The Invention Process

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So, you have an idea that you think will be a better way to catch the proverbial mouse. Congratulations. An original idea is a terrible thing to waste. So where do you go to collect your millions? You go directly to the bank, of course! It is just that there are a few stops along the way.

To go from a concept that answers a need, all the way to increasing your wealth, requires many small steps. In some situations you will be able to proceed with one foot placed in front of the other. In other situations it may be required that you have more than one area being addressed at a time. The following list of steps will give you an overview map of areas you need to consider to reach your goal. Engineers and Project Managers like to use labels that state the "Level" a project is at. Each level may require several steps. But achieving a higher level status on a project states that *all* the previous steps have been completed.

LEVEL – 1
(Realization of the need for a solution)

The Concept to an Idea

The thought that "*There aught'a be a better way*", is not an idea and *definitely not an invention*. It is only the impetus that causes an idea to formulate. The development from a concept to an idea requires knowledge. This knowledge should come from experience. You must have enough knowledge about the need and the solution to the need, to present an idea. That is why most inventions come from the work place or a hobby.

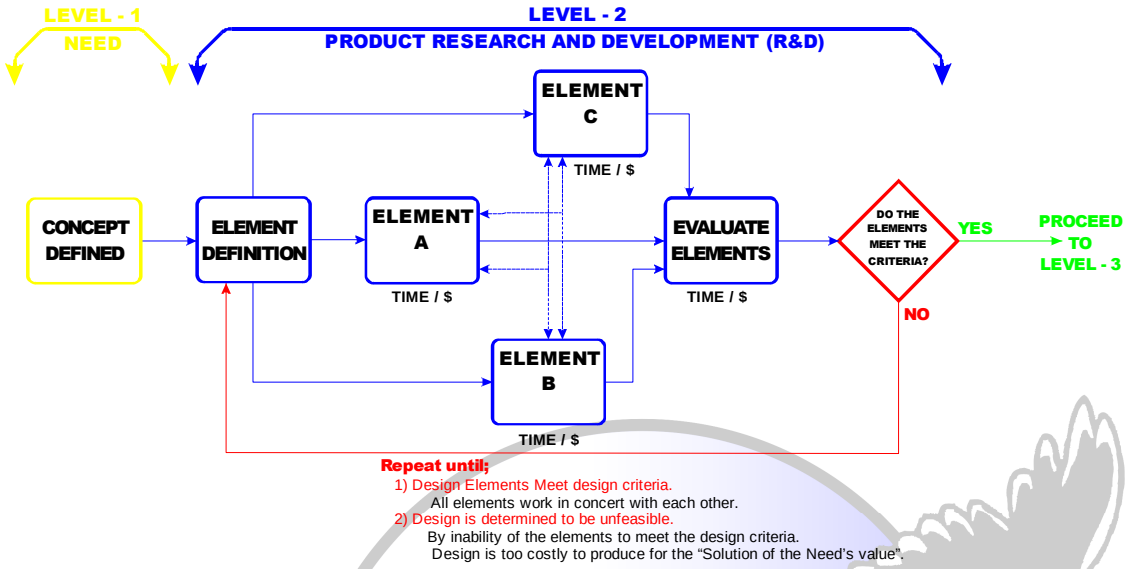
> **NOTE:** It is a good plan to keep notes that are signed and dated as you work on your project. In addition an occasional Notary Stamp will assist in determining the dates of your work. If your project goes the route of applying for a patent, these notes could be very helpful in determining who came up with the idea first. Always keep hard copies or print outs of all computer notes. Sign and date each as you file them for later reference.

A second method by which a concept gets turned into an idea is by investing financial resources. This is why corporations have Research and Development (R&D) facilities. In this setting the boss says "I want a product to do something about lumpy pavement, like what we have in our parking lot." The R&D department then after researching how the lumps got there in the first place, the consistency of the lumps, and how modifiable the lumps are, recommends solutions to the boss's request for a product. These solutions are based upon the engineers and scientists educating themselves about pavement lumps. This education is expensive. If this is your chosen path, you must have the resources to see the project through to the end. Otherwise it is time to reconsider even starting work on the project.

In either case, to go from a concept to an idea requires knowledge. Either you supply the knowledge, or you must purchase the required knowledge. There is no other way.

LEVEL – 2
(Solution to the need)

This level is where the idea is developed. This is also where most ideas are lost. Many people have great ideas at some point in their lives. But, because they do not develop the idea, no one is ever allowed to appreciate the idea or value it. There are three (easy to state, but more difficult to do) steps required to develop an idea. These three steps may need to be repeated many times to come to the final idea that truly meets the original need.



Idea Refinement

Determine the methodology of transforming the concept into an idea. How does the concept work? What kind of mechanisms, electronics, and/or software will be required? If you are to be the "Inventor of Record" you need to show how your idea works, not just in words, but in detail. It is not enough to say that "It will strip bark from logs." You must know in detail, how the log will be held so that the bark can be removed, the process and tools used to allow the bark to be removed, and the log released.

Make an example of your idea

This is the step often referred to as the "Prototype Stage". This is where the idea takes physical form.

- Mechanical – Make a model that proves that the solution is workable. This does not have to be "Elegant" only show that the idea works.
- Electronic – Make a breadboard circuit that proves that the solution is workable.
- Software – Draw a flowchart that shows all the steps of the program. Be sure to include error traps and reset loops. This flowchart will be what the programmers use later to write the first version of the software.

Test

Work with your prototype / breadboard circuit / software to learn what problems may develop that should be addressed before investing any funds to protect or promote the idea.

These three steps will provide additional knowledge specific to the idea. This additional knowledge will allow you to evaluate the potential of your idea. It will also provide a basis for a financial evaluation of the costs associated with producing your idea. Remember that this refinement process may need to be repeated many times before the idea becomes a product.

You also want to be aware of a second truth, "That no product is perfect". All products could be improved. You must select the development stage that the design meets the need well enough to

be of value to the consumer. As a trained Engineer, I well know the reluctance to declare a product ready to market. There is always something more that can be done! But if you use this criteria only, you idea will never become a product. All you will do is waste your time and your money.

The opposite side to the conversation of the second truth is rushing a poorly designed idea to the market place. This also will waste your time and your money. This is your decision to make. Balance the two sides; you want to make money not waste it!

NOTE: At this point in your invention's development, it may be wise to seek an evaluation by a "disinterested" third (or fourth…) party. A face value appraisal of the feasibility of your invention can save you resources and time. Be sure that those you ask, for an evaluation, are honest and credible. They should have no hesitation in signing a non-disclosure Agreement, an agreement that states that they will not steal your invention and use the information for their own profit or disclose the information to anyone else you do not authorize. Also expect to be charged for such services. ***In no way sign anything that gives the evaluator the rights to your invention, not even for a second!***

LEVEL – 3
(Business Plan)

Developing a business plan based upon your solution to a need requires that ***All*** of the steps in Levels 1 & 2 be completed. You must completely understand the solution and its execution to be able to develop a plan to present the solution to the market place. It is prudent at the start of activities at this level to avail yourself of other resources. Resources with expertise in areas of Engineering, Legal, Business Finance, and Marketing. This is not a time to rely on advice from anyone that thinks they are an expert. Check references and determine the value of the advice you will receive based upon the reference's credentials and past successes.

LET'S FACE IT, you would not give your money to a Financial Adviser that was not rich would you? No, you want an investor working for you that is successful with his own finances! The same analogy holds for experts in any professional field. Base your selection of advisors upon performance, not fees. Many people choose their advisors using the Golden Ladder Assumption. That is, the higher the fee, the better the advice. To apply this assumption could be very incorrect. I admonish you to take the time and research those that will be working with you. You need help not hindrances. Helpers are rare, but they are out there. You must be prepared to put as much effort into finding them as you did in your effort to develop your solution to a need.

During the development of a business plan several key decisions will be required. Your advisors should be able to lead you through these decisions. They should not be the final authority. Unless you have given up the right to make the decisions (such as having sold shares in the company), do not let anyone else make them for you. You must be in charge of your project.

These decisions would include;

Engineering

What will it take to turn the lessons learned in levels 1 & 2 into a commercial product?

1. What types of facilities will be required.
2. Physical labor or automation?
3. Storage and materials handling equipment?
4. Regulation compliance?

Legal

What is the legal standing of the business going to be?

1. Sole Proprietor (Company or DBA)?

2. Partnership?
3. Chapter S Corporation?
4. Corporation?

Is the solution to the need unique, and if so is a patent advisable? Areas of research would include,

1. Currently available products or services.
2. Recent patent search by,
    a. Keyword
    b. Abstract
3. How should the patent be filed?
    a. Through a Patent Attorney or Agent?
    b. By yourself using the electronic filing facilities provided by the United States Patent and Trademark Office on the internet at www.uspto.gov ?

What is your legal exposure?

Marketing

There are several ways to exchange a solution for money.

1. Exchange the solution with the user directly and receive money in return. If this is your option of choice then you will need to be able to make your own arrangements for fulfillment.

    Note: The new buzz word for the complete production, packaging, and selling of a product is "Fulfillment". Whereas someone that takes a finished item and packages it ready for shipment and sale is known as a "Converter".

2. Reach an agreement with someone else that will take the solution to the customer needing it.

If you determine that you do not want to present the solution directly to the customer, an agreement with someone else will be required. Each could be exclusive (you will only deal with one agreement), or non-exclusive (you can have more than one agreement). Such agreements would include,

1. Selling the solution outright.
2. Selling the solution for an initial lump sum with a percentage for each unit sold.
3. Receiving a percentage or royalty for each unit sold.
4. Stock Option in exchange for the solution.

Amplification of a couple of areas is in order at this point.

Patent Application

A patent is commonly pursued without understanding the pros and cons of the process. In some cases it is unwarranted, a waste of energy and finances. A patent is a means of protecting an idea from competition. With an idea of limited market or minimal financial reward potential, the expense of applying for a patent may not be justified. There are many products produced that a patent has never been applied for.

Consider: Your business plan may call for the idea to be produced in facilities you already own. You may operate the enterprise out of your home. These options lower your overhead, allowing reduced production costs which limit the competition. But it may also limit your market. Harry & Jill's Hardware may have no problem with you being able to produce twenty units per day. But Wal-Mart will need to see that you can produce millions of units per year to be allowed to play in their ball park!

But the opposite is true also. That is, you want to be sure that your solution does not "Infringe" upon someone else's patent. While it is the responsibility of the patent owner to notify you that your solution infringes on his patent, it would be prudent to find out if there was a prospect of that happening before you engaged in the production of your solution.

The main question to be answered at this stage is… "*Is there a potential competitor that could take my idea and beat me in the market*?" If so, then a patent may be prudent for you to consider.

There are two things you must understand about patents.

a. A patent is awarded by the government for an ***original idea*** for the purpose of allowing you time to produce your idea without competition, so that you can recover your expenses incurred in development and make a profit for your efforts.

b. To apply for a patent, ***you*** must be able to convey to your patent attorney (or agent) the complete idea, not just a concept. If this is ***your idea***, you should be the most knowledgeable person about the idea. If others had input into your development of the idea, then you are required to include them as co-inventors. Otherwise your patent could be set aside if later it becomes known that you were not the sole inventor.

The Initial Market Plan

Determine how you want to provide your solution, to a need, to the market place. Do you want to sell it outright to someone else? A popular plan (at least in the initial stages) is to produce and sell the product yourself. Some inventors plan to license their product to others, who in turn produce and sell the product. This question may require consulting with a professional that has done this before. But the steps are the same. You will need to,

c. Prepare a market survey to determine.

- How large of a market there is for the idea (a few or many).
- How valuable is your idea. If the perceived value is only pennies, and your cost to manufacture is a dollar, it is time to reconsider.

Do not make guesses! Do not lie to yourself, or others! To do so, misleads and creates an inaccurate business outlook. You want the most accurate information possible. Think about it, your goal is to engage in a series of activities that will provide you with additional wealth. It only undermines that goal if the information you base your decisions on is false.

d. Develop a marketing plan based upon market suggested by your research. Who is to produce, package, transport, and sell your idea or product?

Manufacture (Mechanical & Electronic)

The production of a product requires documents and specifications. The product is not producible without guidelines as to what the product is. What is "Good Enough" and what is "To Restrictive" impacts not only the cost of production, but even if the design can be produced at all! Therefore the following must be considered,

e. Develop engineering drawings for production of your idea. These drawings detail how the product is to be made. There are many ways to make a part, and many ways to join parts. The best way to make a product at one manufacturer may not be the best way to make the product at another manufacturer's facility. Manufacturers, just like doctors or convince stores, sell what they have. If you need a particular process done, select vendors that provide the level of quality the design requires.

- Mechanical Engineers work on the definition that a measurement is not a measurement without a tolerance associated with it. So let's say that your widget is 6" long by 3" wide. The engineer thinking of how that widget relates to other parts must include the maximum and minimum interpretation of the 3" and 6" absolute dimension. The result of the engineer's research may result in a specification of 6" plus or minus 1/16" (6"+/- 1/16") and 3" plus nothing minus 0.030" (3" +0.0/-0.030"). Other engineering disciplines have their conventions also. If you are unfamiliar with the problems associated with making parts work together it would be prudent to seek professional help with these areas as you develop your product.

- One modern approach is to model your idea on a computer, sometimes called 3D Modeling or a "Solid Model". This type of technology can be very effective in controlling costs and providing quicker development.

f. Create a pre-production prototype and test for function. Use and abuse the prototype to determine the design's limitations. *But be sure to take potential advertising photos before any damage occurs!*

g. Revise engineering documents and drawings based upon lessons learned from building and operating your pre-production prototype. You may have to go through several iterations of 5a through 5c before you are satisfied with the implementation of your idea. The old adage of "If at first you don't succeed, try, try again!" really applies here.

h. Build a few of the revised design and have several independent end users put the design in actual use conditions and see if further changes are required. This is the "Beta Testing" you have heard so much about. The results of this step may cause you to go back to 5a again.

i. Finalize design and set initial production quantity. At this point you should to put together all the information needed to proceed with the development of production and a marketing plan.

- Material Costs
- Assembly costs
- Packaging costs

At this point most burgeoning capitalists determine that what they originally thought was a good selling price may need to be reconsidered. Now that you have all the honest data collected, it is time to re-evaluate the potential of your project.

This is where the plans and dreams start to become tangible. You have the components specified, and the advertising plan proposed. The labeling and

packaging is all drawn up on your computer. Fantastic! *But…* This is the time for one more reality check. Take the time to think it through one more time.

LEVEL – 4
(Do it!)

Fulfillment

Follow through on your production and marketing plans previously devised in your initial marketing plan (Level 2) and re-evaluated in Manufacture (5e). By now you may have changed your original marketing concept drastically. So at this point the thoughts to ponder again are,

- Do you sell direct, or through a distributor? Or is the internet to be used to present your product to the public?
- Is the packaging to be utilitarian or geared to the impulse buyer, inviting the potential purchaser to pick it off the shelf and examine it more closely?

The process to bring a concept to the end user is a complicated process. But, it is not an impossible challenge. An understanding of the development steps required and knowledge of your concept are a good start.