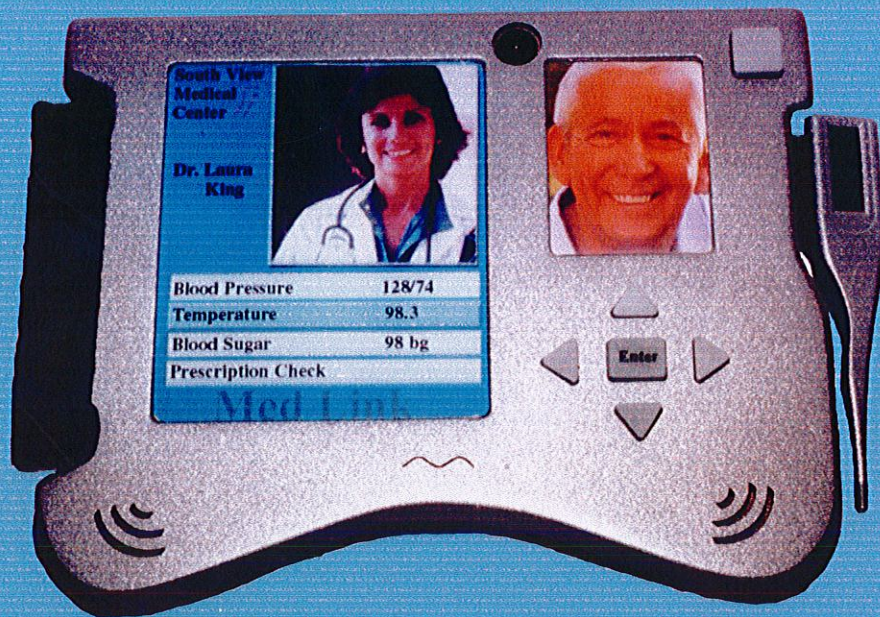


Medlink



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May 2, 2001

Table of Contents

Abstract.....	3
History of Medlink.....	4
Design Process.....	4-5
Figure 1.1.....	6
Figure 1.2.....	7
Medlink Modeling Process.....	7-8
Figure 1.3.....	9
Material List & Cost of Medlink.....	9
Project Management Schedule for the Model.....	10
Figure 1.4.....	11
Medlink. Could it be Patented?.....	12
What is a Patent.....	12
What can be Patented.....	13
United States verses World.....	13
Provisional Application for Patent.....	14
Joe Fighuzzi.....	14-15
What have I learned.....	15
References.....	16

Abstract

Because the Internet can be used to transmit almost any type of information, it could be used to transmit vital medical information. A device could be constructed to eliminate multiple visits to the doctor. If a device such as this could be thought of, it can be made. This project allowed me to get an understanding of the product development process including the patent process.

History of Medlink

We reach a point in our lives when medical attention is needed. It may be for a short period of time or a long duration. Constant visits to the hospital or clinic can be overwhelming. To help patients contact a doctor and make them more accessible, I came up with a device called Medlink. It will allow a patient to interact with their doctor from the comforts of their home, or where ever they choose to go.

With this in mind, I designed Medlink to be user friendly, while providing vital information about a patient's condition. From your home, information would be collected about your condition while talking to and seeing your doctor through the Medlink device. I wanted to make sure that the information collected during a check-up in a doctor's office could be done via Medlink in your home. Does this seem a bit futuristic? It is not, in fact many companies today are working to develop this type of technology including MediaStation 5000 created by the University of Washington, MedAire Inc, and many patents relating to this type of technology exist today. What I have not found is a device that is small and easy to transport wherever a person goes. They all consist of using a large computer setup system that is not easily transportable.

The Design Process

Before I designed Medlink, a list of functions and attributes were made to determine the best possible design. These qualities were chosen from information gathered from doctors and nurses. The most important attributes include:

1. Blood Pressure Cuff
2. Thermometer
3. Monitor
4. Camera
5. Speakers

6. Microphone
7. Monitor of self
8. Function buttons
9. Name of hospital
10. Prescription check
11. Name of doctor
12. Blood sugar levels

Once these functions and attributes were determined, I moved onto incorporating them into a design. The design aspects included shape, form, ergonomics, and aesthetics. When I designed Medlink, shape was first considered. Medlink needed to be a shape that people would not recognize unless they had seen one before. I added curves to make it look modern. Since Medlink would be easy to transport because of its small size, it needed to work well with the human body. The button placements and screen layouts were also considered for convenience. I chose to paint Medlink a silver color for several reasons. It needed to be a color that people would notice. Secondly, it needs to appeal to many different types of people, old and young. Lastly, it is a new device, which needs a new and fresh color.

I used Adobe PhotoShop to make the screens of Medlink. I found pictures for the screens that I thought would work well to interpret my thoughts of being simple, yet effective. The background color was selected to coordinate with the device itself while providing an easy color to look at. The color had to be catchy so that people would notice it, but not be turned away. Medlink, in simple terms, needed to be functional and simple. Figure 1.1. on the next page shows different sketches used to determine the final look of Medlink. Figure 1.2 shows the final sketch of Medlink.

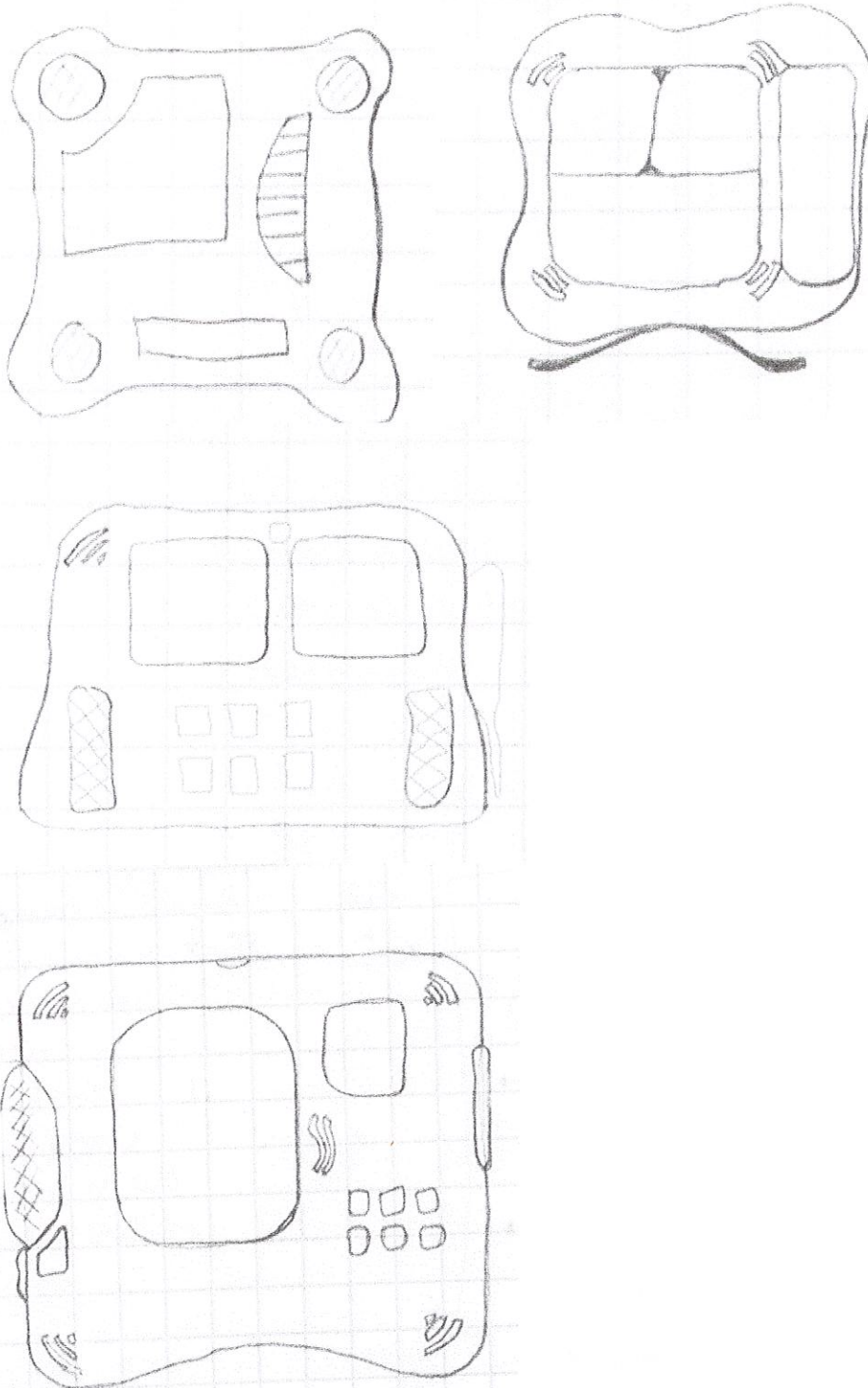


Figure 1.1

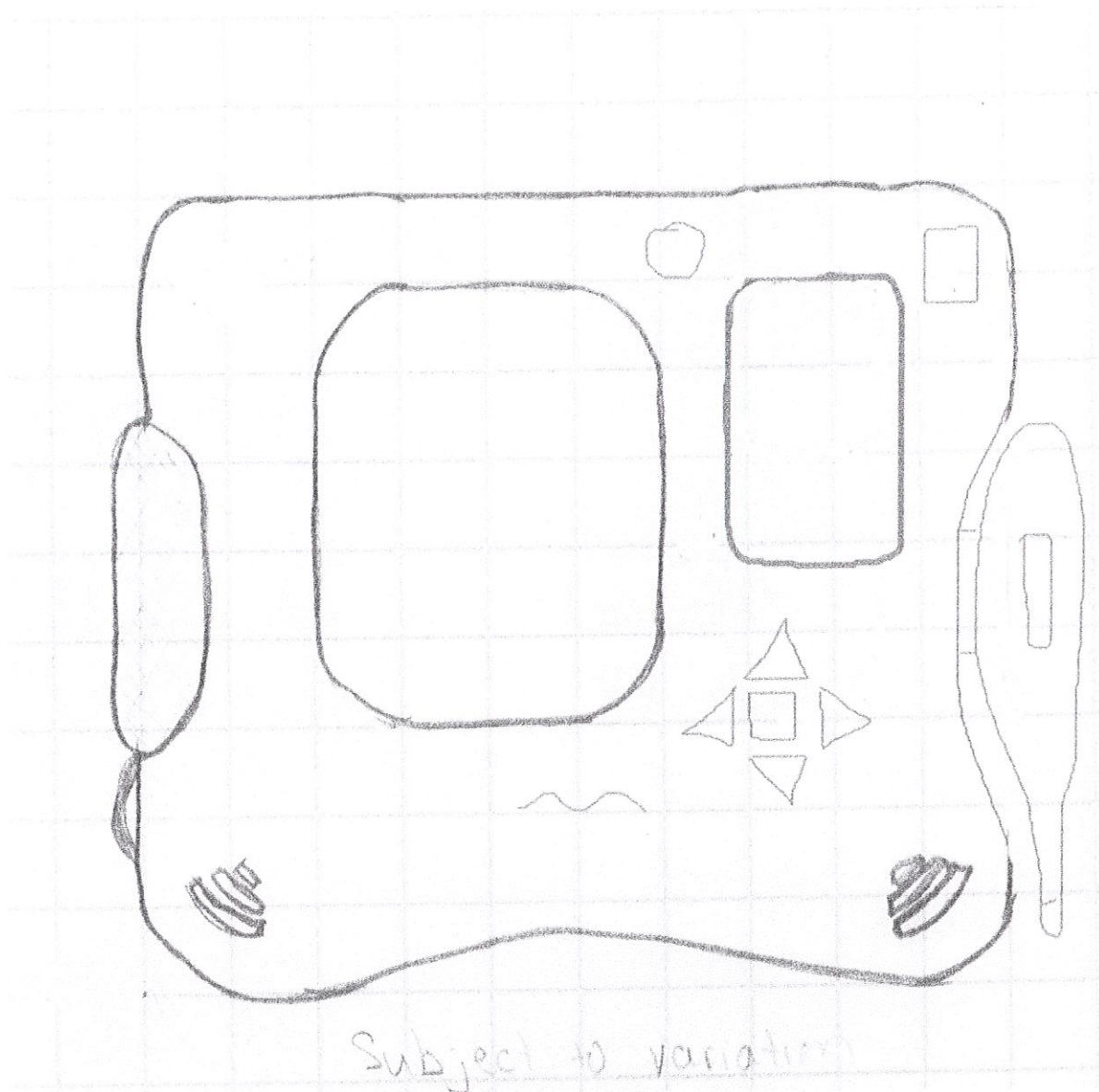


Figure 1.2

Medlink Modeling Process

The first step in the creation of Medlink was to take my 2D drawing and create a 3D image in a computer program, I chose to use the program Rhino. Once the main body of Medlink was drawn to specifications, I then brought it into a program called Surfcam, which allowed me to create tool paths and movements that a CNC Mill can read.

The next step was to test the program of the main body using urethane foam. Urethane foam was used because it is relatively inexpensive and easy to shape at increased speeds on the mill.

Once the program was run precisely to my specifications, ren was used for the final model. Ren is a composite material, which has qualities similar to wood, without the grain patterns. Figure 1.3 on the next page illustrates Medlink after being shaped by the CNC mill.

I used an existing thermometer to create a functional thermometer for Medlink. The real thermometer was cut down and shaped to contour the same shape of the Medlink model. Velcro was used to connect the thermometer to the main body.

When I was done with the thermometer, the next step was to create the function buttons. Acrylic was used first, but I soon discovered that acrylic was too hard and looked unrealistic. I then decided to cast them out of silicon. It allowed the buttons to seem real, as they are soft to the touch.

The next step was to create a blood pressure cuff. It was made using fabric to illustrate where a blood pressure cuff would fit onto the model.

To finish the model, I painted it and added and the screens. Overhead sheets were used to protect the prints of the screens.

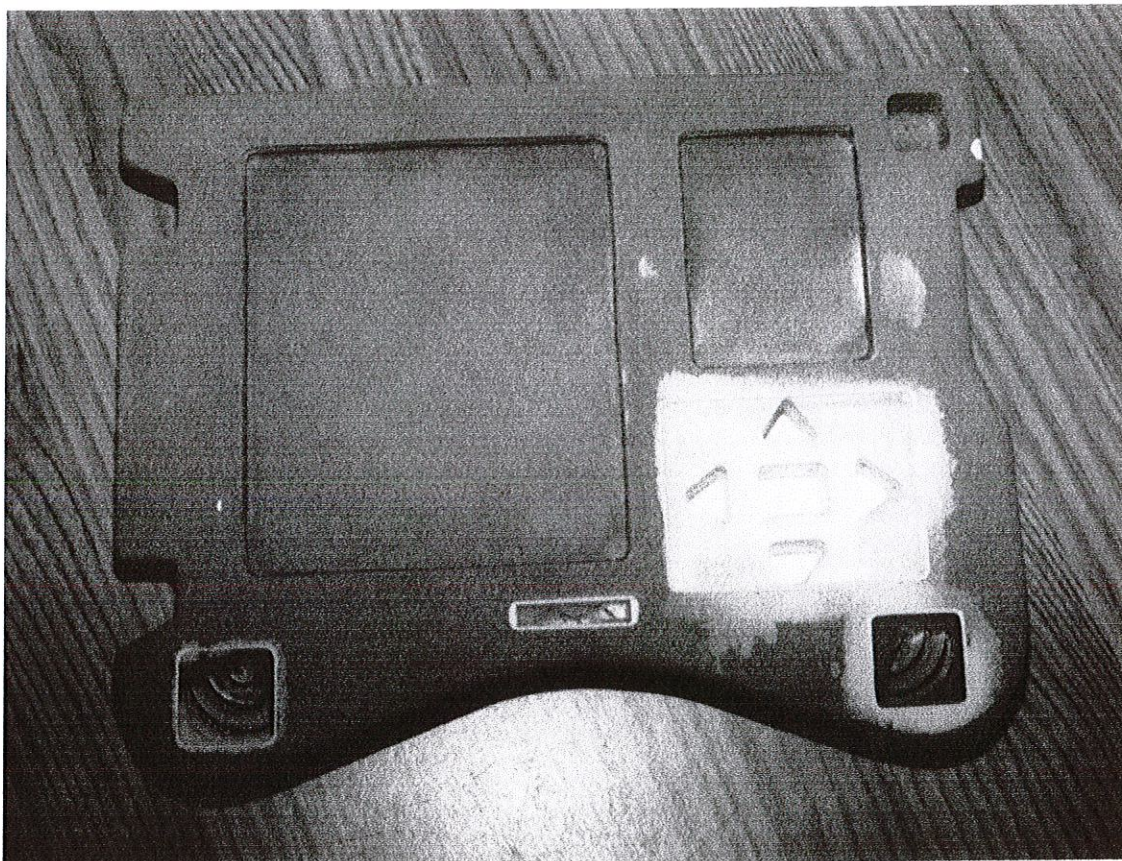


Figure 1.3

Material List & Cost of Medlink

<u>Part Name</u>	<u>Material</u>	<u>Supplier</u>	<u>Quantity</u>	<u>Cost</u>
Main Body	Ren	Cieba-Giegy	2sq. Feet	\$80.00
Thermometer	Thermometer	Target	1	\$4.76
Function buttons	Silicon	Ace on Lake	1 pint	\$10.00
Blood Cuff	Fabric	Joan Fabrics	1sq. Foot	\$5.69
Screen covers	Over Heads	Office Max	2	\$0.60
Screens	Color Prints	Computer Lab	2	\$12.00
Camera	Foam Ball	Ace on Lake	1	\$0.25
Surface Finish	Spray Paint	Ace on Lake	1	\$5.45

Total Cost: \$118.75

Project Management Schedule for the Model

Week	Work Performed	Process Used
1	Sketches where drawn	Hand drawings
2	3D Drawings using the computer	Rhino, Surfcam
3	Started working with urethane foam and ren	CNC Mill
4	Finished main body	Hand work
5	Make Thermometer	Hand work
6	Make Blood Pressure cuff	Hand work
7	Put all together	Hand work
8	Make buttons	Silicon molds
9	Paint all parts	Spray paint
10	Make Screens	Adobe PhotoShop
11	Final details	Handwork

Figure 1.4 on the next page shows Medlink in its finished model state. The different parts of the model are labeled to illustrate my ideas of the model.

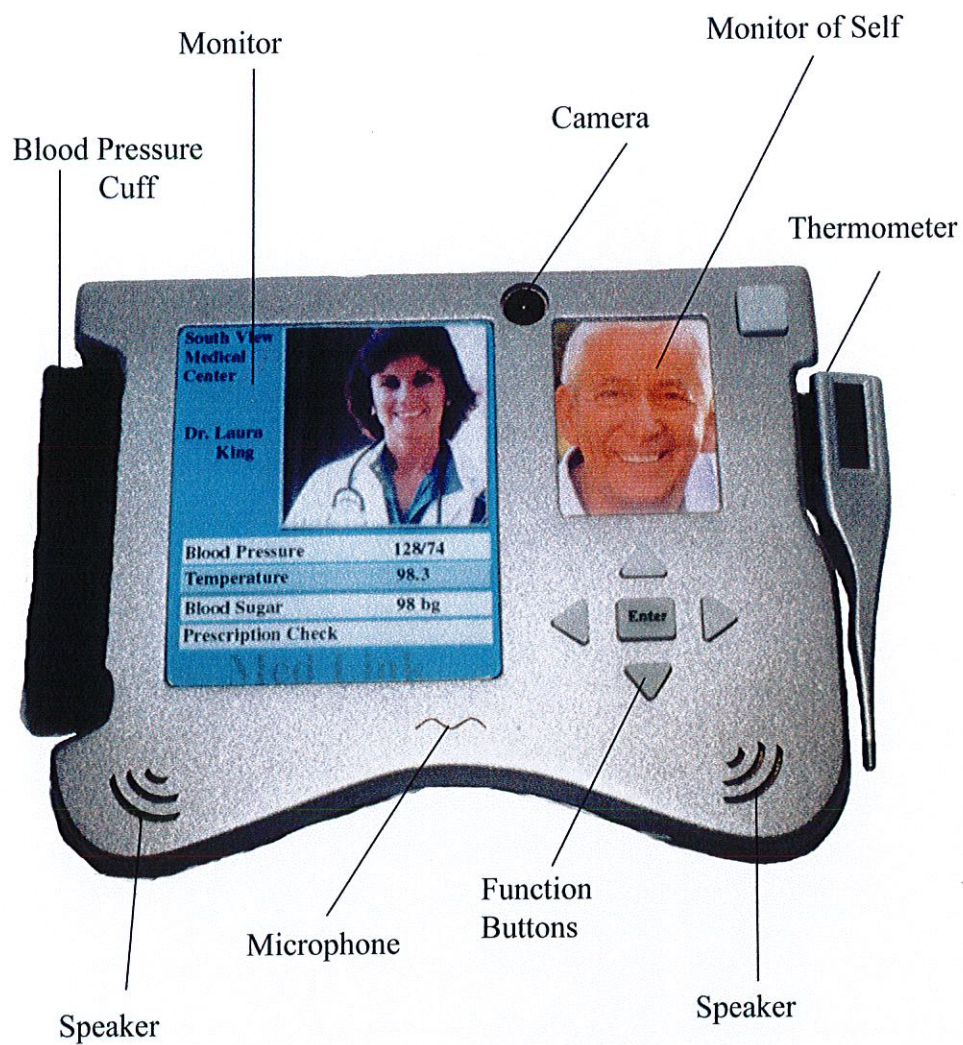


Figure 1.4

Medlink. Could it be patented?

My research first led me to CarTika Medical Inc. It is a company in the Twin Cities that specializes in making medical instruments. They have many in-house operations that are used to take an idea from drawings through the development process. I had the opportunity to talk with the founder of CarTik Inc., Tom Carlson. After looking at my model he told me the next step would be to talk to a patent lawyer. He does not specifically deal with this type of technology (T, Carlson, personal communication, January 8, 2001).

Instead of going to a lawyer, I thought I would research patents on my own by looking up the U.S. Patent and TradeMark Office.

What is a Patent?

Three kinds of patents exist in the United State: they include utility, design, and plant patents. A patent keeps the general public from selling, using, or making claims to an idea. Typically, a patent is valid for 20 years, after that the inventor can patent an idea again or leave it up for grabs (U.S. Department of Commerce, 1997, p. 16).

An important side-note is that patents only put restrictions on other people from using an inventors idea. Patents do not give the inventor exclusive rights to use, sell, or make his or her idea. If someone has a patent relating to yours, you will have to get permission from that person before you can create your patent (<http://www.patents.com/patents.htm#whatis>).

What can be patented?

Patents can be given to anyone who “invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent (U.S. Department of Commerce, 1997, p.10).”

Patent laws also emphasize that the patent be “useful.” This refers to the patent itself and subject matter. If an inventor has a device that will not perform its intended purpose, the invention will not be granted a patent title. When working to patent an idea, it has to be more than just an idea. A structured layout of the invention is required (1997, p. 10).

After seeing the many ideas related to Medlink that already exist today, I know that it will take a lot of time and money to patent an idea of this magnitude. Looking through patents with the key word Tele-medicine, I found out that many patents related to Medlink exist today. Randomly looking at some of these patents, I found them long and hard to understand. I then applied for general information about patents from the U.S. Patent and TradeMark Offices and started reading about them.

United State versus World

Two ways of claiming rights to a patent exist in the world today; they are “first to file” and “first to invent.” The United States is the only country to use “first to invent.” That means a person does not have to have a patent on an idea to get credit for it. As long as an inventor has been documenting his or her idea and working on it continuously, they have rights to the idea. The rest of the world uses “first to file,” which demands a patent status before claims can be given to the inventor (J. Figliuzzi, personal communication, April 29, 2001).

Provisional Application for Patent

During the early stages of obtaining a patent, a person can apply for a provisional application for a patent, which allows "Patent Pending" status given to an idea for up to 12 months from the date of the application. A Provisional Patent is similar to a patent, but it allows the inventor to protect his or her idea before it is patented. It becomes useful when dealing with ideas that are too large for a single person to handle. Medlink is one of those ideas that will need many people involved to create it. The inventor still needs clear and accurate documentation of his or her idea, but it protects it while they talk to different people and companies who may be interested in that idea. During the 12 months the inventor must apply for a patent license on his or her idea in order for it to be valid. The provisional patent is \$75 which is inexpensive compared to the patenting process itself (2000, pamphlet).

Joe Figliuzzi

Because of the cost involved with the patent process, I continued my research with a personal contact through Mark Schmit. I contacted Joe Figliuzzi, who is an expert in the patent process. He has numerous patents of his own and several in the patent pending stage. He also has a small prototyping shop, which he uses to bring his ideas to life (J, Figliuzzi, personal communication, April 29, 2001).

I explained my situation to Joe Figliuzzi and displayed my model for him. He quickly said that I needed to start a journal. Inventors use a journal to explain their ideas in writing along with sketches. Once an inventor explained his or her idea, they get witnesses to sign and date the pages. The witnesses have to fully understand the idea and

cannot be related to the inventor. Every page has to be completely written in and numbered to ensure information is not added at a later date. If an inventor updates his or her idea, it should be another journal entry to explain that. It is also important to show continued work on an idea in your journal. The patent office holds journals at a high status. Journals can prove or break a case for you. According to Joe Figliuzzi, a journal is the best thing a person can do to protect his or her invention besides a patent.

Medlink in its current state of development would not be granted a patent because it is only a mockup model of an invention. The next step for Medlink will be to make a working model or prototype to fully understand the components that would be needed to make Medlink functional. Joe Figliuzzi suggested that I find someone who works with electronics and that I can trust. Once Medlink is documented to the point where by it could be made, I could apply for a provisional patent pending status. Then I could work on marketing Medlink to companies for development (J. Figliuzzi, April 29, 2001).

What have I learned

What I have learned through this research is the entire product development process, from taking an idea to developing it into a patented invention. The model of Medlink is successful, in that it portrays what I intended it to. Even though I have only scratched the surface of patenting, the further I take my ideas, the more I will gain from that process. Along with everything I have learned, new questions have arisen. Questions like “who can I trust?” “does this idea already exist?” and “can I trust the reader of this thesis?” These questions will have to be answered in the future. I am starting to understand the steps I need to take to develop an idea of this magnitude. It is a long process, but if consistent and dedicated, it can be accomplished.

References

Oppededahl & Larson (1995; June). What is a patent? [5 paragraphs.] Available <http://www.patents.com/patents.htm#whatis>

U.S. Department of Commerce (1997) General information concering patents. United State Patent and Trademark Office.

(2000) [Pamphlet]. Provisional application for patent. United States Patent and Trademark Office.

