INDUSTRIAL DESIGN CONSULTANCY

Inventors Guide

To make the product development journey smoother, the Industrial Design Consultancy team has put together the IDC Inventor's Guide. With an introduction to research and development, patents, confidentiality agreements and costs, as well as advice about seeking outside investment, licensing and marketing, the Inventor's Guide help you plan and assess how to profit from your idea.

Edition 1

Chapter 1: Introduction

Inventing something can be a thrilling experience. Unfortunately it can also be a costly and very long process and the reality is that most ideas don't make it to become successful products. For a specialist product design and development consultancy like IDC, solving problems and turning ideas into reality is something we do every day, but how do you make sure the product is a success. Just making your idea isn't enough. You need to make sure it will make you money.

To help you take the first steps with your invention IDC have created this guide to break the process down into five key steps:

- Assessing your idea
- Protecting your idea
- Developing your idea
- Selling your idea
- Funding your idea

Chapter 2: Assessing Your Idea

This is the starting point for any new invention and in many cases also the end. Not all inventions have the potential to be commercially successful and there are numerous reasons why people decide not to pursue the idea. This is the stage where you find out if your product has already been thought of, whether the product is viable in a market and also if there is a market big enough that may need your product.

There are a few questions you have to ask yourself:

Has your invention already been thought of?

Frequently inventors have ideas that already exist, either as products or as patents in which case it is unlikely to be worth pursuing. In many cases a similar but not identical product or patent will exist, in which case you need to be sure your idea offers a big advantage. Thoroughly searching the internet and patent databases (see details later) is time well spent.

Who would use your product?

Is your product aimed at consumers or businesses? Is the market the whole population; is it national, gender specific or aimed at a specific demographic? It is useful to imagine a typical or range of typical uses. If you have close, trustworthy friends and family who fit this profile you can get their opinion but beware influencing their reaction. You need to be sure they aren't just saying they like it because they don't want to disappoint you.

What are the reasons people will buy your product?

What problems does it solve that aren't solved by existing products or what advantages does it give? People have managed without the product until now, so why should they suddenly need or want it?

What is the potential size of the market?

This can be difficult to estimate but data does exist for sales volumes of most consumer product categories be it soft drinks, electrical appliances, furniture or medical devices. If such data is not available you may need to make an initial estimate from other sources, for example if you are designing a new baby toy you might use census data on the number of babies born each year to estimate how many such products are bought. When estimating the potential sales volumes be conservative - few new products will gain a market share of more than 5% unless they are truly revolutionary.

Can you protect your idea?

This is important as without any competitor company can copy your idea and use their market position and financial muscle to squeeze you out. The next section covers how to do this with patents and design registration.

What are the risks and difficulties you will face?

Developing, launching and profiting from your invention will be a long and complex process and problems can occur at any stage. Things to think about include; can you get the funding to develop it? Does the product require new technology to be developed? If so could there be problems or delays? Can you make the product for the target cost? Can you find distributors? Will consumers like it? Will retailers stock it? How will it be marketed?

What will the development and set up cost be?

There are many stages to developing a new product as explained in the Developing your idea section. The amount of work involved can vary dramatically from product to product. As well as the design and engineering costs other costs will include, prototypes, production moulds and set up costs, approvals and testing, initial production, shipping and storage. For a simple product these will be a few tens of thousands of pounds. For a complex product such as a medical device these can run into hundreds of thousands and even millions of pounds.

What is the target product cost and profit margin?

What will each product cost to make and what price can it be sold for? Most products are distributed through a supply chain with manufacturers, brand owners and retailers all handling the product. Understanding the pricing and margin each party needs to make is key to success. Many retailers will look to buy at half the consumer price or sometimes less. If you can't offer them the profit level they need at the retail price they think will sell then they won't stock the product. Do your research on the sector and retailers relevant to your product. What is the price of products of a similar size, type and complexity? Contact factories and retail buyers for initial price estimates.

What is the potential return on investment?

With information on the possible size of the market and profit margin you can make a very rough estimate of how much money the invention could make. Is it enough to pay back the development, set up, patent, distribution, administration, marketing and other costs? How long will the investment take to pay back? What is the best case and worst case? Does that make a good investment for you or an outside investor?

Finding the answers to these questions make take a bit of searching but will tell you whether the invention is worth pursuing. This process should be thorough but should not involve spending a lot of money. It may seem like a lot of bother but many of the answers to these questions can form part of your business plan (see later).

It is important to be unbiased and dispassionate in this analysis – it is easy to get so emotionally attached to your ideas that you ignore the problems and weaknesses of the invention. Remember most successful inventors have many ideas before they find the true winner. Deciding not to pursue an idea, which doesn't add up, is a positive result – it is better to save your money and energy for the great idea still to come.

Chapter 3: Protecting Your Idea

For the small inventor, protecting your ideas is critically important. If you don't have some form of protection there is nothing to stop a large competitor taking you idea and using their financial and marketing muscle to squeeze you out of the market. Patents are generally the best way to protect your ideas if they can be obtained but other protections such as registered designs, or trademarks and copyright also exist.

During the process of developing your idea it will be necessary to speak to individuals and companies who may become partners, investors, suppliers or customers. It is vital that this is done under confidentiality. A Confidentiality Agreement or Non Disclosure Agreement is the best way to do this. If you would like to talk to IDC about your idea you can download our NDA here, fill in your details and we will be happy to sign it.

Patents

There are three general requirements for your invention to be patentable. It must be novel, useful and not obvious. To count as novel your invention must be new, in other words; never publicly known, used, or sold anywhere in the world. If your invention is described in printed material or available to buy anywhere in the world it is not patentable. To satisfy the criteria for utility your invention must be useful. It must perform a function and benefit society in some way. Anything that does not perform cannot be patented. To avoid being classed as obvious, your invention must give new results and should not be just an incremental improvement over existing products. To be different in design alone will not get your invention patented.

It is advisable to use registered patent attorney to help understand whether you can patent your invention, what it would cost and the level of protection it would give. They can also help you draft you application and manage all aspects of maintaining and enforcing your patent rights. However before you instruct an agent and start incurring costs it is advisable to do some online patent research on your own. Using the various free online patent databases such as USPTO, Espacenet Google Patents, etc., it is possible to find many relevant patents and documents and gain a good idea about whether you idea is novel or not. If after your search, things still look positive or you are unsure what your search results mean, then taking your results to a professional patent attorney will help them get straight up to speed and reduce their search fees.

Once you have worked out that your invention is likely to be patentable there are a number of decisions to be made such as what, where and when to patent. Patenting your product in multiple territories is time consuming and expensive so it is important to think carefully before making your application.

What to patent?

How you draft your patent what you claim as your invention can have a big impact on the future earning potential of the idea. If your claims are too narrow and specific, competitors will be able find ways of avoiding infringement by making small changes. Conversely if your claims are too broad, the patent examiners may judge it is prior art (technology and inventions already public) or not inventive. A good patent agent will help you draft your application to get this important balance right.

When to patent?

There are generally two approaches to timing your patent application either to patent as early as possible, or as late as possible.

Patenting early means you are less likely to get beaten by a competitor registering the same or similar idea. If you know people are working in the same field, this could be important. The disadvantage of patenting early is that you have to pay fees for application, searches and examinations much sooner and potentially well before the product has been launched.

By contrast, making your patent application at the last possible moment, before the product is made public means money is saved. Because protection is given from the date of the first application, and one year is generally allowed for the search and examination process, you get at least one year of worldwide protection without having to invest heavily in applications, translations and patents agents for every territory. This can allow you to judge the success of the product, the potential in different markets and start potentially start earning profits before having to spend large amounts on patent protection. Another advantage is that your patent application can be based around a fully resolved and detailed product allowing it to be stronger and broader.

Where to patent?

This will depend upon which are the significant markets for your product and what you can afford. The US and the EU are the two biggest markets and so can offer cost effective cover relative to the size of the application fee but other markets are also significant and need to be considered carefully. By patenting late (see above) it may be possible to keep you options open.

Other Protection

If it is not possible to attain a patent or if you want further protect you idea, there are other ways for you to protect your intellectual property (IP)

Registered Design

A registered design can protect the aesthetic design of your invention. It is purely about the form and materials and does not cover how the product works or is manufactured. Design Registration is a relatively cheap, quick and easy process but is only available in certain countries, including the UK.

Trademarks

Trademarks are symbols that distinguish goods and services in the market place like logos and brand names. If your product has a certain name or logo that you want associated with it, it's worth getting it trademarked so that no one else can take the name and logo.

Copyright

Copyright is an automatic right, which applies when the work is fixed – in other words, when it is created or written down. It covers the printed documents, text, journalistic and literary works, images, music and video recordings. It has limited applicability to products but offer some protection of your work.

Chapter 4: Developing Your Idea

Undertaking a new product development requires a whole series of tasks to be performed. Typically the product design and development process is split into phases, each with distinct activities and deliverables. Every development has its unique challenges and so the order and breakdown of these phases should be arranged to address the key challenges and minimise the risk of development. Many inventors will look to license their invention and so the aim of the design process is not to get a product into production but to get an investor or licensee on board

The Full New Product Development Process

Details of the all the key stages of the product development process are given below and also on the services section of IDC's website.

User Insight

Researching and understanding the needs and behaviour of the potential users ensures that people will connect with the product - a key requirement for success in the market. Insights gained in the research stage often lead to new product innovations.

Concept Generation

This is where the skill, experience and creativity of the design team are used to generate designs, which address the identified needs and come together to create a vision for the successful desirable product. Design concepts can be presented as sketches, storyboards, simple models or fully photo-rendered images.

R&D

For technology led inventions, research and experimentation is a vital part of the product development process. Developing test rigs and experiments helps gain understanding of how to apply scientific and technical principles to create an inventive new product.

Patent Support

The process of developing an innovative new product needs to go hand in hand with the patent process to ensure as many of the important features of the product are protected and that competitor patents are avoided.

Engineering Design

To ensure that the design is translated into a successful product suitable for high quality, cost effective manufacture, this stage of the development defines all the details of every part needed to make the product. A detailed understanding of design for manufacture and assembly and an close attention to detail is a must in this stage.

Electronics Design

Working alongside the mechanical engineering design, the electronics engineers design the circuits, lay out PCBs, write software and ensure all details of the electronics are suitable for manufacture and interface with the mechanical parts of the design.

Prototyping
Prototypes are vital for any new product. They not only provide confidence they design is correct and the product will work, they can also be used for marketing purposes. For inventors a good prototype can be the key to securing a investment or a licence agreement. See also the section below on designing for investment below

Regulatory Support
Many products have to conform to regulatory standards governing safety, function and performance. This will require product to be thoroughly tested prior to release. The requirements of the standard should be identified at the beginning of the development to avoid difficulties later on.

Project Management and Support
The development project manager coordinates the efforts of the whole development team as well as all external suppliers (e.g. mould makers, manufacturers, shipping companies, marketing agencies, test houses, patent attorneys, etc.) to ensure the product is launched successfully. Ensuring product quality and managing the transition to manufacture is one of the key project management tasks.

Development for Investment or Licensing
Frequently for an inventor, the purpose of employing a product design company is not to undertake the full development but to develop the concept to a stage that it can prove the viability and commercial potential of the product to licensees and investors. The two key requirements at this stage are to prove the viability of the invention and to create a vision for the successful production product. This can be done with sketches and illustrations but will be more convincing with 'Looks Like, Works Like' models. Making one model which looks and works like the finished product can involve doing much of the design and engineering development so often two models are made. At IDC we have our own dedicated rapid prototyping and model making service IDC Models. For more information about prototyping techniques and services visit http://www.idcmodels.com/

Visual Model
Having a clear vision for your product is important when trying to sell the benefits of your invention. A high quality aesthetic model illustrating what the product would look like is one of the best ways to communicate that vision and get potential investors and buyers excited about your idea.

Functional Model
The 'Works Like' model is made to prove that it is technically possible to build your invention. Potential investors and buyers will respond more positively if they can physically see and touch what you are trying to sell to them. The functional model does not have to be particularly elegant in design, but your model will have to represent what the invention can do and that it can actually do it.

If you know what you want to make and just want help with making models and prototypes please feel free to contact IDC Models for a quotation.

Chapter 5: Selling Your Idea

Being able to sell the benefits of your invention is crucial to success. Think hard about how to communicate the benefits of your idea to consumers and buyers. Selling is also important if you are looking for licensees or investors. You have to be able to convince them that your idea makes sense to invest in and that you will in turn provide them with a fantastic return on investment. A good, well-thought out and structured business plan is the key to making investors want to invest in you, your product and your business venture.

Business Plan

Your business plan is the blueprint to how you are going to make money you're your invention. Writing a business plan will help you plan out your business, pre-empt some of the difficulties and, crucially, estimate the capital required and the likely return on investment for your product.

There are many books and websites dedicated to writing business plans but the basic should be:

- Executive summary – about you product, patent and the business opportunity
- Marketing research – analysis of the market potential, competitors, pricing etc
- Commercialisation plan – detail of how will you profit from the invention, e.g. licensing,
- Sales projections – estimates for pricing, sales volumes and profit margins
- Manufacturing – plans, costs and timescales for development and production set up
- Management team – profiles for your management team
- Financial statements – projections for cash flow, return on investment and profit and loss

Commercialisation

There are many different ways to profit from a great invention. It is important to think carefully to choosing the best one for you and your investors.

Selling your Patent

It may be possible to sell your patent to another person or company and receive a one-off payment for it. This will mean you will lose the rights to your invention and not receive any future royalties so if the product is a huge success you will not see the benefit. On the plus side you will potentially get cash in hand without risking much of your own capital if the product fails you still have your money.

Licensing your Patent

Another route to commercialise your invention is to licence it. This means that you will retain the ownership of whilst allowing another party to make, use and sell the invention in exchange for royalty payments. The license may be exclusive or to more than one party. You may grant a worldwide license or agree deals territory by territory. You may also choose to issue licenses for specific uses or industries. Use industry and product directories and registers to identify potential licensees.

Start your Own Business

You can of course launch your own company, which will sell the product. This means that the entire responsibility of fundraising, manufacturing, selling as well as distribution, is on you. You will have to come up with a business and sales plan and conduct a market survey to make sure that your start up company will be able to fully exploit the opportunity.

Chapter 6: Funding Your Idea

You may be fortunate enough to be able to fund the project yourself, however, most inventors need financial backing from an outside source. Getting other people on board can also be helpful as they will have the skills and experience that can aid in the development of your invention. Finding funding can be one of the greatest challenges in the entire inventing process and it is impossible for us to go into great detail. However, we do have a few tips that may help.

Research

You must research different funding strategies thoroughly; there are many companies and government organisations that can help you with funding as well as putting you in contact with the right people.

Finding Partners

It is always best to have several money-raising options as an entrepreneurial inventor. One of these options is finding financial partners, either an individual, a group or a firm that may have a vested interest in your product. You can provide the invention and your partners may bring the rest of what you need to the table. Your partner can provide whatever they do bring to the team for free, in exchange for a percentage of any future profits. There are a few different ways to find partners; you can place an advert in a newspaper or magazine, contact an investors organization or approach a bank and some other traditional financial sources who may be willing to finance your idea.

Venture Capital

Another way to find capital is to find a Venture Capital Firm. This firm will invest in your growing company and will give you the financial backing you need in order to advertise, do research, build an infrastructure and develop the product. The Venture Capital Firm will make its money by owning a stake in your company. Financial agents who work for a finder's fee may be able to help you find a Venture Capital Firm that is willing to invest in your company.

Local and Government Programmes

Local, state and government programmes that provide businesses with financial assistance are another option to finance your invention and company. Try to research small business funding and angel network programs. Another option is to research government grants.

Inventor's Checklist

The following checklist is a general guide to help you track your progress. Should you need more clarity on a certain issue, please refer to the Inventor's guide handbook for more detailed advice.

1. Have you researched the web and patent databases to make sure that your invention hasn't already been thought of?
2. Who is your target user and why will they buy your product rather than the existing or competitor products?
3. Have you conducted market research to estimated the potential size of the market and understand the distribution chain?
4. Are you sure your invention is patentable?
5. Have you estimated how much investment is needed for development and set up?
6. What will be the estimated cost of manufacture per unit and your predicted sales price?
7. Is their sufficient return on investment to interest investors?
8. Have you written a business plan?
9. Do you have a model or prototype to demonstrate the viability and benefits of your invention?
10. Will you sell or licence the IP or manufacture and sell the product?
11. Have you secured funding or investment?
12. Do you have the right team of individuals and partner companies to deliver your plan?

If you have good answers to all these questions you will be well on the way to making your invention a reality