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PART 1

OVERVIEW OF THE PROCESS

Bringing an invention to market nationally is a very large, complex, and expensive undertaking. You may have what it takes to succeed in this, but you should realize that a great invention is *just the start*.

Inventor-entrepreneurs excel due to their:

- Market research and marketing
- Application of sound business principles
- Analysis, foresight, and adaptability
- Networking and people skills
- Financing and financial management
- Ability to seek and accept help
- Persistence

Of course a good product is required, but what you do to support that product is the key.

This document is intended to provide a general overview of the product development, patenting, business-building, and marketing processes. It is not a substitute for further research or for expert advice. Many of the issues discussed are complex and cannot be fully described in a general overview such as this. You should do your own research or seek expert advice on many of these matters.

At the outset, it is essential to be realistic about the time and money required to develop and patent a product and bring it to market nationally. A good rule of thumb is that it can require tens or even hundreds of thousands of dollars to do so. You may decide to begin the process while working a “day job,” but eventually you will probably need to spend full time on your project. Most of the entities that you will be dealing with are only available during business hours.

It is much easier to contemplate a product than it is to actually produce it commercially and economically—many inventors fail in this regard. Be sure to take this into account.

There are several companies that advertise on late-night television with claims of helping inventors get their product patented and marketed. Be extremely careful about sending your hard-earned cash to one of these companies. Do your research and be sure you are going to get your money’s worth. Studies show that an extremely small percentage of inventors ever receive profits to offset the money they spent with invention promotion firms.

Also, books are available that claim to help you “patent it yourself.” As the patenting process can cost \$5,000 - \$20,000 or more through a patent attorney, this is a tempting thought. However, trying to obtain your own patent can be compared to trying to do your own brain surgery– it saves a lot of money, but the results are generally not worth it. It is very helpful to buy such a book to learn about the patenting process, but you must pay an expert to write the patent application. An exception to this would be someone who has gone through the patent process with an attorney many times and has learned the ropes in so doing.

It is this author’s opinion that succeeding in the endeavor of bringing inventions to market is largely a result of avoiding pitfalls that could lead you astray at a minimum, or sink your plans at worst. If you avoid the landmines, you may be around long enough to succeed. For this reason, this document is focused largely on pointing out pitfalls to avoid. This focus is intended to instill respect for the process, not fear of it.

NOTE TO THOSE ACCESSING THIS DOCUMENT AS AN ELECTRONIC FILE:

This document is set up to be printed as a book, two-sided. You will see several blank pages in the electronic document, and will get several blank pages if you print it one-sided. These blank pages are inserted to ensure that chapters start on the right side page when printed two-sided.

PART 2

THE IMPORTANCE OF MARKET RESEARCH

As soon as you have an idea for a new product, you should start researching the market for it with as much diligence as you put into developing the product itself.

It is very easy to put a lot of thought and effort into your invention but not much into the market for it. The fact is that 98% of patented inventions fail to make money for the inventor. Note that in these 98% of cases the inventors did not fail to generate a *patent*, they failed to generate a *profit*.

Market research and product development can be done in tandem, but be careful how much money you spend on product development before you ascertain that:

- 1) There is a market for your product.
- 2) You can capitalize on this market.

Note that 1 and 2 are *not at all the same*.

PART 3

INTELLECTUAL PROPERTY PROTECTION

“Intellectual property” is your idea or concept. You must take steps to protect your intellectual property or you can lose your rights to it.

Trade Secrets vs. Patents

A trade secret is a secret that is kept for purposes of conducting commerce or trade.

It may sometimes be appropriate to keep details of an invention a trade secret rather than to obtain a patent on it. However, keeping a trade secret requires a high level of diligence and nothing can be done about someone else who reverse-engineers your product. If you choose the trade secret route, you should consult an attorney on how to protect your rights in this manner.

If your invention is not patentable, but it does not infringe on another patent, it still may have certain aspects that are worth keeping as trade secrets.

Patentability

In order to receive a utility patent, an invention must be novel, must not already be patented, must not be an obvious combination of existing patents, and must have utility. Expired patents are considered in this analysis. Unfortunately, patent applications that are pending action by the patent office are also considered. The public has limited access to these applications.

The invention also must not be obvious to anyone “skilled in the art” related to the invention.

Bound Notebook

You must document your invention process to establish yourself as the true inventor. To do this, record your development process in a *bound* notebook that has numbered pages. Write down any changes you make in design and why you made them. Sign and date each page. Include a witness statement on the page as follows: “This information was disclosed to and understood by me. (Signature of witness, date).” This witness should not have any stake in the outcome of your invention process.

You should also write in permanent ink and leave no blank spaces. If for some reason you leave a blank space, cross a line through it and then add your initials and the date.

Drawings should be made directly in your notebook when practical. Otherwise, staple the drawing onto a notebook page and sign so that your signature goes across both the drawing and the notebook page.

The patent office will consider the first inventor of a product to be the true owner, not the first person to file for a patent. Documentation of your invention process can be

invaluable if someone else gets to the patent office before you, but you actually invented the product first.

Public Disclosure & Offer for Sale

Be very careful about disclosing your invention publicly or offering it for sale before you have applied for a patent. These activities can restrict your ability to patent your invention.

The U.S. allows a one-year grace period to apply for a patent after public disclosure of the invention or offer for sale.

In other countries, you cannot apply for a patent after you publicly disclose, unless you have first applied for a U.S. patent. Once you have applied for a U.S. patent, you can publicly disclose or offer for sale. However, you generally only have one year after your U.S. patent *application date* to apply for a patent in another country.

Public disclosure can include an article about your invention in a newspaper, showing it at a trade show, public use of the invention, etc.

You should check with the U.S. Patent & Trademark Office (USPTO) at www.uspto.gov, 800-786-9199 or with a patent attorney for more details as the rules on these matters are complex.

Invention Disclosure Document

The USPTO maintains an invention disclosure document program for the purpose of documenting inventions. In this program, you can write a description of your invention and send it to the USPTO. For a fee of about \$10, the USPTO will maintain the document on file for a period of two years. Although this is not a substitute for a bound notebook, it provides additional evidence that you are the true inventor in the event of a dispute. You can find more on this program at www.uspto.gov.

No information disclosure document may be filed in a provisional application. (See below for discussion of provisional applications.)

Self-Addressed Letter

There is a common myth that you can document that you are the inventor of a product by describing your invention in a letter, mailing the letter to yourself, and then keeping it unopened. This is not a recognized means of documentation.

Non-Disclosure Agreements & Secrecy Agreements

A non-disclosure agreement is typically used to protect yourself when you want to disclose information regarding your invention to another party before you have applied for a patent or while the patent is pending. This other party could be: someone whom you want to assist you in producing prototypes; a company to which you would like to *license* your idea (have the company make and sell it and pay you for the use of your IP); a company that you want to use for market research, etc.

Note that larger companies generally will not sign a non-disclosure agreement that you provide and instead may present you with their own document that offers you little, if any, protection. For their own protection, many large corporations will not accept submission of an invention idea unless there is an existing patent application on it. Some companies may not accept invention submissions at all.

Certain non-profit organizations that assist inventors, such as those listed in this document, often are willing to sign non-disclosure agreements with inventors that offer real protection to the inventor, although these are normally provided by the organization, not the inventor.

An example of a non-disclosure agreement is available at www.inventnet.com/nondisclosure.html.

Patent Protection

A patent gives you the right to prevent others from making, using, or selling your invention. The government will not enforce patent protections. You must do so yourself.

If you cannot get an infringer to stop voluntarily, then you must file a patent infringement lawsuit. These suits can be very expensive, ranging up into the hundreds of thousands of dollars for complicated cases. Some law firms prosecute infringement lawsuits on a contingency basis.

Patent infringement insurance is available for the purposes of providing funds to prosecute patent infringement lawsuits against someone who is infringing on your patents. Insurance is also available to protect you from claims by others that you are infringing on their patents.

Infringement insurance information can be obtained on the Web by typing “patent infringement insurance” into several search engines. A good discussion on patent insurance can be found at <http://ipcounsel.blogspot.com/2006/01/patent-insurance-may-become-necessity.html>

Provisional & Non-Provisional Patent Application

You can begin the patent process either by filing a *provisional* patent application or by filing a *non-provisional* patent application. A *provisional* application will expire in one year unless you file a *non-provisional* application that is based upon it.

The non-provisional application is what is used to actually apply for patent protection. A provisional application can be thought of as a type of place holder until you file a non-provisional application. A provisional application does not and will never result in protection of your intellectual property.

The USPTO developed the provisional patent application process as a means of reducing the costs involved in developing inventions. The provisional application is much simpler

and therefore much less expensive to prepare than the non-provisional application. Basically, it provides you a means to “test the waters” in the market before you commit to the substantial costs of a non-provisional application.

You can choose to start off by filing the expensive non-provisional application (\$5,000 - \$20,000+), or you can start off by filing a less-expensive provisional application (about \$100 if self-filed) to establish a patent application date, obtain the ability to put “patent pending” on your product, and test market your product.

The non-provisional application must be filed within one year of the provisional application in order to receive the benefits of the provisional application. The main benefit is the filing date of the provisional application.

A provisional application can also be used to effectively extend your protection period from the standard 20 years to 21 years. Check with the USPTO or a patent attorney for details.

Filing a provisional patent application is much simpler than filing a non-provisional application. Although it is reasonable to attempt preparing a provisional application yourself, you still must be knowledgeable about the process because the provisional application forms the basis for the later non-provisional application. In order to obtain the benefit of the filing date of a provisional application, the claimed subject matter in the later filed non-provisional application must have support in the provisional application.

Eighteen-Month Publication

Unless certain conditions apply, the USPTO will publish your non-provisional patent application eighteen months after submission, making it available to the public. It can easily take 24+ months after the application date for a patent to issue, so this 18-month publication provision often applies. You can prevent publication of your patent application if you forgo the right to file your patent in any foreign countries. Check with the USPTO or a patent attorney for details if you are concerned about publication.

Provisional patent applications are not published; they expire in 12 months.

Diligence

Generally, you must show diligence in completing the invention and filing the patent application. This means that you should not let the process languish for long periods of time.

Patent Search

It is very important to conduct a patent search as early in the invention process as possible. The information you find could save you a lot of time and money in pursuing an idea that is already patented.

There are a number of ways to conduct a patent search, one of which is to hire a patent attorney at substantial cost.

Alternatively, you can conduct your own initial search, saving the attorney for a more complete search if yours turns up nothing that invalidates your claim to invention. If your search turns up a patent (or an obvious combination of patents) that invalidates your claim to invention, you will not have paid an attorney to receive this bad news. However, if you do not find anything that invalidates your claim, you may want to hire an attorney to do a further search and analyze the resulting information before you spend significant funds on product development and patenting.

Below are several methods of conducting a search without an attorney:

1. *Hire a patent searcher in Washington D.C.* Through the USPTO, you can get a list of qualified individuals who will go to the patent office in Washington and do a patent search for you. Many are retired patent examiners, etc.

To find a patent searcher: Go to the www.uspto.gov website, select "Site Index," and then scroll down to "Agent and Attorney Roster, Patent." Select: "Search for a Patent Attorney or Agent." Select: "Listing of Active Attorneys and Agents by Geographic Region," then "District of Columbia." You can follow this hyperlink to get right there: [Patent Attorneys and Agents: Listings by Geographic Region](#) Agents and Attorneys are listed. Typically, Agents charge less than Attorneys. The cost varies greatly by individual and is based on the complexity of the search, but is usually in the low hundreds to low thousands of dollars. The higher costs may apply if the searcher actually goes to the USPTO office to conduct the search.

Call several searchers and ask about prices and services, as these vary greatly. You may be able to find a retired patent examiner who does searches for a little extra income and who will charge as little as \$100 or so.

If you hire a local patent attorney to "do a search" he/she may contract with an agent or attorney in D.C. to conduct the search, the same as you can do. However, your attorney should also offer valuable analysis and insight based on what was revealed in the search.

2. *Go to a Patent Depository Library (PDL).* PDLs are often located in the main branch of public libraries in major cities. You can go to a PDL and conduct your own search. General assistance regarding the search process is usually provided at no cost. A listing of PDLs is available on the USPTO website.
3. *Search on the Internet.* The [uspto.gov](http://www.uspto.gov) website has a useful search function. To use this, select "Patents", then "Search Aids" on the [uspto.gov](http://www.uspto.gov) home page. Scroll down to "Search Existing Patents and Published Applications". You can follow this hyperlink to get right there: <http://www.uspto.gov/patft/index.html> You can enter keywords relating to your invention and call up patents that contain those

words. Be aware, however, that patents sometimes use legal terms instead of common words that you may think of as keywords.

For a more complete Internet search try the following: If your keyword search brings up patents, look to see what classes/subclasses those patents are classified into. You can then check the class/subclass descriptions to determine which are relevant to your invention, and then search the patents in those subclasses.

Also, you can review the “prior art” patents that are listed on the patents that your search reveals. Call up those patents, read them, and “follow the thread” of prior art patents that are listed on them, etc. Review all of these patents.

Be aware that the Internet database is only “searchable” for patents dating back to 1976. Page images are available for prior patents, but the search function will not search them– this is an important point!

You must also search the patent applications that have been published. This can be done on the USPTO website. The applications search function is on the right half of the page that comes up when you select “Search Existing Patents and Published Applications” as detailed above.

Note that patent applications are not published until 18 months after the application date. This means that there are many applications that are not searchable in this process.

4. *Bucknell Product Development Center (BPDC)*. The BPDC is affiliated with the Pennsylvania Small Business Development Centers. BPDC can conduct patent searches for approved projects as a free service to companies in PA. There are certain requirements for inclusion in this program and it is competitive. These projects must be submitted through a PA Small Business Development Center business consultant.
5. The Pennsylvania Technical Assistance Program, (*PennTAP*) can assist PA companies with patent searches at no charge. See contact information at the end of this document.
6. Many states other than PA have programs similar to the two listed in 4 and 5 above. Check with your local Small Business Development Center.

Obtaining a Patent

The details of obtaining a patent are beyond the scope of this discussion. However a few general comments regarding the process are pertinent.

A patent can be very beneficial to the success of a company that is marketing a new product, but a patent is not always essential. A reputation for quality and innovation, brand name awareness, and other factors are important as well. If you cannot patent your

invention, this does not mean that you cannot or should not build a company based upon it. Of course, that is as long as you are not infringing on someone else's patent.

To illustrate the point of the above paragraph, look at the room that you are in. How many of the items are patented? The desk, the chair, the flooring, the glass, the paper, the pen, your clothing... and on and on and on are not patented. Yet somebody has a successful business selling these items.

There are three basic types of patents: utility; design; and plant.

Utility patents cover inventions that have a utility, such as mechanical devices, software, and chemicals.

Utility patents can cost \$5,000 - \$20,000 or more including attorney fees, depending on complexity and other factors. Patent term is 20 years from date of application and maintenance fees of several hundred dollars and more are required several times during that period to keep the patent in force.

It can take over two years to receive an initial response from the patent office on a non-provisional utility patent application.

Design Patents cover the aesthetics or "look" of an item. They do not cover any functional aspect of the item, although the item can have a function.

Design patents can be obtained for \$750 - \$1,000 including attorney fees. Patent term is 14 years from date of grant. It can take 9 – 12 months to receive an initial response from the USPTO on a design patent application. Design patent numbers begin with the letter "D." A product may be marked "patent pending" after the design patent application is submitted.

It is possible to have both a design patent and a utility patent on an invention if both aspects are patentable.

Plant Patents cover asexually reproducing plants.

Foreign Patents

Be very careful to do thorough research before applying for foreign patents. You must be sure that your product has a real market in the target countries and especially that you will have the resources and expertise to capture that market. You must also evaluate the actual level of protection that a foreign patent may give you. Also, will you have the resources to prosecute patent infringement lawsuits in foreign countries?

Although someone can make your product in China or another country if you do not have a patent there, you can prevent them from selling that product in the U.S. if you have a U.S. patent.

Trademarks, Service Marks, and Copyrights

The USPTO defines a *trademark* as “any word, name, symbol, or device, or any combination, used, or intended to be used, in commerce to identify and distinguish the goods of one manufacturer or seller from goods manufactured or sold by others, and to indicate the source of the goods.”

You can claim a trademark simply by using TM with the word(s) or symbol(s) that you would like to protect. However, you should conduct a search or have a search conducted before doing so. The USPTO site provides a means of searching trademarks. Once you have registered your trademark with the USPTO, you may use the ® symbol instead of TM.

If you choose to use TM and not register your trademark, your trademark will only be defensible in areas of the country in which you are actually using it in commerce. If you register it, it will be defensible in the entire U.S. and its territories.

It is very important that you use the TM or ® symbol consistently in order to maintain your rights to the trademark. It is also very important to prevent others from using your trademark in a generic manner. There are many examples of trademarks that have lost their protection due to generic use.

Some products that we think of as generic used to be trademarked, such as linoleum and stainless steel. Aspirin was a trademark of Germany’s Bayer Co. until after WWI when the Allies forced the company to relinquish it.

If you see your trademark used in an improper manner, send a letter to the offending party instructing them to refrain from doing so and keep a copy for your records. For example, Kimberly Clark Inc. monitors for generic use of their Kleenex® brand name and diligently sends letters to offending parties. This is how they protect their brand name even though it essentially has become generic.

Note that a word can be trademarked by more than one company if the businesses do not overlap. For instance: Delta airlines and Delta faucets. Just because a name is already “taken” for one product does not necessarily mean that you cannot use it for your product if your businesses do not overlap. See the USPTO website for more information on this.

The USPTO defines a *service mark* as “any word, name, symbol, device, or any combination, used, or intended to be used, in commerce, to identify and distinguish the services of one provider from services provided by others, and to indicate the source of the services.” A service mark is designated by the “SM” symbol before registration of the mark and by the ® symbol afterward.

For more information on trademarks and service marks please go to:
<http://www.uspto.gov/web/offices/tac/tmfaq.htm>

Copyrights are administered by the Library of Congress and provide protection to “original works of authorship.” For more information please go to:

<http://www.copyright.gov/circs/circ1.html>

Calculated Risk, Shared Ownership

You sometimes must take calculated risks regarding your invention. This is often a very difficult concept for inventors to understand. It is particularly true when you desire to license your idea to large companies. They will not sign an agreement that gives you the protection that you would likely want when you submit your idea for consideration.

If you are unable or unwilling to create a company to make and sell your invention yourself, you may just have to take the risk that the large company may “rip off” your idea. However, most companies are reputable and are not in the business of stealing ideas. You may need to take a serious look at what you end up with by protecting your idea from all possible chances of being ripped off, no matter how remote they may be, vs. allowing someone to take a look at your invention so that you at least have a *chance* of profiting from it.

An analogous situation often develops when inventors are asked to give up a part ownership of their invention or company in order to get it licensed or to secure investments. The inventor must make a realistic assessment of the alternatives. Sometimes there are none. The inventor must then ask himself what he would rather have: 50% of *something*, or 100% of nothing.

PART 4

BUILDING A BUSINESS

The goal of an inventor-entrepreneur should not be to build a better mousetrap, but to build a better mousetrap *company*. This is a paraphrase of a quote that I came across many years ago and it is the essence of bringing inventions to market.

The Small Business Development Center and the SCORE organization are great resources to assist you in building a business.

Networking/People Skills

In the process of inventing, prototyping, developing a manufacturable product, and especially in marketing, it is essential that you build large and strong networks of individuals and businesses that you can call on for assistance. The broader and deeper your reach, the more successful you will be.

Your ability to work well with people and to get them to genuinely want to assist you will be critical. Your business will not succeed based on what you can do, but based on what others do for you.

Holistic Approach

It is important to take a holistic approach in bringing inventions to market— especially in researching the idea that your invention pertains to.

The viability of the invention idea in the marketplace is directly linked to its manufacturability, economics, marketing, and use by the consumer. These must be considered as a whole. An invention that could be marketable may not be manufacturable and vice versa. An invention could be manufacturable, but at too high a cost to be marketable.

These factors should be researched in tandem, as they are tightly interwoven. If this seems too overwhelming, then research them separately, but *be sure to research them all*.

Good Ideas, Bad Products

Let's face it: Sometimes inventors get patents for good ideas that are bad products. This is a major reason why only 2% of patents are profitable for the inventor. In turn, a major reason that inventors get patents for bad products is perhaps that they do not go deep and wide enough in their research.

An inventor must consider not only the idea, but its implementation in manufacturing and in use by the consumer.

An example of poor manufacturability and product usage research that comes to mind is a patent I once saw for a three-pronged barbecue fork that had a hollow handle for holding marinade. The idea was that the marinade could be squeezed out through the tips of the hollow prongs, similar in concept to a syringe. The user of the product could inject

marinate into meat using the same utensil that is used for flipping the meat during grilling. On the surface, this may sound like an interesting idea.

However, from a manufacturing standpoint, the device requires that three separate hollow, pointed metal prongs connect to a single reservoir of marinade. Alternatively, each prong would have to have a separate connection directly to the reservoir. How would this be accomplished? It can be done, but at relatively high cost.

The problems with the product include:

- Its cost of manufacture relative to the cost of a standard BBQ fork, when compared to the benefit of using the product. A standard BBQ fork is extremely inexpensive to produce. The added cost of the invention may not be worth the benefit it provides.
- Most marinades include spices, garlic, etc. that would plug the hollow tines.
- There are many competing methods of marinating meat.

This invention may be a good *idea*, but not such a good *product*. An inventor must clearly evaluate both aspects before pursuing a business based on an invention.

Ask yourself: If you were aware of the product drawbacks listed above, would you spend \$5,000 - \$10,000 getting this product patented? Why do you think that the product's inventor did so? Could it be because he did not do his homework before going to the patent attorney?

PART 5

MARKET RESEARCH

This market research section is presented prior to the section on product development, although product development should generally be pursued in conjunction with or even prior to some of the steps listed here. Market research is presented first to emphasize its relative importance vs. product development.

Being information-based, marketing research can often be done for less money than product development. This is important because you can save yourself the substantial costs of product development if your marketing research shows that you cannot make money on your idea. The research also ensures that you develop the right product for the market.

Protect It

Remember to protect your intellectual property through non-disclosure agreements, etc. as you are conducting marketing research.

Also remember that in order to get good advice, you have to give good information. This means that if you are expecting an expert to give you good advice, you must fully disclose what it is that you are planning to do. It is sometimes difficult to balance this need with the need to protect your invention and plans for it.

Take the Right Approach

Be careful about relying on your family and friends to tell you what they think of your idea— often they are reluctant to burst your bubble. Also, approach the entire process with the attitude of trying to find the weak points. You probably already know what is great about your idea. What you need to find out is what's not so great. The latter information is out there and will affect you whether you know about it or not, so you might as well know about potential drawbacks so you can deal with them if they exist.

Instead of simply asking someone what they think of your invention, try asking them to “critique” it. This signals that you are open to an honest appraisal and this is what you may get.

Competitive Advantage

Much has been written in marketing texts about the importance of determining what your competitive advantage is. It is typically recommended that this be done during the market research phase.

Here is a good exercise for defining your competitive advantage:

Take five minutes and write down your competitive advantages. Now, look at what you wrote. How much of it deals with your product, service, level of service, quality, etc. and

how much of it deals with your marketing strategies? It's a safe bet to guess that you were heavy on the former and very light on the latter. Reverse this!

There are many product innovation or quality award competitions that you can enter. If vying for one of these awards is how you define competition, then your product's attributes are critical to your competitive advantage.

However, if you intend for your product to compete in the *marketplace*, then your *marketing* is critical to your competitive advantage.

The point here is that the competition is not about *having* the best product; it is about doing the best with it. It is important to have the best product, but you don't make any money just by *having* it; that is just your starting point. Once you have the best product, then you can enter the race.

Market Statistics vs. Market Research

Many people consider "market research" to mean gathering statistics on the size of the market for a product or gathering demographics on potential customers, etc. One of the reasons people tend to focus on this is that it is the *easy* part of marketing research. It is also by far the *least important* part.

Market statistics are essential, but of little importance relative to the organizations, systems and procedures employed to capitalize on them.

A good analogy is air as it relates to your life. Air is essential, but unless you have lungs to take advantage of it, the existence of air means nothing. In your marketing research, you need to find out how the "lungs" work in your industry. In fact, you need to understand how the entire "respiratory system" works!

Determining that there are 1,000,000 potential customers with a certain demographic profile within a certain geographic area does virtually nothing to put profits into your bank account. *How* will you capture that market?

True market research cannot be done in a library; only one small component of it can be done there.

Conducting Market Research

It is advisable to buy a marketing book if you plan to do your own marketing research, but until then, here is a summary of steps you can take:

- Visit stores and talk to sales people, store managers, or store owners.
- Go to trade shows.
- Call trade organizations.
- Talk to merchandisers or buyers for stores or catalogs that may purchase your product. For example, call the catalog toll-free number and ask to talk to the buyer for the product line of interest.

- Research the competition. Study their place in the market; strategies; ads; packaging; customers; distribution channels; pricing; profit margins, etc.
- Find out all of the ways that people are currently coping with the problem that your invention purports to solve. What are the true advantages/disadvantages of each solution, as seen by the public? Realize that one very popular way of coping with a problem is to ignore it!
- Set up focus groups. You may be able to do this through a college marketing class in your community.
- Get ad rates for newspapers, radio, TV, magazines, websites, etc. that reach your potential customers. Brainstorm creative advertising strategies with their salespeople.
- Go to the public library
- Contact a Small Business Development Center (SBDC). SBDCs have many resources available and may do some of this research for you.
- Search the Internet. Two good sites are provided by the U.S. Census Bureau, <http://www.census.gov/> and the American Marketing Association, <http://www.marketingpower.com/>
- Read and participate in blogs in your technology and market areas.

You need to answer the following questions through your research:

- Who is likely to buy your product?
- Why would they want to buy your product?
- Where and how do they want to buy it?
- How much are they willing to spend?
- How can you target these people?
- How can you innovate in marketing to these people?
- What is the most effective advertising message?
- What is the best vehicle for getting this message to your target audience?
- What is the likely response rate to your advertising message? (Response rates can be 0.5% or less.)
- For how long will you need to present your message, considering the response rate, to generate the number of customers required?
- *How much will it cost to present your message to enough people to sustain your business?*
- What are the potential channels of distribution and terms of sale for each?
- Who are the players in the industry– top-to-bottom; corporate and individual?

Be Realistic

You need to be *objective and realistic* in marketing research. Again, if there is bad news, you are much better off identifying it, accepting it, and making rational decisions regarding it. You must ask the right questions to the right people and not let your love of your product influence your perception of the answers you get. Why bother doing the research if you don't properly use the results?

Be aware during your research that it is one thing for a person to express willingness to purchase your product, but sometimes quite another to get them to actually purchase it.

The good news is that there are many examples of people who did things that the “experts” said couldn’t be done. The cautions listed throughout this document are not meant to discourage you, but rather to help ensure that you are among the 2% of inventors that profit from their invention. You can be sure that successful inventors had a positive outlook, but they also confronted cold, hard reality head-on rather than ignoring it.

Success can also be defined as realizing that you will be unable to market your invention, if that is the reality, thus preventing the loss of your money in vain attempts to do so. You should be able to discard a bad idea and spend your valuable time in coming up with a better one.

Get Help

If you do not feel that you can accomplish the steps above, you should seriously consider hiring someone to do this for you. Professional marketing firms will conduct market research, though usually at a substantial cost.

Marketing Research is Key

Remember: *Poor marketing research can make all other investments into your project evaporate!* The importance of thorough market and marketing research cannot be overemphasized. You should thoroughly understand the marketing for your product or hire someone who does.

If you don’t have enough time, money, or expertise to develop your product *and* do the marketing research, you should question whether you have enough time, money, or expertise to pursue your dream.

PART 6

MARKETING

Marketing Strategy

Marketing research focuses on the “what” of marketing and marketing strategy focuses on the “how,” applied to information learned in the marketing research.

Marketing vs. Advertising

“Marketing” means taking something to the market. This is very all-encompassing. Some people mistake advertising for marketing, but advertising is just one of the tools used in the marketing effort. For instance, distribution channel selection, pricing, packaging, product offering, sales, point-of-purchase display, and customer service are among the functions that can also be considered part of the marketing effort.

Unique Product Syndrome

Many inventor-entrepreneurs view the fact that they have a patented product, unique in the market, with “no competition” as an advantage for their business. In fact, this situation is often the biggest obstacle that they face. This can be for two reasons:

- First and foremost– simply because the inventor views it as an advantage. This causes neglect of the hard work of marketing. An inventor-entrepreneur should think about how he/she would build a business based on a commodity product that has *very strong* competition. This will help focus that person on marketing.
- Secondly, it is an obstacle because many consumers are skeptical of new-product claims and/or they may not understand a new product’s advantages. It takes time and money to educate these consumers. In marketing new product concepts, it is sometimes “the second mouse that gets the cheese,” (to paraphrase an unknown author.)

Marketing for a Well-Established vs. a New Company

A person with experience in marketing products for a well-established company should not assume that the same strategies, vehicles, and activities will work in marketing new products from a new company. A well-established brand or reputation goes a long way toward getting attention for advertising messages or easing entry into distribution channels, etc.

You will not have these advantages when you go out on your own. Be sure to account for this in your marketing plans.

Independent Sales Representatives & Manufacturer’s Representatives

Independent sales representatives and manufacturer’s representatives (one and the same) are entities that will market products for manufacturers. These “reps” could be either individuals or firms with several employees. Typically, a rep will cover only a certain region of the country. One or more of these reps may agree to sell your product for a straight commission of around six to ten percent.

For various reasons, inventors often have little success with independent reps. It is best not to count on them as a significant source of sales, despite what they may tell you. Be very careful about making an agreement with a rep that leaves you little flexibility to make changes if they are not successful.

In the rep's defense, however, it is sometimes the fault of the inventor if the rep is unsuccessful in selling the inventor's new product. If you do retain a rep firm, make sure that you know how to properly deal with, support, and incent them.

Although inventors often do not have success with manufacturer's representatives, there is typically little to lose in contracting with them. At the least, reps can provide great insight into the market. A good resource for finding a rep is the Manufacturer's Agent National Association, www.manaonline.org.

If you do retain a rep firm, you should request monthly reports of whom the rep has demonstrated your products to and verify this information. Reps are essentially your contract employees— make sure they are performing.

Distribution vs. Marketing

In contemplating the marketing of a consumer product, do not plan how you are going to push your product out onto store shelves— this is a distribution plan. Instead, plan how you are going to get consumers to demand that stores put your product onto shelves— this is a marketing plan.

Distribution and marketing are two vastly different endeavors. Getting your product *into* a store is not the goal of marketing. The goal is to get your product *out of* the store in a consumer's shopping bag.

The route between your factory and a consumer's home is your *distribution chain*. This chain can include wholesalers, distributors, store warehouses, retail outlets, catalog companies, and package delivery companies such as UPS.

Most inventors are product-focused, and many inventors also become distribution-chain focused, perhaps because this effort tends to deal with physical entities. For consumer products especially, the process of filling up the distribution chain is sometimes confused with marketing.

Think of the distribution chain as exactly that: A chain. You cannot push hard enough on the distribution chain to move your product through it. Your product must be pulled through the distribution chain. You need to create "suction" in the marketplace— the consumer purchase that causes the store to call its distributor and purchase more product, causing the distributor to call you and purchase more product, causing you to go to the bank and make a deposit!

Some retailers will not carry a product until they get customers coming in asking for it.

Consumers and Customers

An entity that you think of as your customer may not be your product's consumer or end-user. For instance: You sell to a distributor, who sells to a retailer, who sells to the person or business that will use the product. All three can be considered your customer, but only the last is the consumer. This is an important distinction. Selling to the distributor or retailer is *trade marketing* and selling to the end-user is *consumer marketing*. You must be well-versed in each of these and have separate strategies for each as the two are entirely different.

Creating Consumer Demand

A complete discussion of how to create consumer demand is beyond the scope of this document. However, realize that marketing a consumer product on a national level is a very complex endeavor that takes years of *actual experience* to understand. You can spend a lot of money trying to learn as you go.

It is possible for a product to just “catch on” and practically sell itself, but this is quite unlikely. The phenomenon is more likely to occur with highly visible products such as Rollerblade® in-line skates or Razor® mini scooters because these products have mass public visibility. More importantly, the product benefits are fun and readily obvious.

Avoid a common mistake; assume that you will need to *create* consumer demand.

Marketing Innovation

Inventors are by definition product innovators. However, the successful inventor-entrepreneur will think of him/herself simply as an innovator. This broadened outlook on innovation should then be applied to the marketing process— this is how you will make your money.

Small Business Development Center consultants often get clients who come in and say that their businesses have an innovative product, but their businesses are failing because they need a better marketing strategy. Clients do not come in saying that they have an innovative marketing strategy, but their businesses are failing because they need a better product.

If you have innovative marketing and innovative products, you can be a juggernaut.

Examples of marketing innovators are listed below to help spur your thought in this area. It is important to note that some of these did not invent the marketing concept, but rather they adopted it at an early stage and applied it with great success, often to existing products.

- Montgomery Ward— mail order sales (in the 1800s)
- Tupperware Co.— in-home parties
- *USA Today*— marketing of newspapers to travelers
- Miller Brewing Co. — endorsement of low calorie beer by macho athletes as being “less filling” to avoid a diet-product image and encourage higher consumption.
- HSN— shopping channel

- American Express– cause marketing support of Statue of Liberty restoration
- MBNA– affinity credit card programs
- Nike– logo placement
- Ron Popeil– direct-TV product sales and TV infomercials
- Adobe Systems– gave away Acrobat Reader® viewer software to spur sales of its development software and therefore became the “industry standard.”
- Charles Schwab Inc.– online stock trading

A few lesser-known but equally impressive examples are:

- Wall Drug in Wall, South Dakota– “saturation” signage created a tourist attraction. A small drug store on the main Interstate highway leading to Yellowstone N.P. created a tourist attraction simply by putting up many intriguing billboards, beginning more than 100 mi. from their location.
- Realtree Camouflage– comprehensive marketing campaign deposed the previous industry leader. The innovator of new, more realistic camouflage patterns for sportsmen was usurped by a newcomer that focused much more heavily on effective and innovative marketing. The innovator nearly “vanished” as a result of being out-marketed!
- (Unknown)– clamshell packaging revolutionized product display. Those clear plastic packages that are nearly impossible to open have allowed a revolution in in-store product display.

Name and Logo

The name and logo of your company and its product(s) are very important. They say a lot to potential customers about your business and its products. You should carefully consider who it is that you will be marketing to and what type of message that they would be most receptive to. If your product were a person, what would its personality be? Try to convey this personality through your name and logo.

It is also important to consider whether you plan to expand your product base in the future. In this case, it may be good to avoid a company name that is tied too tightly to your initial product.

Endorsements and Testimonials

Product endorsements by celebrities or authoritative people can be a very effective method of establishing a brand name and reputation for a new product. This approach should be considered if at all possible. As with anything, there are potential pitfalls, but the advantages usually outweigh the risks.

Testimonials from satisfied customers are another highly effective means of convincing prospective customers that they should purchase your product. If you do use a testimonial, be sure to get a written release from the individual or group.

Product Reviews

Many magazines and Web sites will review new products. This is a very effective way to get free advertising. Local newspapers may review your product, as well as do a write-up on your new business. Call the appropriate editor and ask about opportunities.

The lead time for magazine articles can be six months or so. Be sure to submit your product well in advance of when you want the article to run, especially if your product sales are seasonal.

You should provide a professional-quality written new product release and good quality digital images of your product. This reduces the workload for the magazine, as they can simply reproduce all or part of your review and photos. Avoid hyperbole and hype!

A new product release is written similarly to a press release and a good description of how to write press releases is available at www.onlinewbc.gov/docs/market/mk_release_pr.html Fee-based services related to press releases and release distribution are available at www.sightquest.com/business/example-of-press-release-2808.htm

There is usually no need to provide a product sample for a short product review, although it is usually necessary if you want a feature length article. You can request that the product be returned.

Persistence

If at first you don't succeed, try, try again. This adage is very important in marketing your new product.

If thorough research has shown that you have a product that is manufacturable, economical, usable, desirable, otherwise viable in the market, and you have set up a sound business to support it, then don't let anything stop you! Once you have determined all of the above then the only thing left is **persistence**. This can mean *years* of persistence and coming at the problem in many different ways.

For instance if you have identified a great marketing venue and try it once or twice with limited results, you should take a thorough look at *why* it did not work, and then develop a plan for addressing the issues that stood in your way. Don't just fall down when you hit a defender— get back up, find another hole, and keep running for the goal line.

One of the worst things you can do in marketing is to drift aimlessly from one venue to another without ever stopping, driving a stake in the ground, and fighting it out.

Packaging

Packaging is often given too little thought by inventor-entrepreneurs, but is an integral part of your product and its marketing.

Various distribution channels may require various packaging types or concepts. Be sure that you understand the types of packaging that will be expected for your product in the various channels.

You need to be just as innovative in your packaging as in your product development and marketing. Large companies understand this.

There are many examples of products that were reinvigorated by a simple re-packaging. For example: Dannon® yogurt repackaged as Danimals® to appeal to children. Another example is Yoplait® GoGurt®, which is yogurt packaged in flexible plastic tubes with a tear-top for “on the go.”

Other examples of the product-packaging-marketing link are: fruit drinks in aseptic cartons with an attached straw; “1/3 More Free” bottles of shampoo; individually wrapped slices of cheese, and coffee in foil-laminated bags. Some packaging innovations are intended to improve ease of product use, such as cat litter in plastic jugs instead of bags, “upside-down” ketchup bottles, and pull-top cans for Campbell’s® soup.

Consider how soft drink companies have created myriad “products” simply through repackaging: 6-packs; 12-packs; 20-oz. bottles; 6-packs of ½-liter bottles; 2-liter bottles, etc. Also consider how McDonald’s a number of years ago “repackaged” its individual items into Happy Meals and Extra Value Meals with great success that was copied by all of its competitors.

Clamshell packaging has revolutionized product display and retail sales. (A “clamshell” is a semi-rigid clear plastic package– front and back, typically sealed around the edges.) A clamshell package is perceived as higher quality than a blister package, in which the backing is paperboard.

Here is an interesting example of how packaging can affect products: For many years, ice cream was sold by supermarkets in rectangular paperboard cartons. Then, premium ice cream became available in round cartons. A number of years later, market research was done on consumer perceptions regarding rectangular and round ice cream cartons. The researchers found that in taste tests, consumers perceived ice cream packaged in round cartons as higher quality than ice cream packaged in rectangular cartons, even when it was the same ice cream.

A product’s packaging says a lot to the consumer about the product itself. Packaging is extremely important, must be carefully considered, and the innovation process must be fully applied.

It is very helpful to go to stores and study package innovation. Now, put your inventive mind to work!

Competition

It is of course very important to thoroughly understand your competition. Your competition includes *every method* that people are currently using to address the problem or issue that your invention solves or addresses.

Many inventors are highly dismissive of the competition, almost to the point that it seems that the “invention gene” and the “dismissive of competition gene” are linked! However, existing companies can adapt to your presence in the market and may be able to quash an upstart through marketing, promotions, price discounts, etc. on their products, even if their products are inferior.

It is important to realize that it is generally difficult to get consumers to change their behavior. If your product requires your customers to change their behavior, they may stay with the existing products because of the comfort of doing so, even if this choice otherwise makes no sense.

Many people are brand loyal. This fact is very important in competition.

Also, *there is always competition for a dollar!* You are in competition with the mortgage company, the grocery store, the long distance phone company, the travel agent, the bank savings account, and every restaurant in town. You must get your customer to choose you instead of all of the other companies out there vying for the customer’s dollar. This is the choice that your customer is making.

Never think that you have no competition!

Pricing

There are many factors to consider in pricing and many pricing strategies. There are many references available on this subject and it would be useful to study a few if you are not familiar with this subject.

One key pricing issue that is often overlooked: In setting your price, be sure to consider the actual average selling price of your product, not just the list price. There may be discounts from list price that are normally given in your industry or channel of distribution. For instance:

- in-house salesperson’s commissions
- manufacturer’s representative commissions
- 2% discount for payment within 10 days
- 20 – 25% discount for stocking distributors
- discounts to buying groups, etc.
- special sale price promotions
- slotting fees
- 2% co-op advertising allowance

Be sure to set your list price high enough that you can pay the commissions, fees, support, and give the discounts required, yet still secure the revenue you need.

Final Note on Marketing

It is relatively easy to sell a few of your product to people whom you know, with whom you have developed a rapport, or to whom you have given a personal demonstration of your product's advantages. However, marketing a new product is all about figuring out how to sell mass quantities of your product to people who do not know you, your brand name, or your product's advantages.

PART 7

DEVELOPING A MANUFACTURABLE PRODUCT

Easier Said than Done

It is much easier to contemplate a product than it is to actually produce it economically in commercial quantities. One of the best ways to ensure that your product can be produced commercially is to *keep it simple*.

In one sense, developing a manufacturable product is more difficult than selling the product– if you can convince someone that you can make a perpetual motion machine, you can take an order for it. However, when it comes time to deliver the machine, you will have a problem.

Prototypes

If a picture is worth a thousand words, then a prototype is priceless. In order to generate serious interest in your idea from savvy individuals or businesses, you generally must develop a functioning prototype.

If appropriate, begin by making wooden or plastic models in your own workshop. Prepare drawings to the best of your ability, including dimensions and tolerances.

If you need certain materials that you do not have, search the Yellow Pages or Internet for the material of interest, call the supplier, and ask for a free sample. Suppliers will often provide free samples, as they know it could lead to future business if you succeed.

The *Thomas Register*, available online (thomasregister.com) or in many public libraries, lists suppliers of most any material or manufacturing process that you could need. This is an indispensable resource for inventor-entrepreneurs.

The Plastics Technology Center at Penn State University Behrend Campus can assist with prototyping and product development of plastic parts or products. This is a relatively low cost service. (See contact information below)

Check with a Small Business Development Center in your area for prototyping assistance that may be available through nearby universities, etc.

Rapid Prototyping

Rapid prototyping refers to processes in which 3D models can be created from computer modeling data, often using a laser. These processes allow prototypes to be produced much more quickly and generally much less expensively than traditional machining methods.

The precision of rapid prototyping is lower than that of machining processes and the parts are often non-functioning.

If applicable, rapid prototyping could be very beneficial to your project. Consult the *Thomas Register* for companies offering these services.

Assistance From Small Manufacturers

Some small manufacturers will make prototypes for inventors who are looking to start a business. Most of these manufacturers have computerized drawing (CAD) capabilities and can prepare engineering drawings.

These manufacturers can be invaluable in helping to engineer your product. However, in having the manufacturer assist you with engineering, you must be careful to prevent ambiguity as to who invented what. If possible, have the manufacturer sign a document up-front stating that any developments made while working on your project are your property.

Some manufacturers have had bad experiences working with inventors on product development. Typically, the reason that manufacturers agree to prepare prototypes is because of the production business that it could later bring. It is an investment by the manufacturer that they are counting on to pay off later. If the inventor drops the ball, loses interest, or runs out of money, the manufacturer cannot recoup its investment. Even if the inventor has paid for time spent on the project, the manufacturer still loses because it could have been spending that time on a project that brings in future production work. Idle production equipment costs money.

On the other hand, you will need to be very diligent in working with small manufacturers. They can make mistakes or turn out quality that does not meet your needs. For example, you must thoroughly check the drawings they send for review. You will usually be responsible for the results of inaccurate drawings, even if it was the manufacturer that made the drawing error.

Also, you will often be last on the manufacturer's priority list because they have jobs to get out the door for large customers. Have a clear understanding with them up-front of your expectations and the criteria for success.

Manufacturing Processes and Materials

You may need to develop a series of prototypes in order to refine your idea. The prototype development process can be used to identify the best materials and manufacturing processes needed to produce a commercial product.

There are myriad manufacturing processes and materials available— many more than most people are aware of. Some of these may allow your product to be manufactured much less expensively or to much higher quality than would otherwise be possible.

It is well worth the time and effort to thoroughly research the methods and materials available. Some ways to start are:

- Contact manufacturing trade organizations such as:
 - Manufacturers' Association of Northwest Pennsylvania
 - National Tooling and Machining Association
 - Precision Metalforming Association
 - Society of the Plastics Industry
 - Metal Powder Industries Federation
 - Precision Machined Parts Association
 - National Manufacturers Association
 - Consult the Encyclopedia of Associations for other trade associations. A copy may be available at your local Small Business Development Center. You can also find information online by typing "trade association" and the name of the relevant industry into search engines.
- Go to <http://metals.about.com> for a comprehensive review of metals and metals manufacturing processes.
- Go to <http://composite.about.com/> for a comprehensive review of plastics, composites and related manufacturing processes.
- Go to mmsonline.com for a wealth of information on metalworking processes.
- Speak with instructors at manufacturing technology trade schools.
- Attend the National Manufacturing Week trade show in Chicago, usually held in March, www.manufacturingweek.com. You can find virtually everything there and you can speak with the experts in their booths.
- Contact the Plastics Technology Center (PTC) at Penn State Behrend in Erie, PA, (814) 452-0094, <http://ptdc01.bd.psu.edu>. The PTC can provide product development and process assistance related to plastics.
- Call relevant manufacturers and suppliers. Always be sure to ask if the person knows of anyone else you can call.
- Contact engineering societies such as the American Society of Mechanical Engineers and Society of Plastics Engineers.

Feasibility Study

It is advisable to have a feasibility study done on your product. This study will determine the practicability of your idea in terms of concept, design, materials, and cost. The Plastics Technology Center (for plastic products only) can conduct a formal feasibility study for relatively low cost, (\$2,500 - \$4,000). There are specific requirements for this program.

The PTC feasibility study addresses the development of the product, including production methods, materials, sourcing, and costs. It does not address the market for the product.

Private companies will conduct feasibility studies, including both product development and marketability. Consult your local Yellow Pages, for instance under the headings of "Plastics- Research & Consulting," "Marketing Consultants," or "Market Research & Analysis." It is important to note that such companies usually provide actual value, as opposed to the invention promotion firms that advertise on cable and late-night TV.

A Small Business Development Center business consultant can assist you with an informal marketing feasibility study at no charge.

PART 8

MANUFACTURING STRATEGIES

There are several strategies to consider in having a product commercially manufactured. Among these are:

- In-house manufacturing
- Domestic contract manufacturing
- International contract manufacturing
- Licensing agreement with an existing manufacturer/marketer (OEM)
- Various combinations of the above

These strategies are discussed below.

In-House Manufacturing

In-house manufacturing generally provides the most control over product quality and availability, but is the most capital-intensive method. In some cases, the cost of the required manufacturing equipment or the cost of the expertise to operate it is prohibitive.

It is often possible to purchase good used equipment at considerable discount. The Internet is a valuable resource for identifying used equipment suppliers.

Although your per-unit cost may be less if you manufacture the product yourself, you should consider whether the capital and your time tied up in manufacturing is really worth it. There is normally quite a learning curve for understanding processes or industries. You may be better off concentrating on the marketing end of your business, especially at the outset. You can always bring the manufacturing in-house at a later date, even doing so incrementally.

There are a number of government supported loan programs to assist small manufacturers. An SBDC consultant can assist you with identifying and applying for these.

Domestic Contract Manufacturing

Domestic contract manufacturing is less capital intensive than in-house manufacturing, but the disadvantage can be less control over product quality and availability. Domestic contract manufacturers may be identified by consulting *Thomas Register*. Look up the manufacturing process of interest and contact the manufacturer. Not all will be interested in working with a startup, but many are.

It is important to set up win-win relationships with your manufacturers and vendors. Many books and other resources are available on this subject and it would be wise to understand this process. However, despite your best efforts, the fact is that win-win situations do not always develop between suppliers and customers.

Carefully select the manufacturers that you will be working with, especially if you will be spending large sums on tooling with the manufacturer. This tooling can be difficult to transfer to a new manufacturer. It could be that the new manufacturer does not like the way the tooling was designed. It also could be that you end up in a payment or other dispute with the original manufacturer, who then refuses to transfer your tooling. You could be tied to the manufacturer you first chose unless you are willing to pay for new tooling at a new manufacturer.

It may be possible to negotiate an arrangement whereby the manufacturer amortizes the cost of the tooling into the price of the parts. For instance if the tooling costs \$10,000, the manufacturer may spread this over the first 20,000 parts delivered, at \$0.50 each.

Tooling for many manufacturing processes can easily cost into the tens of thousands of dollars. You may be able to identify less expensive initial alternatives until larger volumes are attained. For example: Laser cutting of sheet metal parts instead of stamping them out with dies.

Some manufacturers will make claims regarding their capabilities that turn out to be exaggerated. Ask for references regarding the specific work you want to have done. You don't want to pay for a learning process on their end.

Be very careful to create clear areas of responsibility, leaving no "grey areas" that can be exploited by a manufacturer in the event of a dispute over quality, delivery, etc. Try not to allow a situation where one contract manufacturer can point the finger at another if the final product is not delivered to your satisfaction. The risk of this is especially high if one company produces the tooling and another company produces parts with it.

Be very aware that quality control among small manufacturers can be *very poor*. Be sure to have a clear written understanding with the manufacturer regarding your expectations and the criteria for success. They may try very hard to get you to accept their poor quality and service.

It can take quite awhile until the manufacturer consistently produces a product that meets your needs, especially if you are attempting to do something innovative. You will usually need to "bird dog" everything, but you must not alienate the manufacturer in the process. You probably need them more than they need you! The manufacturer may have the option to just walk away if he gets frustrated or is losing money on the project.

Typically, the manufacturer will specify minimum quantities of product that you must purchase, especially for the initial order. Full or partial prepayment of the tooling costs and initial order is normally required. These factors must be taken into account when calculating capital requirements for startup.

Be sure to have written quality specifications for all important aspects of your product, including order lead-time. Also be sure that both you and the manufacturer retain

mutually approved “first article” quality references. These are production samples of your product made by the manufacturer, representing the expected quality.

International Contract Manufacturing

Generally, the same points apply in international contract manufacturing as apply in domestic contract manufacturing, but with the added issues of identifying qualified foreign manufacturers; language barriers; long lead times; currency fluctuations; international money transfers; import/export procedures; import duties; customs brokers; dispute resolution; intellectual property protection, etc.

You generally must mark your packaging and your product with country of origin if the value of the foreign content is above certain percentages. The U.S. Customs & Border Protection agency enforces these laws.

A full discussion of international contract manufacturing is beyond the scope of this document. Fortunately, many Small Business Development Centers have programs specific to international trade. For those seeking to evaluate international sourcing, this is the best place to start.

International sourcing is relatively complex, but should not be viewed as so daunting that it is impossible for a small business. In fact it is very possible.

Licensing Agreement with Existing Manufacturer/Marketer

There are many advantages to setting up a patent licensing agreement with an existing manufacturer/marketer such as with an original equipment manufacturer (OEM) of products related to yours. In such an arrangement, the OEM will both manufacture and market your product, paying you a royalty (percentage of sales revenue) for the opportunity that this presents.

However, there are many reasons why an OEM may not be interested in licensing your invention. One reason is known as the “not invented here” syndrome. This refers to a general human nature to reject ideas that come from the “outside.” Other reasons include a lack of time on the part of the company you are trying to get interest from and also the fact that the people at these companies have competing priorities.

Another issue that can work against you is the fact that people sometimes make bad decisions or are too lazy or biased to thoroughly investigate before making a decision. If you happen to be dealing with a person such as this, you should try to: 1) recognize this fact, 2) not make an enemy of this person, and 3) find a way around this person.

If you have determined that you want to pursue licensing, you must look at the process as a sales effort— a strategic sale for a complex product. It would be beneficial to study a book on strategic selling if you are not trained in making this type of sale.

A seasoned salesperson realizes that he/she must contact many prospects in order to make one sale. Many of the prospects drop out at various stages along the way, but the

salesperson must keep working and not get discouraged too easily. You should adopt this attitude in licensing your product.

It may be wise to “have more than one iron in the fire” in your licensing efforts. This way, if your efforts come to nothing after a long period of working with one prospect, you may have a backup instead of having to start over at square one in the process. If you let the prospects know right from the beginning that you are giving more than one company the opportunity to review your invention, you should not have a problem in working with more than one. They usually understand that the company that responds to you most promptly and with the best offer will get the prize.

Another reason that you may want to approach several prospects at the same time rather than sequentially: If you are turned down by several companies in sequence, the word may get around the industry that you are shopping your invention around without success. This can cause the later prospects to be more leery of working with you. People from different companies within industry groups do talk to each other.

It is also advisable to develop relationships with more than one department and especially with more than one person at your prospective companies. Typical departments that you should be in contact with include: marketing; sales; product development; R&D, and your area’s district office.

You need to develop a warm personal rapport with as many people at your target companies as possible. You also need to be patient and realize that these people have priorities that are not the same as yours.

Be sure you have everything well planned out before you contact any prospect. Remain as consistent from one company to another as possible. One thing that competing prospect companies definitely will not understand is if you make a better offer to one than another.

A SBDC consultant can assist you with identifying companies to target for your licensing efforts.

In general, you must have a patentable product in order to license it. Many OEMs will not even talk to you until you have applied for a patent on your idea. This is for their protection. Also, some OEMs have a policy against accepting unsolicited ideas.

The royalty percentage that an OEM will pay varies depending on the product line and other factors, but 5% of net sales is a good ballpark figure. Net sales are basically total sales minus returns and non-payments (bad debt).

Avoid royalties based on the profit that the OEM makes on your product. The OEM can easily manipulate or eliminate profits by paying inflated salaries, charging unnecessary expenses, etc., thus eliminating the need to pay you royalties.

The royalty percentage that an OEM will pay is related to the total value contribution that your invention makes to a product. If your invention essentially defines the entire product, then you can command a relatively high royalty percentage. However, if your invention merely improves an existing product, the royalty rate may be a smaller percentage of the net sales of the product.

An extreme example of this would be someone who licenses a better engine mount to an automobile manufacturer. The auto manufacturer will not pay a 5% royalty on the entire price of the automobile for this contribution.

It can take up to six months or more to complete the process of contacting a company regarding licensing and then working through to a signed contract. It can take another year or more for the company to gear up for production and move the product into the market. The latter is especially true if the product has a seasonal sales cycle.

Typically, royalty contracts stipulate that royalties will be paid quarterly, 30 - 60 days after the close of the quarter.

When the above is all taken into account, it can take a very long time to realize any revenue from licensing efforts. For this reason, it is advisable to request a lump sum payment upon execution of the contract, in addition to a royalty on net sales.

It is essential to seek qualified legal advice before signing any contract regarding your invention.

Combinations of Manufacturing Strategies

It is of course possible to create any combination of the above manufacturing strategies. Be aware that a company that you license your product to may not want you to make and market it in competition with them.

PART 9

SUPPLY MANAGEMENT

No matter which manufacturing strategy that you choose, supply management is important to your success. Again, a full discussion is beyond the scope of this document, but a few points are pertinent.

Supplier Management

It is very important in supplier management to prepare backup plans. You may not have the money to actually have more than one producer for any certain part, but you should always have identified at least one backup supplier that you could turn to if necessary. Some customers that you want to sell to may require this of you.

Although it is admirable to want to be loyal to suppliers who started out with you and helped you get off the ground, you must not let a supplier's lack of development inhibit your growth. An applicable adage is: "Dance with the one that brought you." But if the one that brought you can't learn the new steps, you must find another partner or you will stop dancing.

Inventory Control

Inventory control is a very critical aspect of a new business since new businesses are typically short of capital. It is very easy to tie up capital in inventory that ends up sitting on a shelf. This capital is not working for the business.

Be careful not to order excess inventory simply to obtain price breaks. For instance, if your product will cost \$10 each if you order 1000 units, but only \$9 each if you order 5,000 units, you may be tempted to order 5,000 units to get the 10% cost reduction. However consider that the 1000-unit order will cost a total of \$10,000 whereas the 5000-unit order will cost \$45,000.

It is probably far wiser to take the \$35,000 difference and use it for marketing to sell the more-expensive 1000 units. At the normal 2X markup, you are earning \$10,000 at a critical time for your business instead of purchasing 4000 additional units that may sit on the shelf because you are left with insufficient funds to market them.

Many entrepreneurs with new products are overly concerned that they will be unable to keep up with demand for their new product, therefore ignoring the above advice and ordering 5,000 units anyways. They may reason that they want to provide "excellent customer service" and not take the risk of running out of inventory.

Consider this: Running out of inventory is definitely *not* one of the major reasons that new businesses fail; but poor financial management *is*. If you go out of business, that is certainly the epitome of poor customer service!

PART 10

FINANCING YOUR BUSINESS

Capitalization

It is very important to prepare realistic projections of your total expenses and income so that you can develop a realistic figure for the amount of capital you will need. One of the most common ways inventor-entrepreneurs fail is through undercapitalization. The principal cause of this is that the expenses came in at the projected level or higher but the revenue did not.

You want to find financing sources with “deep pockets” that can provide additional support if needed.

Financing Options

There are many ways to fund your product development and/or company, each with certain benefits and drawbacks. The important thing to realize is that you cannot get something for nothing. You must be willing to give up something to get funding, usually something substantial.

You may believe in yourself and your product and “know” that the world will come rushing to your door. But others will not be so sure and they will want protection for their risk. This is sometimes a very difficult concept for inventors to grasp.

There are five basic ways to fund your project:

- Self-funding
- Loans
- Investments
- Partnerships
- Government research grants

A Small Business Development Center business consultant is a great resource for details on sources of funding, but below are some highlights:

Self-funding

Self funding is very high risk because it puts all of the risk on you. Of course, you would get all of the rewards if they materialize.

One point to realize in considering whether to self-fund or not: Be very certain that you will be able to go it alone successfully. If you cannot do so, struggle, and later seek outside capital, you will be marketing a company with a poor history. It is generally much easier to market a startup company with no track record than an existing company with a poor record. In the latter case, investors will likely see you as a bigger risk or as more desperate and will require ownership percentages, etc. commensurate with this. You cannot hide your company’s true financial situation from potential investors.

If you will need to get a loan such as a home equity loan to cover your product development, startup costs, etc., you may need to do so before quitting your job if you are employed. Once you quit your job, you may be unable to get a home equity loan.

Loan vs. Investment

A loan must be repaid and involves no ownership stake in the company by the entity loaning the funds. An investment does not need to be repaid and involves an ownership stake in the company by the entity investing the funds.

Loans

Loans for product development often come from family and friends, as banks normally will not loan solely for this purpose. Be sure to prepare written documents for loans from family and friends, at the very least. If the amount is substantial, it is best to consult an attorney.

It may be possible to secure a bank loan for a new company that will conduct product development in the early stages as part of its overall business plan.

The U.S. Small Business Administration (SBA) and other government entities have loan programs available for small businesses, including startups. Many of these loan programs are done through a bank or include bank financing. There are stringent requirements for obtaining these loans.

Investments

One of the biggest concerns that inventor-entrepreneurs have with investment capital is the need to give up partial ownership of the company.

The amount of ownership that you must give up for a certain amount of investment is partly a function of your negotiating skill. If you are a strong negotiator, you will likely end up with more in a given situation than if you are a weak negotiator, as there are really no absolute formulas. Each situation is unique and it is a game of give-and-take.

You should have a sound basis for your position regarding what you will give up and you need to be consistent from investor to investor unless you have good justification for making changes.

In order to secure investments into your company, you must form a corporation or partnership. A sole proprietorship can receive a loan, but not an investment.

There are strict laws governing the solicitation of investments into businesses. When you solicit investment for your business you fall under securities laws. These are set by the U.S. Securities Exchange Commission and by state governments. There are very severe penalties for violations of securities laws.

General information regarding solicitation of investment is available on the SEC website, www.sec.gov and at www.seclaw.com. State regulation in PA is through the Pennsylvania Securities Commission, www.psc.state.pa.us.

Initial financing is usually obtained from family and friends, or friends of family and friends. Another important source, however, is local people in the relevant industry that can see the value in your invention and have money to invest.

BE SURE TO CONSULT A QUALIFIED ATTORNEY BEFORE MAKING ANY INVESTMENT SOLICITATIONS OF ANY TYPE!

Venture capital is typically only available for persons and products that have a demonstrated potential of creating large, high-growth companies that will “go public” with a public stock offering or will be sold to a larger company. Venture capitalists usually invest in companies that have several years of history, although they do make investments in raw startups if they have confidence in the management team. If your management team has little prior record of business success or yours is a product with a small niche market, it is virtually impossible to receive venture capital investment.

If you feel that you are a candidate for venture capital investment, the process of trying to secure venture capital should be approached with the same “strategic sale” philosophy as described above for trying to secure a licensing agreement.

Angel investors are individuals or groups of individuals that may invest for reasons other than those for which venture capitalists invest. For instance, there may not be a focus on taking the company public. Angel investors may also invest in companies that have more limited market potential. Angel investors generally do, however, want to minimize their risk and make a substantial return on their investment.

Partnerships

Another method of securing financing is to form a legal partnership (general partnership or limited liability partnership) with a person who is interested in you and your product and who has the financial resources to help you succeed.

A general partner will have an ownership stake in your company and will be entitled to substantial control. For this reason, a general partner’s investment is not treated the same as a stockholder’s investment by government regulators. This means that you will not be subject to the same securities laws as you would be in selling stock to a stockholder. Of course you must still be careful not to make any misrepresentations to a potential partner.

In some cases, a limited partnership investment may be treated as a security and fall under securities regulations.

Government Research Grants

There are government-sponsored research grants available for new product development. These are very competitive and often go to well-established organizations. Contact a

SBDC business consultant for details on the following programs. Contact information for various programs is given in the Resources section below.

At the federal level, the SBIR program provides funds through various federal agencies, focusing on products relevant to that agency's mission.

At the state level, Ben Franklin Technology Partners (BFTP) funds product development projects that will lead to job creation in Pennsylvania. Typically, BFTP will require a small ownership stake in the company in return. BFTP also holds annual business plan contests that award \$25,000 - \$35,000 to the company submitting the best business plan. A SBDC consultant can assist you with this funding source.

Another source of state research funds is the Life Sciences Greenhouse of PA (LSGPA) program. This program focuses on PA companies in the fields of drug delivery and design, bionanotechnology, and medical devices. This program has a technology development fund and a gap fund, as well as money available for intellectual property protection.

The maximum funding from the LSGPA technology development fund is \$250,000, and its purpose is to enhance the translation of basic research into proof of principle or prototype. The gap fund is an early stage investment fund with a maximum of \$500,000. Up to \$50,000 is available for intellectual property protection purposes.

The LSGPA funding is basically a loan creating debt that is convertible to equity (an ownership stake in the company). However, the program limits the total return on its investment to 1.5X. This is much better for the entrepreneur than VC funding in which the return paid to the VC is unlimited.

States other than Pennsylvania may have similar programs. Ask your Small Business Development Center consultant about this in your state.

Small Business Administration

An excellent, more detailed overview of financing is available at the Small Business Administration website at www.sba.gov.

Financial Management

Financial management is a very important part of what you are planning to do. Money is the blood of your company. Be sure to hire competent help in this area if you are not qualified through prior experience. Also be sure to stay intimately involved in the financial arena of your company. Again– this is your lifeblood.

Business Entity

There are several business entities that you can form, including sole proprietorship, S-corporation, limited liability partnership, etc. It is very important that you seek qualified

legal advice in deciding upon your business structure, as this is the foundation of your business.

The Role of Luck

One factor that will play an important part in your endeavor is plain old luck– both bad and good.

This is where my favorite adage: “**The harder you work, the luckier you get.**” comes into play. The more things that you do and the longer that you do them, the more that you put yourself in a position for good luck to act upon you and your endeavors.

Good luck!

PART 12

RESOURCES

Gannon Small Business Development Center

www.sbdcgannon.org 814-871-7383

Bucknell Product Development Center

www.bucknell.edu/x7025.xml

Plastics Technology Center

In affiliation with the Northwest Pennsylvania Industrial Resource Center and Ben Franklin Technology Partners, the Plastics Technology Center (PTC) is a non-profit, fee-for-service group of mechanical and plastics engineers with industry experience. They can address product concepts and enhancements, education, and project management to take ideas from concept to production. Using their Product Realization Cycle, the PTC provides effective solutions to client problems:

- Product design and development
- Material and process selection
- Prototyping and rapid tooling
- Structural analysis using computer-aided design (CAD) or finite element analysis
- Tooling development and review
- Process improvement or optimization
- Training or technology transfer

Offering engineered innovations from within Pennsylvania yet available throughout the United States, the PTC works in several industries: medical, electronic, automotive, consumer, and industrial. More information about the PTC is available online at <http://ptdc01.bd.psu.edu>.

Pennsylvania Technical Assistance Program

www.penntap.psu.edu/

U.S. Patent & Trademark Office

www.uspto.gov

SBIR Program

www.sba.gov/sbir/

Ben Franklin Technology Partners

www.benfranklin.org

Life Sciences Greenhouse

www.lsgpa.com

U.S. Small Business Administration

www.sba.gov

Contact information for Steven Overholt

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Appendix

Inventor Protections

The American Inventors Protection Act of 1999 gives you certain rights when dealing with invention promoters. Before an invention promoter can enter into a contract with you, it must disclose the following information about its business practices during the past five years:

- how many inventions it has evaluated,
- how many of those inventions got positive or negative evaluations,
- its total number of customers,
- how many of those customers received a net profit from the promoter's services, and
- how many of those customers have licensed their inventions due to the promoter's services.

This information can help you determine how selective the promoter has been in deciding which inventions it promotes and how successful the promoter has been.

Invention promoters also must give you the names and addresses of all invention promotion companies they have been affiliated with over the past 10 years. Use this information to determine whether the company you're considering doing business with has been subject to complaints or legal action. Call the U.S. Patent and Trademark Office (USPTO) at 1-866-767-3848, and the Better Business Bureau, the consumer protection agency, and the Attorney General in your state or city, and in the state or city where the company is headquartered.

If a promoter causes you financial injury by failing to make the required disclosures, by making any false or fraudulent statements or representations, or by omitting any fact, you have the right to sue the promoter and recover the amount of your injury plus costs and attorneys' fees.

In addition, although the USPTO has no civil authority to bring law enforcement actions against invention promoters, it will accept your complaint and post it online if you complete the form, **Complaint Regarding Invention Promoter**, at www.uspto.gov/web/forms/2048.pdf. The USPTO also will forward your complaint to the promoter, and publish its response online.

To read complaints and responses, visit Inventor Resources at www.uspto.gov/web/offices/com/iip/index.htm.

To order a copy of the American Inventors Protection Act, call the USPTO toll-free at 1-800-PTO-9199, or visit www.uspto.gov/web/offices/com/speeches/s1948gb1.pdf.

Source: Federal Trade Commission Website