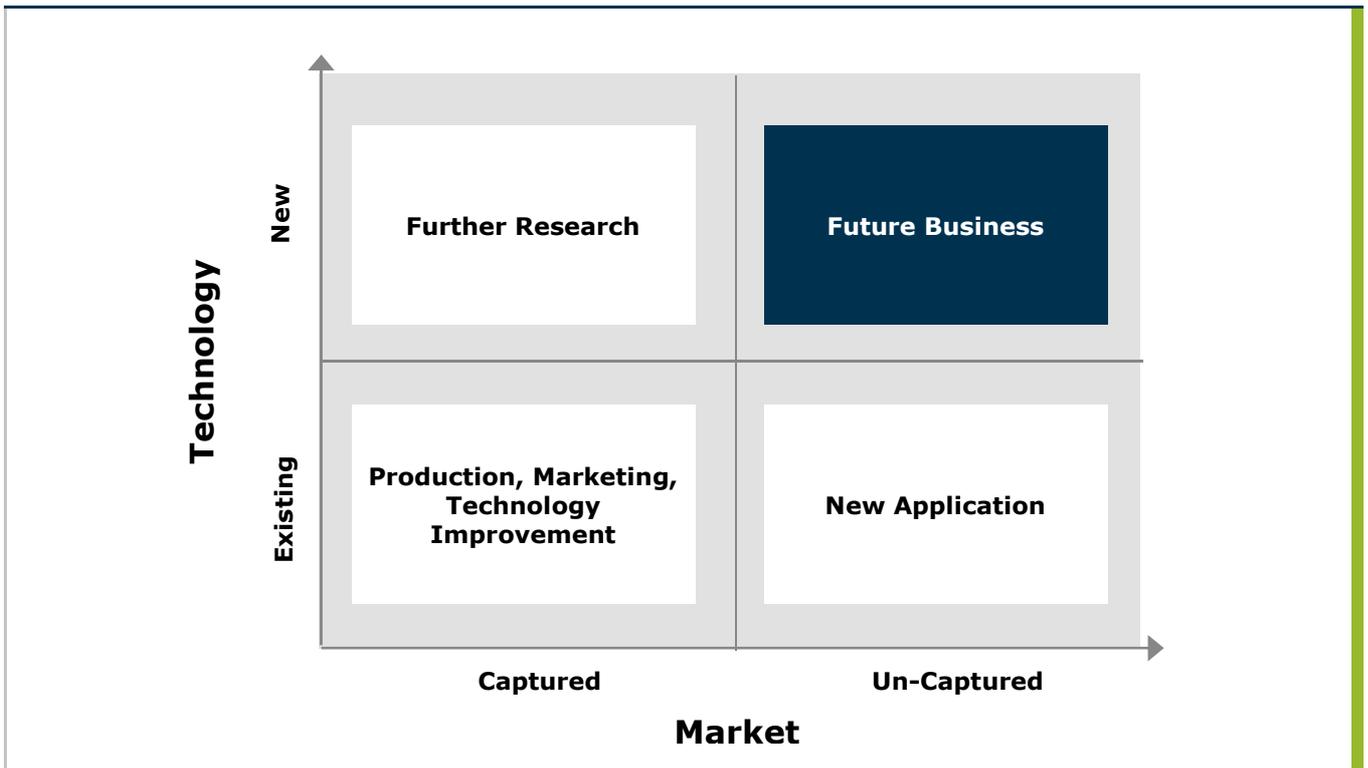
Organisations often make a conscious attempt to tap into profitable alternative application areas for its proprietary technology. The focus of a scouting exercise for this innovation strategy is to identify un-captured and previously unimagined customer segments. Consider the television industry, which has found a new application as an essential aid to video-conferencing facility. Similarly, but on a wider scale, the company 3M leveraged its core sticky tape technology across various application areas and has found repeated success.

The first two innovation strategies (1. Captured market and existing technology and 2. Captured market and New Technology) dealt with in-sourcing technology solutions/business models; whereas, the focus under this innovation strategy is application of existing technologies to new areas where business potential exists. Patent literature could form an effective means of scouting new application areas. A map of forward and backward citations may be created to identify industries where the technology could be implemented. However, while searching for new applications, it is important to not only focus on identifying new industries where the product/solution may be applied as-is, but also pay attention to new solutions/products that can be developed from the features/advantages of the

technology at hand. For example, potential applications of haptic technology were always considered within the narrow playfield of user interfaces. However, with a slight shift in focus, it would become apparent that haptic technology could be applied in medical domain to enable surgeons to perform operations remotely. Haptic technology will provide tactile and resistance feedback to the surgeon as he operates the robotic device - the mechanical feedback replicating an actual operation scenario for the surgeon. Hence, by redirecting focus from a specific successful application of the technology to the advantages offered by the technology itself, much more potential can be found.

Another case for this innovation strategy could be re-use of R&D investment in a given technology for a substitute application when the intended application fails to yield expected results. For example, P&G found new applications for its Olestra molecule which was initially hailed as a low-fat ingredient for snack foods. The snack ingredient was not successful due to unpleasant side effects. However, P&G found another application in environmental remediation, thus salvaging its investment in research and infrastructure.

Figure 8: Un-captured markets versus new technologies

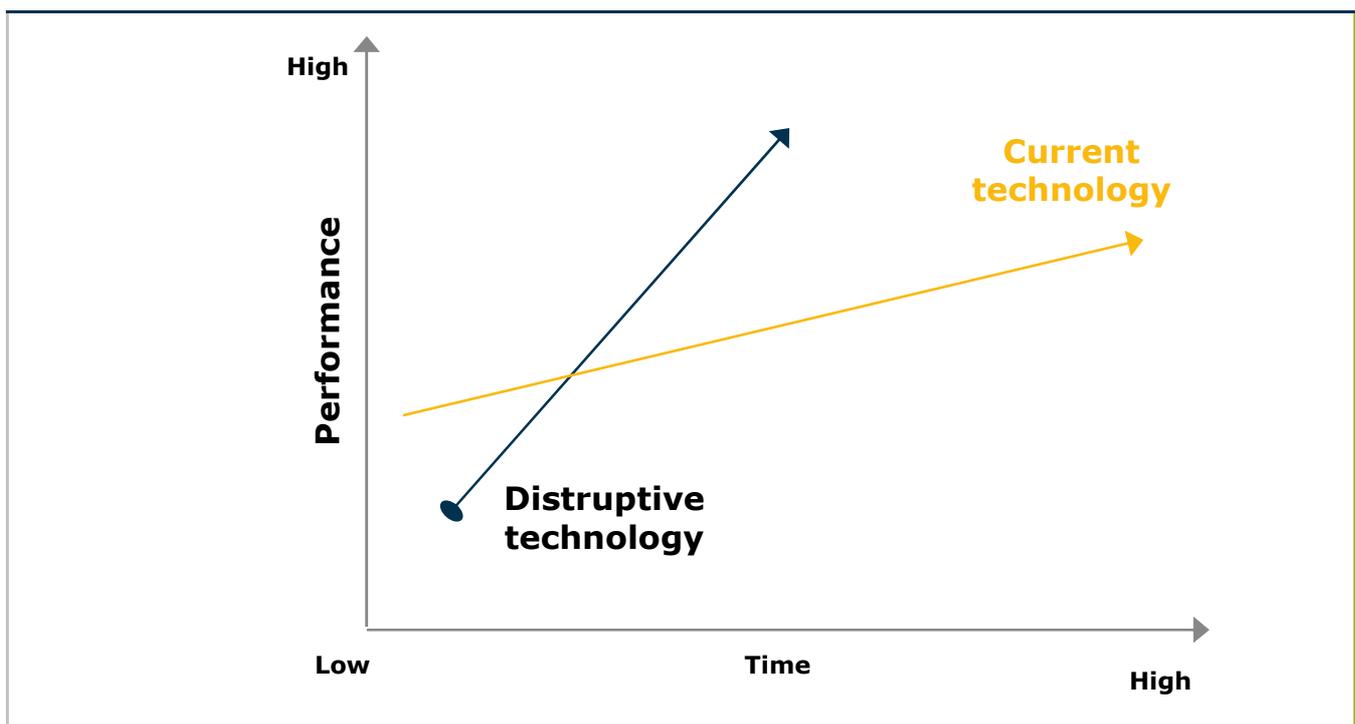


Source: Evalueserve

From a scouting perspective, recognising new ventures requires creating a landscape of potential opportunities. Customer insights and disruptive innovation trends can provide indications of new business opportunities. While disruptive technologies are comparatively easier to spot by implementing comprehensive monitoring programs, converting these opportunities into successful business programs rarely happens. For example, touch screen technology was widely known to incumbent players before it matured and was brought out successfully by Apple, and this development influenced the user interfaces of other devices to a great extent. While conducting an analysis of disruptive technologies,

Clayton Christensen analysed why successful incumbents often fail to adapt a disruptive technology at an early stage. He found that any new technology generally has a low performance value when compared to existing technology. Incumbent players lose interest in disruptive technologies at this stage since they are fascinated with high performance technologies. While many of these disruptive technologies fail over time, some show a remarkable improvement and surpass the performance of existing technologies, thus blindsiding the incumbents.

Figure 9: Disruptive Technologies



Source: Joseph A. Bower and Clayton M. Christensen, *Harvard Business Review*

Not only is a comprehensive monitoring program required to spot early trends, but a regular update is also required on technologies of interest. Patent literature could come quite handy in understanding the evolution of the technology over time. By studying the problems being solved, one can make an educated guess on technology development over time, and whether it has the potential of disrupting the market in future. Yet again, the backbone is a platform that can support monitoring of opportunities, which is run by smart analysts, and which can be accessed through-out the organisation.

Conclusion

Any organisation considering scouting could tap into consumer insights, or into the technology/business models of business partners, other businesses, universities, start-ups and suppliers. Due to the resources-intensiveness of the process, a well thought strategy that combines tapping into the right sources is required.

Any idea passes through the R&D, patent, development team and the marketing department. Therefore, the scouting team should have representation from all the key functions, with stakeholders agreeing to a common agenda. While quick wins are always advantageous to show early success, the

team and its backers should realize that ground-breaking inventions are not seen everywhere and all the time. Smaller or less important inventions can be combined or further developed to generate the next breakthrough. Thus the spirit of “designing” rather than “borrowing” should be kindled.

A knowledge management system may be a worthwhile investment. The knowledge management system should be accessible throughout the organisation so as to ensure that anyone anywhere in the organisation is aware of the developments within his or her areas of interest, and can in turn enhance the system with his or her knowledge. Such tools may also enable in-sourcing of knowledge in order to supplement the internal knowledge. A decade back, Eli Lilly developed an online tool to allow its researchers to post a challenge for review by a network of scientists and academics around the world. Anyone providing an answer to the challenge was rewarded. The tool was a major help to the researchers, and the business model was so successful that it eventually evolved into an independent business model called ‘Innocentive’ and was spun out from Eli Lilly. A study showed that for 100 problems posted to Eli Lilly’s internal experts, a solution or advancement was found in 80% of the cases. Similarly, for 40 external challenges posted, the success rate was a healthy 80%. Success of such networking tools reiterates the fact that opportunities that originate from human interactions will always remain essential and cannot be relinquished.

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About Evalueserve

Evalueserve is a global specialist for knowledge processes with a global team of over 2,500 professionals. As a trusted partner, Evalueserve analyzes, improves and executes knowledge-intensive processes and leverages its proprietary technology to enhance efficiency and effectiveness. Evalueserve has dedicated on-site teams and scalable global knowledge centers in Chile, China, India and Romania, which provide multi-time zone and multi-lingual services.

Evalueserve's knowledge solutions include customized research and analytics services for leading-edge companies worldwide. By working with Evalueserve, clients benefit from higher productivity, improved quality, freed-up management time, better access to knowledge and information across all parts of the company, and adding new capabilities to their organization.

About the Author

Nitin Chaudhary joined Evalueserve in November 2004, after graduating from Indian Institute of Technology, Delhi. Currently, he is the Client Executive for Denmark and south Sweden. Prior to joining the sales team, Nitin was part of the IP operations team where he gained experience in working and managing patent drafting, prior art search, overlap analysis, patent portfolio management and landscape analysis projects. During that time, he handled multiple accounts, with his team developing expertise in litigation support services. Nitin has a strong focus on role of patent analytics in innovation growth, a topic that he has spoken on at several occasions. Nitin has a B.Tech. in Industrial and Production Engineering from Indian Institute of Technology, Delhi, India.

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