From concept to market, the art of invention and product development (Part six)

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In part five of this series we covered what you can do to protect yourself when having to disclose your idea to others before and after the filing of a patent. In this section we address seeking help from a product development firm.

Product Development firms depending on their experience and their core set of competencies can help you get your product from the concept phase through prototyping and hopefully to a market ready state.

Service provider competence

When screening product developers, always inquire about their actual work history related to your type of product. This is a very important step and cannot be overlooked. Many if not most of our project rescues are born of incompetent service providers that simply did not know what they were doing.

Although many come to mind and some very well known products, I will reflect upon and provide a lesser known product example. A client came to us a couple years ago with solar charged, battery powered real estate sign lighting system "designed" by a competitor that shall remain unnamed.

The clients were a splendidly nice group of people and I took a keen interest in helping them after seeing just how badly they were conned by their service provider.

The product could not have been simpler. An overhead add-on light bar attached to a conventional 4X4 mounted real estate sign intended to provide night time illumination of the sign for passing vehicles.

Upon inspection of the prototypes and support documentation two glaring mistakes leaped out at us. The designer chose to deploy a

miniature CCFL "Cold Cathode Fluorescent Lamp" as the light source and the battery pack power was far too small to power the light for just moments or any practical period of time.

Any experienced engineer or "A" level technician for that matter would have known better than to use a current hogging light source like a CCFL in such an application.

Furthermore the discharge curve of the battery pack not only failed to provide nearly enough operating time between charges but could not provide ample inrush lamp start current to perform a lamp restart after only 1 hour of operation!

An experienced service provider/engineer would have excluded the CCFL at ground zero and would have focused exclusively on low energy, solid state LED's "Light Emitting Diodes" like the Nichicon white LED in an array behind a diffuser panel to bathe the sign's planar surface in a clean uniform white light.

To save battery power I would have deployed an oncoming vehicle detector using an inexpensive commodity grade photo sensor preceded by normal incident geometry tube baffle about a half inch long made of any opaque material like PVC.

The detector's field of view would be optimized for long range detection in an effort to light the sign as early as possible minimizing driver distraction that might present a product risk management concern.

As the vehicle approached and its headlight(s) detected, the sign would illuminate for a predetermined period of time or until a secondary means of motion detection determined the absence of the vehicle or persons that may have exited the vehicle to acquire a brochure from the sign.

But all this brainstorming didn't overcome yet another problem with the product idea that was overlooked by the prior "product developer" and only occurred to us after a few hours of analysis.

The client's specification and pending Utility Patent called for the use of solar power to recharge the product's battery between hours of operation.

Question...Where is a real estate sign typically located?

In front yards usually as close to the curb as possible to be seen by vehicle traffic right?

What is often found or (hint) “***growing”*** in front yards or sidewalks that can be very large and create vast amounts of shade over relatively long periods of time?

You guessed it! Trees!

After a brief run at the calculator, factoring mean and worst case solar panel sun exposure in various parts of the country, it was abundantly clear that the solar panel would have to be so large that just the cost of the panel exceeded the utility of the product!

How did the story end?

Vorelco invested about $4,000.00 in case review, report generation and expert witness testimony via sworn affidavit that resulted in a court victory.

We never billed the client and forwarded the charges to our "good deeds" account.

Sometimes you just can't charge someone that has already been turned upside and shaken by a bad actor in this business.

In summary, try to find a service provider with prior experience at least remotely related to your product idea! Never pay someone to learn on the job.

Disclosing your invention or product idea

Once it is has been determined that your potential product development company is without conflict of interest and you feel comfortable with disclosing your product idea make sure you keep an ongoing record of all communications both written and oral.

It is always a good idea to have the candidate product developer write a brief summary of their understanding of your invention post disclosure.

This ensures that they sincerely understand the scope of the invention and in case there is a misunderstanding later as to rights of ownership they will have a difficult time claiming ignorance.

The preliminary or "ballpark" quote

To save a lot of time for both yourself and your product developer try to get a preliminary or ballpark quote summarizing estimated costs and time to deliver in writing. This approach will prepare you for what potential investment lies ahead.

The final quote and agreement

Once a final quote is agreed to and you and your service provider desire to enter into a business arrangement you should create and operate from a work for hire design and development agreement.

Either party may produce the agreement but it should be drafted by a competent attorney familiar with intellectual property law and work for hire agreements.

It is imperative that your ownership rights are protected and how far that protection goes relating to any discoveries or derivative works born of the reduction to practice efforts expended during the enforcement period of the agreement(s).

In other words if the service provider makes a discovery related to the subject matter covered in the agreement but is outside the scope of work agreed to how do you reconcile this without prior terms in an agreement.

This could be one of the most prevalent causes of issues between clients and service providers.

If you, the client lock down the agreement so tight that there is no reward for innovation your service provider might just invest as little effort as possible to just get the job done leaving potentially invaluable

features out of the design. In other words you should provide some incentive

The many types of design and development agreements

There are basically 3 types of design and development agreements.

- **Time and material "T&M"**
- **Fixed Milestone**
- **Not to exceed**

The straight "Time and material" based arrangement like it sounds is the client agreeing to pay a known hourly rate and actual material cost. Sometimes there is a nominal handling fee for materials like 2-5%.

The Fixed milestone based arrangement is simply the exchange of payment for a verifiable completion of an agreed to definable milestone like a preliminary design due in 40 hours or one month.

The "Not to exceed" arrangement like it sounds is a fixed budget program where a predetermined investment ceiling is established and agreed to.

Downsides to all three project funding methods

Time and materials based arrangements are a blank check and have no budgetary constraints and costs could easily spiral out of control without close oversight.

Fixed milestone arrangements although the preferred of the three, can be a problem if the client lacks the technical prowess to understand the milestone benchmarks or deliverables.

The Not to exceed method is mostly used when it is difficult to specifically identify the scope of work in a project lacking clarity.

These are often scientific endeavors where much of the work is exploratory in nature and results are uncertain. At some point in time or budget the project is either rolled up or continued.

The downside here is the reality of pending project termination for the service provider regardless of progress.

The ideal arrangement is a hybrid fixed price milestone based arrangement where payment is rendered upon completion of verifiable milestones but if it is determined that unforeseen reasonable costs revealed themselves after the execution of the agreement that those costs should be covered on a contingency basis.

Discounted service fees for a "share of future proceeds"

Although this all sounds like a win-win deal for both the client and service provider, it often leads to disaster and over the years we have seen our share of these projects coming in from deals gone bad with the prior service provider.

It always starts off looking like perfect arrangement. The client gets product development services at a reduced price and the service provider can look forward to sharing in the profits from the sale of the resulting technology or product.

The problem can often arise from immediate priorities like cash flow. Although the reward of sharing in some future, almost imaginary, sale of a product is an enticement it pales to the immediate and quantifiable reward of full rate paying work.

Therefore it is advisable that in such an arrangement you and your service provider agree to a specific milestone based timetable that can be easily tracked for schedule creep.

The design agreement should provide language covering default and reasonable remedy time.

Without addressing schedule creep in a well written agreement by a real attorney, you and your product developer could be in for a very long and miserable relationship.

Never forget the carrot and stick in such agreements. Reward for compliance and dissolution for failure.

Vorelco Product Development Services