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## Ironman Inventing

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### Researching Your Ideas -- Idea Validation

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To illustrate the importance of research relative to invention success, let me open by saying that, with adequate time, and given my knowledge of product and market development, I would be able to specify a successful product or technology for virtually *any* industry or market segment.

Conversely, regardless of the available time, there are many inventions that I could never commercialize, simply since they incorporate inherently non-commercializable features -- features that an astute inventor would have addressed as part of the ongoing product and market research.

Consider the designer's axiom -- Form Follows Function. If the ultimate function of an invention is to develop revenue for the invention owner, then "form" gets shaped by the data collected as a result of comprehensive research.

Inventors and technologists must focus on their innovation project in order for it to be successful. In large corporate environments, these inventors are, for the most part, comfortably insulated from the business elements of idea creation.

Marketing, Sales, Operations, Purchasing, and Production departments all contribute their expertise to the overall idea development, whether it is in finding low-price component sources, or price-pointing the new product to place it competitively in the marketplace.

Independent inventors or technologists working within the small entity environment simply do not have this luxury. Many times, they lack the professional experience and shy away from "what they don't know". In other instances, they are not able to find the information they need, even if they know generally, the market, costing, materials or other information they seek.

In *all* cases, however, it is critically important that the small entity inventor learn where and how to research the appropriate information needed to succeed in a competitive marketplace.

Too often, I have "overheard" inventors that speak out in Internet forums and newsgroups by posting questions to fellow inventors in the hope of

soliciting help for their prototype efforts. In one recent case, I saw an inventor who was "in production" of a product, but was relying on other inventors to suggest where he might buy a specialty component!

How can a production commitment be made without having all of the component, vendor, costing or scheduling information in advance? This phenomenon reflects either the laziness of the inventor, or more likely, the simple lack of knowledge on the part of the inventor on how to properly locate this information.

In general, research conducted during the idea-to-market "lifecycle" of an invention can be divided into three phases -- Before, During, and After idea development. Some of the research resources are referenced in more than a single phase of idea development, contrary to what the outline in this series would seem to suggest.

Once the inventor becomes immersed in the research process (applicability of a search resource, research methodology, application of research results to the present project), it will become clear when to properly rely on certain research data when researching each phase.

Ongoing research data development is important in fast-moving technologies. The introduction of a competitive product by a competitor, an alternative technology that allows faster-cheaper-better advantages over the inventor's technology, customer trends, new governmental regulations all play a part in shaping the ultimate product to be commercialized.

This series is intended as a Primer on appropriate research resources for the small entity inventor. It is further intended to provide Internet-accessible resources that should *not* be solely relied upon when hard-copy resources can be referenced in their local university or community libraries. Although the Internet provides timely information to distanced inventors, there remains substantial reference data in paper-only format. It is important to augment the methods outlined herein with other, more traditional research methods and data resources.

This series does not exhaust the research resources by any means -- but properly armed with the information presented, the inventor should easily be able to research additional references.

Indeed, for an inventor that gets joy out of breaking new ground, there is little that compares to the elation and satisfaction of finding that hidden, vitally important information nugget after hours of research.

Or put another way, what important information would the inventor *not* want to learn before investing countless thousands of dollars and years of development?

In this series, we'll look at the research required and the resources that are applicable in each of the three phases:

- Idea Validation
- Idea Development
- Idea Commercialization

### **Idea Validation Research**

Research in this phase is intended to confirm, validate or re-direct the time and money investment an inventor is getting ready to put into his/her idea. By conducting this research, the inventor will *always* obtain solid information. Result conclusions could include: "the idea is 100% on-track", all the way to "I'm glad I found that article on the small company in South Africa -- now it's back to the drawing board for me".

Idea validation research encompasses:

- Prior Art Research
- Industry Research
- Market Opportunity Research
- Funding Resources Research

### **Prior Art Research**

If the inventor fails to discover and properly disclose to the Patent Office a product or technology upon which he might infringe -- or fails to discover information that could invalidate his patent if the prior art information is brought to light by the other product owner -- every minute and every dollar the inventor puts toward idea development could be lost.

Not only are the prior art search references to technology or products (which includes patent search, prior art search of non-patented products, search of speech, news-print interviews, trade show introductions, etc.) important to ensure a strong patent position, it is also vitally important if the prior art holders are manufacturers that could ultimately compete in the world commercial marketplace.

To conduct Prior Art Research:

- a) Have a registered patent attorney or patent agent search and review the U.S. or foreign public patent documents for patentability and, if called for, potential infringement.
- b) The inventor should simultaneously (and continuously) research prior art through every appropriate trade publication, and from seminars or speeches by industry leaders, newspaper articles and press releases, graduate and post-graduate theses, and association newsletters. These sources will not be discovered in most patent searches.

Some good prior art research resources on the Net include:

- [United States Patent & Trademark Office](#)
- [IBM's Intellectual Property Network](#)
- [Biotechnology Patents](#)
- [Canadian Intellectual Property Office](#)
- [European Patent Office](#)
- [Japanese Patent Office](#)
- [Knowledge Express](#)
- [Electric Library](#)
- [Gibbs Group Invention Assessment Program](#)

## Industry Research

Most every industry, from semi-conductor manufacturing to consumer apparel, from automotive to fishing and hunting (check SIC -- Industrial Classifications) has one or more lobbyists, industry associations, or trend-watchers that collect and publish data. When compiled, this data can show up or down trends in technology, customer preferences, demographic or political influences on technologies and markets, and variations in the cost of money (lending rates and world currency fluctuations).

Before getting into industry research databases or published data, it is important to write out what one expects to gain from the research. Whether it is to establish the sales trend of personal computers (because you invented a new lap top), or to verify the buying trends of aging baby-boomers, having an outline to follow ensures that the huge volumes of interesting data about to be tapped into does not distract the researcher from finding the intended data. It is easy to begin researching a tangent only to find that 3 hours have passed without quality research results.

To conduct Industry Research:

- a) Establish, with specific targets, what data is required. Market trends, economics, age/population distribution, new product announcements, governmental regulations, ISO9000/UL/CSA/VDE/TUV or other certification requirements in the industry, strategic alliances between companies in the industry, business failure rate, or any other information that would specifically paint an accurate picture of the industry the inventor's product will have to compete with, are each a potentially important industry data point. Expand the thinking to include other data that may seem of importance to the particular industry being researched.
- b) Review the research databases, print-resources or other identified information clearinghouses to *qualify* the content and potential search results, prioritize the resources based on the probability of returning results to the targeted search,
- c) Conduct the research following the priority schedule developed in (b) above.

Some good industry research resources on the Net include:

- Trade association Web sites (search Gale's Listing of Trade Associations at the local library for a complete listing of all trade associations)
- [TRW Credit Reporting](#)
- [Polson Enterprises Research Desk](#)
- [Thomas Register](#)
- [Dunn & Bradstreet](#)
- [Standard Rate & Data Service \(SRDS\)](#)
- [Hoovers Online](#)
- [Ward's Business Research](#)
- [Online Business Library](#)
- [North American Industry Classification System \(NAICS\) & Standard Industrial Classification \(SIC\) Codes](#)

### **Market Opportunity Research**

I can't say how many times inventors have come to me with an idea they absolutely *know* will sell a million units. Yet when I ask how the units will be sold, through what distribution channels and for what price, and over what period of time, they discount my question and answer again that they *just* know it will be a winner if they get the product to market.

Not only does that show a naivete of the real business world, it casts suspicion on the validity of the technology itself, even though the idea may be competitively manufacturable and technically superior to anything on the market.

As they say, "you only get one chance to make a first impression". To develop a credible first impression (and to prove to one's self that there really *is* a market opportunity to justify taking a loan against the family house), the inventor simply must get himself deeply into market analysis and research.

Some of the information that would help an inventor validate the market opportunity might include the following:

- Competitor (current supplier) evaluation -- get a price/feature listing of every competitive product
- Competitor company evaluation -- Are their sales up or down? What new products investment have they made in the past year? How big are they? If I enter the field with my product, can I compete on price? On features? On sales channels?
- Technology evaluation -- Is the present technology already getting eclipsed by new technologies? Think of the impact the Internet has had on the TV viewing audience.

- Where will the products be sold? Where do most of the potential customers reside? Will shipping costs to that location make the new product non-competitive? If the invention is being sold to newspaper mills, for instance, are their industry sales up? Or down? If news print is losing ground to the virtual publishers (Internet), they will not seriously consider capital investment in new automated machinery -- unless the inventor can succeed in selling the invention as a cost-savings benefit to the newsprint mill.
- Once the product is ready for production, what commissions will have to be paid to the sales persons and distributors? Even if the inventor plans to simply license the product or technology to a manufacturer, it is imperative that the money incentives throughout the distribution channel are accounted for. Unless these incentives are calculated into the targeted sales price (and production costs), neither the investor nor potential licensee will believe the profit potential.

All of these questions, and more, will help shape the product features, manufacturing methods, and production or retail pricing, and will begin to help the inventor understand the sales channels for the intended product.

There is a never-ending stream of data that can be wildly useful in idea validation. Marketing is part art, part science. With each piece of market opportunity validation data, the inventor's presentation will migrate from "I think I can sell a million widgets" (art) towards "based on competitive product sales to the energy refiners in the oil-producing states of the U.S., I feel that over the next 3 years, at least 75 units can be sold" (science).

Which of the above arguments would *you* believe? The qualified market *data*, of course. And this data is collected through researching the appropriate data archives.

Some good market opportunity research resources on the Net include:

- [DataQuest Market Research](#)
- [Dialog Corp.](#)
- [LEXIS-NEXIS Statistics](#)
- Search your industry trade group(s) for association pamphlets

### **Funding Resources Research**

It is a paradox that inventors should seek project funding when they do not require any. Nobody wants to get involved with a project that has lost money, even though most inventors know that project development cost money, and appreciable returns on the investment are typically not seen for a year or two.

If the inventor is committed to the long-term development of your product/technology, and has developed a business plan to outline the expected costs of the project, it would be a smart move to bring in

investment "partners" long before the need for money crops up.

"Partners" can mean actual equity (paid-in) partners in a legally formed partnership, co-founders in a small corporation, or governmental agencies that can loan, grant or assist in obtaining funding. (There are scores of information sources on business structures -- see [www.gibbsgroup.com/smallbiz\\_cafe](http://www.gibbsgroup.com/smallbiz_cafe) for a few connections.)

Developing a business plan is an important step in any commercialization venture -- even if the inventor has no intention of manufacturing the product. It is only through the development of a business plan that the inventor (and potential patent licensees) can begin to understand the actual business and revenue potential of the idea.

Without this important step, without investigating the market opportunity and sales potential, and without understanding the production costs or sales/distribution channels, the inventor will be going into any business negotiations with 1/2 of the required knowledge -- and will likely receive 1/2 of the potential value of the idea.

In some cases, the lack of a business plan can cause the inventor's idea to never be considered for licensing, especially when approaching a new market with a new product. The inventor must convince the potential licensee, banker, venture capitalist, investment angel, or rich uncle Henry that there is a potential for returns on the investment.

Each type of funding comes with its own set of criteria. Early in the funding search, the inventor should contact the funding resources to obtain an outline of what they look for in qualifying their investments.

When the inventor searches the available funding sources, he should determine the investment level or loan amount the funding source will make. Some specialize in the under \$500,000, some will not get involved unless \$2.5 million or more is needed. Obviously, just going after a big-name venture capitalist will not increase your chances of funding simply because you "only need \$25,000".

Some of the resources below will help the inventor source the right kind of funding for the project. Visit each of these sources and take notes -- then come back and review them again after beginning the outline for the business plan. The requirements, funding conditions and investment criteria will become more clear with each business plan iteration and funding source visit.

Some good funding research resources on the Net include:

- [Federal High Risk Technology Development Grants](#)
- [Federal Advanced Technology Shared Cost Program](#)
- [DataMerge Free Venture Capital Database](#)
- [America's Business Funding Directory](#)

- [FinanceHub \(venture capital resources\)](#)
- [National Science Foundation \(NSF\)](#)
- [SBA Procurements & Grants Hot List](#)
- [SBA Small Business Loan Program](#)
- [DOD's Small Business Innovation Research](#)
- [Venture Financing Resource Directory](#)
- [Datamerge's 75 Financing Resources](#)
- [Money Hunter](#)

Armed with this new-found research information, the inventor can begin outlining and collecting the necessary data to validate the invention, the market opportunity, the anticipated funding requirements, and schedule, all of which will help lead to a successfully commercialized new invention.

The next phase of inventors' research will address data required during the Idea Development phase. It will address finding and using information such as Product Costing, Materials Research, General Information Research, Technology, Design & Engineering Methods Research, and Competitive Supplier Research.

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