



PART TWO
**Ideas and
innovation**

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Whole company innovation

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*Innovation is becoming a group sport, says **Garrick Jones**, a research fellow at the London School of Economics and a partner at the Ludic Group*

The collective knowledge in any commercial organization contains a wealth of contextual information – a vital source of ideas for innovation. Nobody knows more about the market, customers, issues, trends and opportunities than those who are working with these realities on a daily basis.

The question is how to best get at that knowledge in a way that takes maximum advantage of it and leads to real innovation in products and services?

We call this approach the whole company approach to innovation. It is a multi-layered, yet simple combination of people management, design events, product research and development, and lean continuous improvement principles that lead to rich, innovative outcomes. Through careful sequencing of multi-disciplinary events throughout the design process, new products and services are informed by the knowledge of those closest to the market. A model for this could be continuous cycles of learning, creating and communicating,

The nature of work is rapidly changing. Most innovation and production is project led, powered by workshops that disappear after its goals are achieved. This is becoming as true for aircraft production as it is for the development of new customer experience-based products in the service industry.

The rise of the Internet has also led to new conditions for work. On the one hand increased customer intimacy and knowledge, and on the other the loss of proximity between working teams. Teams may be working on components of a solution across geographic and time boundaries. The time that teams are able to spend together has become increasingly precious. How can the most be made of those interactions?

One response to tapping into the contextual knowledge resources of the workforce are Design Workshops (also known as Lab Events). No longer is innovation the domain of the specialist removed from the real world, cooking up new ideas in a distant lab. Innovation is the product of many stakeholders collaborating to create unique solutions to existing problems, or creating new markets, and new types of customer experiences.

For reasons to do with the growth of the knowledge economy, innovation and competitiveness, organizations require new skills, and are under pressure to be 'porous' using networks, strategic alliances and partnerships to achieve their aims.

Today, the economic and competitive pressures on organizations to grow are increasing, it is the means and the design process by which organizations innovate that makes the difference. The trend is clear – those companies who are shifting toward open, collaborative and multi-disciplinary practices have the advantage.

The design and innovation value advantage is clear to see in companies such as Apple Inc, who have a market capitalization 20 times the book value of the company. The same is becoming true for Samsung and LG, or the Scottish firm Linn who have focused on Design and Innovation as their key differentiators. All of these companies are defining the game as much as competing in it.

It is not only this commitment that creates the value, it is also their commitment to Design and Innovation as a whole company exercise that enables these outcomes.

Innovation is a group sport

There can be no doubt that bringing new products and services to market successfully requires the broad cooperation of many very different teams beyond just the ideas merchants. Marketers, product and service designers, programme managers, IP lawyers, distributors, advertisers, supply chain managers, producers and packagers all have to be factored in. In the most successful cases teams are working in parallel, kicking off processes that are vital to successful implementation long before the finished product has been decided. Boeing created the 777 and had it certified on both sides of the Atlantic simultaneously. It is no longer cost-effective to allow isolated design phases and research to hand over an idea in search of a market. Today, ideas are developed and refined in conjunction with multiple stakeholders – customers, retailers, users, salespeople. Trust and flexibility are vital. Successful organizations create cultures of trust and enable flexible networks that promote mutual understanding, rapid learning and the ability to change course mid-stream. Competitive advantage can be described as the ability to learn, innovate or continuously reposition with respect to the competition.

Complex programme management requires many threads to operate in parallel. Alignment between these parallel processes is enabled by interaction and communication. Successful organizations, whether formally constructed or networks of affiliated companies, need to work hard at enabling both the relationships and the communication required. The best managers actively design opportunities to do so. As we move to a networked economy the concept of the linear supply chain has transformed into that of the non-linear value web. Successful organizations are able to identify the members of their value web and create opportunities where all these resources are working in harmony, and focused on a single goal – getting the products or services to market on time, on budget and desirable to the consumer.

IBM, Sony and Toshiba are working together on new IT products, Sony-Ericsson have had to work together to stay in the market, and have been innovative as a result. The micro-projector (soon to be found in every mobile phone) is a joint production by multiple specialist technology companies. However, open innovation practices are not only limited to extending the traditional boundaries of the organization into its value web. Today, everybody within the organization who has a stake in the outcome

of a project has a voice. This requires a different way of organizing projects; and very large-scale events or Design Labs are where the work is being done.

Collaboration, both formally and informally arranged, has significantly increased within organizations as a tool for strategic development, innovation, corporate education, and problem-solving purposes. Alongside collaborative practices, action research, activity-based systems and participatory media development are being employed as organizational processes for enabling active employee engagement. We call such approaches collaborative authored outcomes.

Spaces for innovation

Physical and virtual environments are evolving to support these new requirements for knowledge-led innovation.

Collaborative Learning Environments (CLE) are fully flexible workspaces equipped so that groups of different sizes may actively engage in learning-based decision-support processes. As group-based tools and techniques grow in sophistication, so too do the demands made on the environments in which innovation is taking place. Ranging in a typology from the informal to the highly structured, the improvised and mobile, the laboratory to the socially integrated, the physically static to the highly ephemeral – these structures are providing opportunities for the combination, and recombination of ideas through generative and instrumental mechanisms. Some exist as centres of decision-making, others exist only for the period in which the groups come together for a specific purpose.

Spaces for innovation are constructed fundamentally as learning and production environments – places where groups from across the disciplines and functions are able to get together to exchange contextually relevant information, and to put it into production. The idea is to put ideas into action there and then.

A physical environment

Imaginative environments for innovation full of toys, puzzles and books have been around for some time now. Everybody has seen the pictures of the Google offices. However, the playful interior often masks a serious infrastructure that means business. These workspaces are designed for creative work – and they often work very hard indeed. They are essentially theatres for large group work, which also contain smaller spaces to work individually or in teams. It may be possible to draw on the walls, but more significantly, there is ready access to information and focused databases, which enable rapid decision-making. There may also exist a team of people who are dedicated to capturing everything you produce and placing it in an easy to access web tool, seconds after you have produced it. These environments contain a matrix of electrical and audio-visual sub-systems in order to permit multiple configurations for group work and to ensure that when large groups get together, the experience is potent, useful and enjoyable. Where film-making has pre-production, production and post-production facilities to successfully create in a highly networked

creative environment, so too does the innovation industry. The products may differ but the techniques are very similar.

A virtual knowledge environment

The collective knowledge inherent in any commercial context contains a wealth of information. Such a database exists physically, virtually and socially, both within our heads and within groups or teams. Paying attention to the knowledge environment in which a group is innovating enables more powerful decision-making. A support crew captures all the information generated by participants, in every format; documentation, video, sound, handwritten, photographic and the web. Making this generative knowledge-base available to participants seconds after its creation allows them to be used as powerful reflexive resources. The capture and display of information in multiple formats provides instantaneous feedback to large groups. Through ever-more increasing cycles of feedback, a group is able to navigate its way through labyrinths of information. Providing documentation and knowledge bases for large groups as they move through cycles of creativity, design and production creates a narrative of the journey of their development, as well as cataloguing both the end goal and the iterations that were needed to achieve it. Beyond a single project, these virtual records become powerful learning tools for the next set of programmes coming after. They also provide context-rich records, which enable those joining the teams later in the cycles to understand what has been going on.

Online tools exist that enable asynchronous development of ideas across geographies and time boundaries. Collaborative authoring tools, participatory media, project management tools and other social software are enabling very large groups to exchange information. Online ‘jams’ are being held as events across a number of days, to specifically generate vast numbers of employees focusing their ideas on a particular topic or set of prototypes. Video conferencing allows people to exchange ideas at their desktops.

However, despite the sophistication of online tools, nothing can substitute for the assiduous sequencing of events and information that leads to the successful development of an idea from conception through the launch in the market. This is a process that will always require careful design and nurturing.

Prototyping, simulation and play

When a large group is engaged in collaborative decision-making, it may be useful to construct all manner of models of conceptual ideas, and to test them. Simulation, the playing of games, the construction of small worlds, testing of hypotheses, questioning, the reordering of information, scenario testing are all tools used for innovation. A collaborative learning environment provides all the resources required to do so. These may include construction materials for modelling, spreadsheets for financial modelling, large surfaces to write on and iterate ideas, surfaces for moving information around the space, screens for running simulations between groups, areas for role play, break-out spaces for groups to work in parallel, video facilities for groups to

create scenarios. Networked technology is enabling parallel work by groups exploring the contextual field as they work through group processes of defining and refining options.

Essentially, whole company innovation is about connecting the right team with information, design resources, processes and documentation in a manner that enables deep understanding of the landscape of information, critical exploration of alternatives and opportunity to prototype ideas – and launch them into the market.

Flexibility and communication in a value web is directly related to the quality of interpersonal relationships – establish multiple opportunities for these to develop

As a system moves through the cycles from innovation, proof of concept, piloting, testing to production, marketing and distribution, the qualities and skills required of teams change. These phases have their own distinct personalities and qualities and it takes a savvy manager to promote the context, attitude and environment that are required for each team within each phase to be successful. During innovation phases, teams function best if they are:

- autonomous;
- configured with the best members for the task;
- connected to customers;
- connected to your value web;
- skilled in disciplines associated with innovation;
- incentivized;
- measured.

Each phase in the lifecycle requires different skills to take the lead – in principle moving from the unstructured to the structured. Even self-organizing teams need to recognize that the leaders of creative phases are usually different from the leaders of piloting, testing, production and distribution phases. An important thing not to lose sight of though, is that as the baton changes hands, the teams are still checking in with customers and the entire value web. Rapid iterations and feedback cycles are best at all phases. Empowerment is vital – understand the acknowledged experts in the teams and let them make the decisions. Let packaging experts decide on packaging, let the logistics specialists decide on distribution, let designers make the design decisions. Flatten the hierarchies, and enable decision-making.

Check in with your value web

The opinions of your clients, employees, suppliers, customers and learning networks continue to be vital throughout the inexorable march to market. Encourage osmosis of ideas. In addition to generating ideas, you also begin to mobilize the users of the products, creating the buzz around the new products long before they are launched, and creating an influential user community in the process.

Rapid iterations and feedback cycles

Creating opportunities for rapid iterations and feedback increases the sophistication of the product. IDEO create project spaces and displays for their products in design and they are open for conversation with anyone who is passing. The products are always visible; the teams are always in close proximity to each other. The same holds true for the design of services, process flows, video scenarios and use-case descriptions enable the communication of these ideas. Encourage teams to build formal and informal feedback cycles into their processes, throughout the lifecycle of development and production.

Empowerment is vital

Flattened hierarchies only work when roles are clear and everybody knows who takes responsibility for what. Making these roles visible helps. This is not to say that everybody is allowed an opinion on everything – the eureka moment may come from anywhere on a team! However, the final decision should rest with the expert on the team.

The enabling role of leadership

The role of leadership within fast moving, complex networks is to enable teams to achieve their ultimate objectives – through facilitation, arbitration and demonstration. Leaders are required to be sensitive to changing moods of the network, to understand what blockages exist and to facilitate the opportunities for teams to solve the problems. Arbitration is vital when differences of opinion exist – to ensure differences are tested and to ensure that decisions are made in order to enable progress. Fundamentally, leaders model the behaviours they desire to encourage within the broader context of the programme.

Acknowledge the programme phase

Sensitivity to the phase of the programme enables a large group to be clear about what needs to be done and who needs to take the lead. Film production is a powerful example of this because it's so visible. Studio time is costly, and everyone is aware of the phases of production – from filming, to editing, to screen testing and distribution. Acknowledge the programme phase and acknowledge the phase leader.

Incentives and measures

Although teams need to be autonomous, it is important that members of the teams feel rewarded for the work they are doing. Most learning takes place in failure and the design process honours failure. High volume, low-risk failure! However, business success is also a factor of time and budget – and incentives to meet these targets are vital. Measuring the success of teams against understood criteria, established clearly at the start, provides security. Getting things to market requires clear goals and deadlines. Healthy competition between teams allows the bar to be continuously raised on quality, outcome and sophistication. Teams find a sense of flow when they are challenged and tested in an environment that provides the skills necessary to achieve. All successful innovation, at the end of the day, is about people having fun.

The state of the art collaborative learning environment represents a complex ecology of support systems, environment, tools and technical systems, production systems, learning systems, project management and process support.

These represent the infrastructures required to enable a whole company approach to innovation.

Garrick Jones is an academic, consultant and musician based in London. He is a partner of the Ludic Group, who produce innovation programmes, advise in the development and operation of Collaborative Learning Environments (CLE) and design-led innovation. His career includes director of Ernst & Young's Accelerated Solutions Environment (ASE) and director of the Innovation Unit – Innovate:UK. His academic research is focused on large-scale group work and he is the first 1851 Commission Fellow in Design where his research is focused on the power of games for educating design thinking in business. He studied at the University of Oxford, is a research fellow at the London School of Economics and Political Science (LSE) and a Senior Lecturer in Industrial Design & Engineering at the Royal College of Art & Design (RCA) and Imperial College. Further details from: Garrick Jones, Institute of Social Psychology, London School of Economics and Political Science, Houghton Street, London WC2A 2AE, UK; e-mail: G.A.Jones1@lse.ac.uk.

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Innovating out of recession

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*Following the Dyson report on 'Ingenious Britain', **Jacqueline Needle** at Beck Greener discusses the process for taking an idea and turning it into a winner*

The launch in the United Kingdom of the Apple iPad led to unprecedented scenes. Consumers, who had queued for hours, emerged from retail establishments holding their purchases high in triumph. Although the economy is in recession, and retailers are generally reporting poor sales, innovative new products still fly from the shelves. The new generation of HD, digital, flat screen TV is selling well, as is Dyson's bladeless fan. However, there is little interest in acquiring a new car, and why should there be when this year's model is indistinguishable from last year's?

It is not sufficient to develop a new 'must-have' product or service. The secret to innovating out of a recession is also for the innovator to keep control of that product or service. This means acquiring and retaining appropriate intellectual property (IP) rights, such as patents, designs and trademarks.

Losing penicillin

Penicillin was discovered by Sir Alexander Fleming, and its curative properties were established at the University of Oxford by Sir Ernst Chain and Lord Howard Florey. In 1945 Fleming, Chain and Florey were awarded the Nobel Prize for Medicine. And yet, in 1948 civilians in England were dying of tuberculosis because penicillin was not available in this country. At that time, the drug was available to civilians in Australia, and had been available to the US forces since they entered the Second World War.

In the late 1940s and early 1950s there was a view among scientists in the UK, and certainly at the University of Oxford, that it was unethical to patent medical products. To this day, British scientists still assert that a failure to patent 'dedicates the invention to the public'. The fact that penicillin was available in the USA and Australia, where the manufacturing methods and the drug were patented, and not in the UK, where there were no patents, underlines the error of these views.

The Dyson report

In March 2010, at the request of the then leader of the Conservative Party, David Cameron, Sir James Dyson delivered a report entitled 'Ingenious Britain'. Dyson's stated aim was to present measures that the new government could adopt to encourage British industry to develop and export new technology, and thereby propel Britain out of recession.

Dyson identifies that there are failings in British education and in industry. He wants to encourage young people to take science and engineering degrees and then to seek to work in industry. He also wants to encourage British industry to innovate. However, his main solution to address these failings is for government to provide financial support to innovating firms through the tax system.

Dyson also recognizes the dire performance of Britain in patenting innovations. He quotes the 2007 figures from WIPO (World Intellectual Property Organisation) for patent filings, which are:

330,000 – Japan
240,000 – USA
17,000 – UK

However, although he has been a vocal supporter of the need to patent, and has all his innovations patented, in his report Dyson does not address the failure of British industry to patent.

Why avoid protection?

The underlying distrust of IP rights generally, and patents in particular, which was prevalent in the 1940s unfortunately still exists. IP is perceived to be expensive, irrelevant to small and growing businesses, and difficult, if not impossible, to enforce.

However, by his use of the patent system, Sir James Dyson was enabled to manufacture and sell vacuum cleaners particularly profitably, and in the process he became a millionaire. Dyson licensed his patents to companies in other countries – for example, to a company in Japan – such that the worldwide manufacturing capacity for his cleaners was substantially increased. Dyson also enforced his patents against competitors, most notably Hoover. This enabled him to keep Hoover's versions of the vacuum cleaner off the market.

Difficult and expensive?

Individuals and companies can succeed, and can make money, without involving themselves in IP issues. However, there are risks in such an approach, and it may prove a costly decision. There are many examples of companies who have ignored IP completely only to be accused of patent or trademark infringement. It is possible for the launch of a new product to be stopped in its tracks by a court injunction, and the

expense of dealing with such accusations will be significant, and against a background where there can be no income from the product. Even worse, this unexpected expense could probably have been avoided.

IP does cost money, and if the issues are not understood, it can appear difficult. However, without IP, creativity cannot be captured and protected and it is this protection that enables ideas to be turned into wealth. The difficulties disappear with knowledge and Mandy Haberman, the inventor of the Anywayup Cup, has criticized SMEs for not having at least one person in authority who has been educated in IP.

Free IP rights

Not all IP rights cost money. Copyright and unregistered design rights arise automatically. All a company needs to do is adopt ‘good housekeeping’ to ensure that it can prove that the rights exist and identify their owner.

Original software and design documents need to be kept in a systematic way so that the date of origination can be established, and the creator or author identified. The company also needs to ensure that it owns the rights it uses in its day-to-day business. For example, a company commissioning a logo design for its own use will not automatically own the copyright in the resulting logo. A specific agreement will be required to transfer the copyright from the designer to the company.

Any proprietary information of commercial value should be identified and kept confidential. Employees should be made aware that such confidential information must not be divulged. Measures may also be taken to restrict the availability of confidential information within a company. Both the recipe for Coca-Cola and the exact composition of the batter for Kentucky Fried Chicken are still known to only a handful of people.

Companies can also freely search Patent Office records on the Internet to ensure that they are unlikely to come into conflict with existing rights of others. The easiest records to search are those giving information about trademarks that have been registered. A company can avoid future problems by ensuring that their proposed trademark or logo is not already registered by someone else.

Patenting costs

A majority of those made rich with the assistance of IP, such as Sir James Dyson, and Ron Hickman the inventor of the Workmate, have had ideas or inventions that have been patented. A patent can only help if it is valid, and a valid patent can only be obtained if the patent application is filed before there has been any public disclosure of the invention. It is essential that any new idea of potential worth is kept totally confidential to the company during the early stages of design or development. At some time a positive decision should be made as to whether patent protection is likely to be required. If it is decided that patent protection is not warranted then public disclosure can be made, but it should be realized that putting the idea in the public

domain also dedicates it to the public as the right to obtain patent protection in most countries has been given up.

It does cost money to pay professional patent attorneys to register trademarks and to draft and file patent applications, but the potential rewards are high. For the price of one full page advert in the *Daily Telegraph* it would be possible to cover the fees arising over a five-year period to obtain grant of a patent for a new invention in the whole of the European Union, in the USA and in Japan. The newspaper advert may be available for only 24 hours or so, whereas the patent could provide a platform for profitable trading for 20 years.

What protection should be sought?

If an invention has taken time and money to develop, will take further resources to get into the market, and is forecast to have a future, it is wise to take professional advice as to its protection. In such circumstances there is a very high chance that the invention will be patentable. Alternative forms of protection, such as a Community registered design, may also be available and might be commercially useful.

Where products and services are to be advertised and developed it is generally a good idea to register the associated brands and logos. Now it is possible to file applications for trademark registrations that cover the whole of the EU or a raft of countries worldwide. This has made trademark protection across countries readily affordable. If an innovative product is placed on the market with a strong, and protected, brand, a reputation is built up in that brand and a competitive product might be seen by the public as an inferior imitation.

Patent attorneys are generally very conscious of commercial realities and can suggest ways to get some protection in the marketplace even where the budget is small. However, a company with forethought might devote resources to an IP fund. This growing amount of capital can underpin the cash flow of the company in early days, and finance IP costs at a later date. There are also grants and awards available for development and patenting. The British Government, for example, provides R&D grants for projects of different sizes and EU money is also available.

Enforcement

It is commonly said that patenting an invention is a waste of time because the company will not be able to afford to enforce the patent. However, less than 1 per cent of all patents are involved in any dispute, and it is the existence of the patent, rather than of the invention, that provides the wealth-generating opportunities.

If the new product is patented, or is the subject of a patent application, the majority of businesses will pause before rushing to develop rival versions. In any event, it is generally only the successful inventions that are of interest to those who wish to copy. If a successful product is copied, it is capable of providing an income stream to fund litigation.

Jacqueline Needle has wide experience of advising companies in the procurement and use of IP. She has managed extensive patent portfolios, and has wide experience of patent drafting and of patent prosecution in many countries. Jacqueline holds a Litigator's Certificate, which gives her the right to conduct litigation in IP matters in the English courts. Jacqueline has an Honours degree in Electrical and Electronic Engineering awarded by the University of Leeds, and an LL.M in Advanced Litigation from Nottingham Law School. She is a partner of Beck Greener in London and can be contacted at: jneedle@beckgreener.com; tel: 020 7693 5600; the Beck Greener website: www.beckgreener.com.



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Exploring patent information

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Dean Parry, technical director at Patent Seekers, discusses how to search patents to identify innovative products and reveal the competitive landscape within particular markets.

Some of the most successful companies utilize patent information to gain strategic information about markets and competitors. They know expert patent knowledge can provide the key to success in today's highly competitive markets.

Patent database information

With over 50 million patents on worldwide patent databases, there is a wealth of information (much of which is not available anywhere else) for companies to explore and utilize. These databases provide information on patents at different stages (application stage, granted or dead) but they are all published for the public to view.

In general, patents go through a pre-grant stage where they are being assessed by a particular patent office via search and examination, and if successful, a post-grant stage where a patent has been granted by a patent office.

Understanding how patents develop can provide more accurate information on the patent strength of competitors and whether particular products are currently protected.

The following list details the different stages for patents:

- 1** If a patent is in the application stage this means it may or may not be granted (be put in force by a patent office) and there are many reasons why it may fail; for example, lack of funds, failure to meet statutory requirements (eg the invention lacks novelty and/or inventiveness). A GB or European patent (known as a patent specification or spec) in the application stage would have an A (or A1, A2, etc) suffix and the granted spec would have a B (or B1, B2, etc) suffix.
- 2** If a patent is granted, this means it has been put in force at some stage. *However, it does not mean that it is currently in force:* the patent may have subsequently died.

- 3 A patent may have died for many reasons, eg its 20-year life has ended, it's been revoked due to evidence put forward against its validity, failure to pay renewal fees, etc. However, there are certain situations where a patent can be reinstated and certain inventions can get extended protection beyond 20 years via supplementary protection certificates (SPCs), eg pharmaceutical inventions.

The above information can give companies access to the latest technological innovations, market trends and the companies that have control over areas of particular technologies.

If a patent relates to a product of interest, a company can discover the owner and see whether the patent is granted and in force.

Searching patents

There are a large number of patent databases available to carry out different levels of patent searching and analysis. The best places to start a search would be Espacenet or the SIP databases and Google. These allow free searching to be carried out by using keywords, classifications and company names.

Any patents found through these databases may not give the full picture because each patent may have many patent family members, eg a UK patent may have other patents connected to it via countries outside the UK such as Germany, France and the US. These family members would need to be found for each patent. There may also be multiple patents relating to different aspects of a particular product.

Once all the patents have been found, eg for a particular company, the results can be displayed based on the number of patents for subject matter, countries, publication dates, etc. These can be displayed as a patent map or landscape, which show trends and how patents may be linked.

Making decisions based on patent information

Patent information, maps or landscapes can provide vital strategic information to companies:

- Trends for a particular technology, ie the number of patent applications for a particular subject matter over time.
- Potentially identify the next generation of products your competitors are developing.
- The companies most active within a particular field (and when they were most active).
- The countries that have granted patents for particular technologies (these give a good indication of where the best markets are for a particular product).
- Partnerships between companies working on a technological area.

- Areas of technology that have very little patents could indicate a good option for research.
- Areas of technology that have a large number of patents may indicate a high probability of litigation or a very high cost for due diligence (identifying any patents in force for a particular subject matter).

The above information can be used to develop a working strategy to either avoid potential problems and/or to identify new products and new areas for research.

The pitfalls

There are a number of problems associated with patent searching and subsequent decisions that are made off the back of the information found. The problems include:

- Delays in database updating of information.
- Data incorrectly stored on databases.
- Only partial information for particular patent territories.
- Partial or no language translations for foreign patents.
- Information stored in different formats for different databases.
- Particular assignee and inventor names can be difficult to pin down.
- Google allows third parties to buy the data you search on.
- Google statistical tools allow website owners to view the search terms used by third parties to navigate to their website.

The best way to overcome the above is to use multiple databases (including national registers, eg The Intellectual Property Office in the UK, the European Register, etc) to maximize coverage and make sure you properly research a particular company so that you know who their partners/subsidiaries are and who are the directors of these companies. For Google searching, you should not use undisclosed information when searching with this and similar search engines.

Final word

Be aware of the dangers of drawing conclusions based on limited or inaccurate information. There is no substitute for properly researched patent information and if you follow the above advice it can provide excellent information for you to be able to improve on your knowledge base with regards to competitors and current products.

Companies that regularly analyse patent information, in their area of technology, automatically have a big advantage over their competitors. They are able to see areas lacking in development and may even be able to identify where the next innovation should be. So the best advice, for companies developing a product and/or developing

a market strategy, would be to know your market, the patents that control it, the companies that own them and the patent applications that control it now or may control it in the future.

Useful links

Free Patent and Research Databases:

Espacenet

<http://ep.espacenet.com/>

Software for Intellectual Property (SIP)

www.patentfamily.de

US Patent Office search facility

<http://www.uspto.gov/patft/index.html>

GoogleScholar

<http://scholar.google.com/>

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IP challenges for technology ventures

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*At the start, your intellectual property can be ad hoc, but you have to become more systematic, as you grow, says **Nick Sutcliffe** at Mewburn Ellis*

Intellectual property (IP) in the business world is the equivalent of the ‘bagsy’ in the school playground. It establishes exclusive rights to business’s technology and brands that prevent other people from imitating them and allows a business to distinguish itself from its competitors.

As a business grows and the commercial stakes get higher, the exclusive rights that are provided by IP can make an increasingly important contribution to the success of the business.

Value of IP

IP can be valuable to a business in many ways. The ability to actively exclude imitators from the marketplace allows a business to reap the full reward for the development of a successful technology or product. By allowing a business to distinguish its products and services from those of its competitors, a business can build up the prestige and reputation of its brands.

A strong IP portfolio may also attract investors to the business and may even generate revenue streams in itself through out-licensing.

IP encompasses a number of different legal rights. However, the core IP of most growing businesses is likely to be the patents and patent applications that protect their technological innovations and the registered trademarks that protect their brands. Patents and registered trademarks are acquired through a lengthy and often costly application process, and most businesses will engage legal professionals, generally specialist patent and trademark attorneys, to handle this process.

Although some businesses have no dealings with IP in their early stages, others have a close involvement with intellectual property from their very beginnings. For example, many technology businesses are started-up or spun-out around a portfolio of patent applications protecting a key technology.

Whatever their beginnings, all businesses growing beyond their early stages should explore the possibilities and challenges presented by their own and other people's IP in order to maximize their potential in the marketplace.

IP management challenges

Growing a business presents management challenges in all kinds of areas, including IP, and a major challenge is to ensure that the IP which a business has accumulated in its early stages is effectively managed.

Most early-stage businesses own a relatively small amount of IP, which can be managed in an ad hoc way. Typically, one of the company directors puts his 'IP manager' hat on as and when decisions are required and there are costs to sign off.

However, in a growing business, the amount of IP and the time and resource needed to manage it also grow. Sooner or later, an ad hoc approach to IP management may need replacing with a more systematic and planned approach that gains the maximum value of the IP assets of the business while keeping costs under control.

Effective IP management

Busy executives with many demands on their time can find it easy to fall into a reactive style of IP management in which decisions are only made in response to a final deadline. However, by adopting a more proactive mindset, an executive can take a more strategic view of the IP portfolio. This strategic view can then inform each individual issue, as it arises.

Application procedures for patents and registered trademarks generally involve meeting a series of legal deadlines set by patent offices or other authorities.

Many (but not all) deadlines can be extended by paying governmental fees. For many businesses, the temptation to consign IP-related decisions to the 'too hard' pile until all the extensions are used up and the final deadline is looming is irresistible.

However, not only are the costs of this reactive approach likely to mount up over time, but also decisions made under pressure at the last minute may not always be consistent with any overall strategic vision.

Effective management usually involves meeting deadlines without taking extensions of time (or only with good reason). This avoids unnecessary costs and pestering from frantic IP professionals seeking instructions. Difficult decisions on IP matters do not go away for being put off. Fronting up and dealing with them promptly may save considerable costs over the long term.

Realistic expectations

Patent offices and other authorities only grant applications that comply with certain legal criteria and these criteria can be enforced rigorously.

In applying for IP protection, it is important to have a realistic view of what is likely to be allowable and what is valuable to the business as it moves forward.

For example, although exclusive rights to an entire technical field may be valuable to the business, it may be unrealistic to expect this level of protection. Unswerving pursuit of broad patent claims, in the face of obstinate objections, may be expensive and ultimately futile.

Conversely, while protection for a narrowly defined technical innovation may be relatively easy to acquire, this protection may be easily avoided by competitors and therefore have no value to the business. IP with no value is a waste of business resources.

Effective management therefore needs to set realistic expectations of what is achievable and possess a clear idea of where the value of the IP to the business lies.

Keeping IP aligned with the growing business

The commercial interests and activities of a business often change and develop significantly as it grows.

Effective IP management needs to prevent the IP portfolio from diverging from the current or future interests of the growing business.

Out with the old...

IP can be expensive. However, despite the cost, many businesses cling on to redundant IP that does not provide any effective protection for their commercial interests. Often, this is a result of ineffective management. For example, it may simply be that no one has noticed that the IP is now redundant or no one is prepared to make a final decision to abandon it.

Some businesses may see redundant IP as having 'trophy' value. A large IP portfolio enhances prestige regardless of its quality or actual value to the business.

In other cases, redundant IP may be maintained for sentimental reasons. For example, the IP may cover the original technology of the business, even though the business itself has moved on. Sometimes, only an obstinate determination to show the world that the technology is protectable keeps IP alive long after it has lost all its value to the business.

There are situations however, where there are sound reasons to maintain redundant IP. For example, the IP may be licensed to a third party and provides a revenue stream that justifies maintenance of the patent applications. Alternatively, a business may take a strategic view that a technology is sufficiently close to its current activities to be worth keeping out of the hands of competitors.

For IP management to be effective, IP that has become redundant to the business needs to be identified and culled, if it is not providing real value to the business.

... In with the new

As a business grows, new projects and activities may provide opportunities for extending its portfolio of IP.

Communication within a small company is not usually a problem. However, in a growing business, business and technical functions may be split between different offices, buildings or even continents and lines of communication may need to be actively established to identify IP opportunities. For example, staff working day-to-day on technical projects may not recognize IP opportunities in their work and bring them to the attention of those responsible for IP. Regular meetings between business and technical staff may be needed to tease out innovations and assess their value to the business. Innovations that have commercial value may then be taken to an IP professional to see whether IP protection is feasible.

Opportunities for IP protection may be lost if information is publicly disclosed before the appropriate applications are filed. To manage this risk, businesses may require staff to submit manuscripts and other disclosures for review before submission.

Other people's IP

As a business grows beyond the start-up phase, awareness of the other players operating in the marketplace becomes more acute.

Disputes over IP are invariably costly and time consuming. Having an awareness of the IP landscape allows a business to steer clear of competitor's IP and avoid disputes. Similarly, an awareness of the IP landscape may allow the identification of licensing opportunities to bring new technologies into the business to drive growth.

A business with effective IP management is likely to search IP databases regularly to identify these threats and opportunities.

Running the IP portfolio

Very few early-stage companies employ an IP professional and the IP management hat is generally one of many worn by one of the company executives.

As a business grows, the amount of IP management increases, while the amount of executive time available to deal with it decreases. Many growing businesses employ an IP professional to manage their IP portfolio. A legally qualified attorney may be an attractive hire in order to save on the costs of employing external legal professionals. However, a qualified attorney commands a high salary and, if the attorney will in fact be spending his time on in-house IP management tasks, it may be more cost-effective to employ a non-legally qualified IP manager.

Other growing businesses may delegate IP management away from senior management. For example, project managers may be responsible for the IP relating to their particular project. This makes it easier to keep the IP and the technology

aligned, but the fragmentation of IP across the business may present other management challenges.

Conclusion

As a business grows beyond its start-up stage, IP plays an increasingly important role in providing a competitive edge. When efficiently managed and focused on the demands of the business, IP can be as powerful a tool in the marketplace as the 'bagsy' is in the playground.

Nick Sutcliffe is a partner in Mewburn Ellis LLP, one of Europe's premier IP firms, with over 60 patent and trademark attorneys and technical specialists, covering the full range of intellectual property issues: patents (in all technology areas), trademarks, designs, industrial copyright and related matters.

Nick Sutcliffe has a BSc in Biochemistry from the University of Bristol and a PhD in Biochemistry from the University of Leicester. Nick spent four years working in industrial research and development before joining Mewburn Ellis in 1997. He qualified as a chartered patent attorney and European patent attorney in 2001 and became a partner at Mewburn Ellis in 2003. Nick's work is mainly in the biotechnology field.

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Making open innovation work

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*Open innovation creates partnerships that give early-stage ideas speed and scale, but it can turn into a free-for-all. **Maxine J Horn**, CEO at British Design Innovation, reviews the terms on which the creativity of professional originators can best be released*

Open innovation is widely considered to be the ideal business growth model going forward. Unfortunately, many people also appear to believe that it denotes a completely open free-for-all, where ideas can be purloined at will. For that reason, professional originators – those industrial designers, inventors, scientists, technologists, design engineers and others whose living depends upon creating new-to-market products, processes and propositions – have always felt threatened by open innovation’s poorly regulated remuneration structure. Until now.

It is already accepted that knowledge transfer has a tradable value: universities consistently trade and transfer knowledge commercially with industry – an activity encouraged, promoted and funded by the government. (In some regards knowledge-based professional originators are little different from universities, apart from the fact that they have the know-how to take the knowledge further and translate it into market applications in the form of user-led products, services and propositions. To commercialize it to its maximum, in other words.)

But amid rising confusion about what the differences between ‘open innovation’ and ‘open source’ actually are, misconceptions abound – with major implications for the intellectual property (IP) sector, innovation and industry if things are not ironed out.

Professional originators utilize their know-how and expertise to progress unrefined ideas to a state of applied knowledge, yet current IP protection is incapable of drawing a distinction between ill-defined early-stage ideas on the one hand, and fully-rationalized knowledge- and solution-based business propositions on the other. A new intellectual property right (IPR) that protects pre-patent concepts created by professional originators would stimulate open innovation on a truly massive scale, so it is a hotly debated topic.

Put simply, open innovation is where industry seeks external sources of innovation. In a world of widely distributed knowledge, companies cannot afford to rely entirely on their own research, but should instead buy or license processes or inventions (eg

patents) from other companies and individuals. In addition, internal inventions not being used in a firm's business should be taken outside the company through licensing, joint ventures, spin-offs etc.

In fact, open innovation can be broken down into five distinct areas: open source, consumer- or user-led crowdsourcing, expert knowledge-led crowdsourcing, proposition sourcing (involving entrepreneurs), and concept sourcing (involving professional originators). All are outlined in more detail below.

1. Open source

New and shared knowledge, enabling reputation and status-building

Open source is a practice most common in software development and digital productions, where enthusiasts (of music, for instance) share knowledge, code and digital files to build reputations or contribute to end products.

Software companies use open source to encourage web developers to build on their platforms in order to make money from upgrades and end-user licenses for support products, and thus have a vested interest in free shareware. In this sense, 'free' does not mean valueless.

Shared ideas can become valuable if those ideas make a contribution to a greater end product that is worth money. In a structured framework focused on a common goal and with profit-share agreements in place, this is considered co-creation. In an unstructured open source environment, enthusiasts or new practitioners are often more interested in enabling and reputation-building than making money.

The results of publicly funded university research discoveries are made freely available through journals publication, allowing open source access to all who purchase or download them. However, although universities are strongly encouraged to commercialize results using traditional IPR and knowledge-transfer methodologies, small discoveries and new technologies are chasing problems to address but lack any real market application. So this is a form of open source, though not necessarily an immediately practical one.

IP structure: A Creative Commons license was introduced some years ago to denote materials that are free to use without seeking permission. Open source can build new knowledge; spawn innovation, new products and businesses. It serves a purpose to those who make a personal decision to work in such a way.

2. Consumer- or user-led crowdsourcing

User insights, ideas-based competitions, PR, no defined problem, no safety or quality control

User-led crowdsourcing is a modern form of consumer insight research that has replaced the small focus groups used by traditional market research firms. Large corporate brand owners launch competitions, often through PR firms, to source new product ideas and improvements from a consumer or user base; an expert panel sifts

the ideas and declares a winner. Although the ideas submitted are of variable quality the PR value can be beneficial. Occasionally a good submission can lead to a commercial payback.

IP structure: In general these types of competition do not attract professional originators due to the negligible IP terms, where all commercial advantage is often assigned to the brand owner running the competition as a condition of entry. Rewards rarely exceed a small cash prize, free product samples or a little PR.

3. Expert knowledge-led crowdsourcing

Intellectual knowledge, web-based, proprietary data and defined problem, solution-driven, quality and safety-based

This type of crowdsourcing, often promoted via a web portal, seeks to attract professionals, academics and subject enthusiasts. It relies upon proprietary knowledge and a defined problem being placed in the public domain for problem-solvers to find and resolve. Speculative knowledge-sourcing of this kind is less successful than that which offers significant monetary reward to the problem-solvers.

One of the more successful examples of expert knowledge crowdsourcing is offered by Gold Corporation, a Canadian gold-mining company then in financial difficulties. The company knew they had more gold on their 20,000-hectare property, but didn't know where. The cost of searching for gold was going up, while successful finds were going down. The CEO decided the only way out of the crisis was to admit the problem and mount a competition, with a major financial incentive to attract as many external parties as possible.

The Gold Corporation Challenge was launched with prize fund of \$500,000 to be awarded to those who provided the methodology for finding gold, and required the company to publish 45 years of proprietary geological data online. Responses from 1,400 interested parties in 50 countries were received, the majority of whom understood geological data. Gold Corporation's 14 geologists reviewed the online proposals, filtered the submissions to 25 semi-finalists, then sifted down to three finalists who were asked to submit sophisticated proposals.

The solvers identified 110 sites, 50 per cent of which were new and 80 per cent of which produced gold. Eight million ounces of gold were found. Gold Corporation's value before the competition was \$100 million and after the competition rose to \$9 billion, and the company now owns the world's richest mine.

Open crowdsourcing of this nature was unprecedented in a sector as commercially secretive as mining, but was a risk the CEO was willing to take to enable expert problem-solvers to identify gold deposits and save the company. Although Gold Corporation risked open access to its proprietary mining data for the Challenge, the expert-led problem-solving it attracted literally paid dividends.

4. Proposition sourcing (involving entrepreneurs)

Every year, thousands of entrepreneurs spot a gap in the market and develop new business propositions. But while the digital age, the Internet, social networking and so forth have arguably made reaching the customer easier and more cost-efficient, business start-up costs are now at a minimum of £5,000 for an individual operating on cheapest options and £40,000 to £100,000+ for start-ups seeking to launch a professional brand. Costs include website creation and, for online transactions, a bank account, a payment system, telephone lines, brand and supporting infrastructure, while some require a terrestrial retail space as well.

Those who lack the financial resources, creativity or know-how to bring their propositions to market unaided are reliant upon partnering with other businesses, so need to be assured of confidentiality when seeking to negotiate deals at pre-commercialization stage. However, although open innovation is a good way to harness the knowledge, know-how, skills and ideas of large numbers of people, if ideas are considered to be free to be commercialized by those with the wealth and resources to grab them themselves, what motivation exists for entrepreneurs to participate?

A proper IP right with a regulated rewards mechanism needs to be in place if open innovation is to attract entrepreneurs in this situation.

5. Concept sourcing (involving professional originators)

Professional marketplace, user-centered, creatively articulated concepts to proof-of-concept stage

Here we arrive at arguably the most mutually rewarding of open innovation partnerships – but also the most contentious on the IP front.

When professional originators (who predominantly work in the creative industries) are commissioned by brand owners on a fees-for-services basis, they are paid for their knowledge, know-how and skill in creatively executing a brief. In this model, brand owners generally own or buy-out any IP arising. In open innovation calls, however, or where professional originators generate their own concepts without a formal brief, brand owners do not pay fees. Instead the originators seek to trade fully articulated propositions based on their customer- and sector-led knowledge and know-how with brand owners on a shared risk-and-reward basis.

In order for originators to communicate the value of such propositions, it is often necessary to also communicate a good deal of the knowledge supporting them. And quite often the propositions are not subject to patents, but might instead be proposed brand extensions, a new business model, the evolution of an existing product or service, or a new product, packaging or service proposition.

The problem confronting professional originators in these situations is that their knowledge-based propositions are often treated in the same way as ill-defined early-stage ideas proposed by those without the know-how, creativity or resources to take

an idea to proof-of-concept stage. In situations where brand owners refuse to sign non-disclosure agreements (in case they impinge upon concepts the owner could potentially already be working on), originators are totally unprotected from misappropriation of their propositions by those who believe that *all* pre-commercialized or pre-patent ideas are free to use as they choose, regardless of the stage they are at or the expertise put into formulating them.

Pre-patent concepts, including unprotected designs, 3D applications, service design, business models, propositions and processes, are consistently purloined by others on the basis that ‘ideas cannot be protected’. It is as if some companies believe business meetings are held under a Creative Commons license, which denotes that a piece of work, code, image or file is open source and may be utilized by anyone for any purpose without requiring permission.

But professional originators’ propositions are tradable knowledge-based solutions developed by industry experts with requisite know-how – in effect, proprietary but unprotected information. And these originators do not in the main set up competitive brands and companies, but more often seek to transfer knowledge and license concepts to brand owners.

I have personal experience of presenting propositions to organizations under non-confidential terms in order to enable negotiation to take place under normal conditions of business confidentiality – only for the same organizations to later assert that such exposure is in the public domain. But public domain is exactly that – ideas that have been fully exposed on public platforms such as a journal, conference or website.

It is disingenuous to assert that a one-to-one business meeting is in the public domain. All businesses are subject to a duty of confidentiality and most modern businesses have a Corporate Social Responsibility policy in place. They are duty-bound, if not legally constrained, from acting in an unethical manner through the misappropriation of innovative works brought to them by the owners with the express intent of negotiating a mutually agreeable purchase of such works.

So where do we go from here?

A new trading model is required that respects proposition ownership and value

If open innovation is ever to reach its full potential, a new trading model is required that respects the ownership and value of pre-patent concepts and propositions devised by professional originators and described in commercial negotiations with route-to-market businesses. Such a trading model needs to be based on unimpeachable business ethics, best professional practice and permission-based commercialization. And it needs to hand some semblance of pre-patent IP protection back to the professional originator.

As noted above, the bad news is that the market cannot rely upon ethics alone. The good news is that a new digital barcode system that could prevent the misappropriation of confidential new ideas and proprietary information is to be rolled out. Creative Barcode™ denotes ownership of propositions and concepts that require the owner’s permission to exploit them, and offers prospective buyers the route to collaboration,

purchase or licensing of any given proposition idea. And no element of the proposition, however relayed to the interested party, may be commercialized without the written permission of the originator.

This innovative business model bridges the gap between walking naked into a business negotiation and a non-disclosure agreement. It removes any doubt about whether and when route-to-market businesses are free to utilize an originator's idea, and also comprises a beneficial co-creation and innovation management tool for brand owners, protecting them from litigation.

The misappropriation of originators' previously unprotectable work has been the biggest single issue affecting industry and the IP sector, and has become an enormous barrier to open innovation and knowledge exchange.

Luckily, the new rules of engagement in the trading model outlined above are not complex: 'Do not commercialize the work of others without their permission and an agreed commercial remuneration on mutually agreed terms.'

Clear enough? I think so. Now let's get to work trading propositions and generating wealth.

Maxine J Horn is CEO of British Design Innovation (BDI), the trade association for designers and innovators. She initiated Creative Barcode and hand-picked the co-creation team. With over 20 years' experience in the design, innovation and knowledge transfer sectors of the creative industries, she is a member of the UKIPO B2B Strategy Group, a pioneer of open innovation and an acknowledged opinion-former and author. Maxine was a runner-up in the First Women Awards 2010 for business pioneers.

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