Executive Summary

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Company Leadership

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VP of Research and Development – Andrew Hoogendam
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Company Brief

Sherpa LLC is a small electrical engineering company that will offer consumer electronic devices in the personal navigation industry for outdoor enthusiasts and spelunkers. Sherpa is founded on the principles of integrity, quality, teamwork, and technological innovation.

Traditional methods of navigating in the outdoors are using a map or using a handheld GPS; there are times when neither of these solutions is ideal. A map and compass can be cumbersome to carry and difficult to read if the user is not experienced. A handheld GPS can sometimes lose GPS signal and will no longer be able to update the location of the device. There is a need in the market for a device that does not have these external limitations and can be completely self-reliant. There is also a push from the market side for devices that go beyond the now-mainstream functions of GPS devices, as GPS functionality is found in more and more consumer electronics.

Our primary product, called the "One", is a GPS-independent personal navigation device (PND) that is capable of presenting the location of the user without relying on a GPS signal to be available at all times. In many ways, it will be similar to what is already available for customer familiarity, but will differentiate itself from other GPS manufacturers through increased functionality and accuracy.

The Sherpa “One” will provide the customer with the following benefits.

- Prevent the user from becoming lost in the wilderness
- Navigation redundancy - separate from GPS
- Provides peace of mind to the consumer - they have greater security in the wilderness when using our device.

Through the sales made from the Sherpa One, start up and operation costs will be paid for within 3 years, at which time a net profit will be generated, allowing for the planning and development of a second device to continue creating revenue.
The purpose of writing this plan is to develop an effective strategy that would bring the development of a useful product to the marketplace. With a planned out strategy, such an endeavor would be more likely to succeed.

**Human Resources Plan**

The management team consists of four principals, Andrew Hoogendam, Danny VanderSpek, Dave Moelker, and Anthony Boorsma. The members of the management team are all equal partners in the company Sherpa LLC. There are no plans to add to the management team in the near future, as the desired team of few individuals can be sufficiently managed by the existing management team for the foreseeable future. Sherpa will be flexible and stay alert to the changes in the company and be ready to hire additional help before the need becomes pressing to keep the company focused and well-managed.

**Market**

GPS based PNDs have become extremely popular since their initial release in 1993. In the second quarter of 2008 alone, 3,729,110 PNDs were sold (Canalys, 2008). Along with massive growth in sales, the technology behind the navigation devices has advanced significantly and continues to grow.

The personal navigation device (PND) market is controlled by a few major players including Garmin, Magellan and TomTom. The PND market will be difficult to enter; however, with proper differentiation and an aggressive pricing strategy, breaking into the market is possible.

**Business Strategies**

The different strategies that will make this company a success are use of differentiation to distinguish our product on the market and focusing on reliability and quality while maintaining a lower cost than competitors. Through differentiation we can target sectors of the market that the more renowned GPS companies cannot target. Also by focusing on reliability and quality we can convince our target market that the device is indeed beneficial for them to have.

**Financials**

In order to begin operations and to launch our initial product, Sherpa requires $1,750,000. One million of this will be funded by private investors, and $750,000 will be funded through loans. The purpose of the funds is to pay for the development of the initial product that Sherpa will launch as well as cover all of the associated fees for the initial product launch.

Table 1 outlines the highlights of the financial forecast for Sherpa. For more details on the financial forecast, see section Table 1.

<table>
<thead>
<tr>
<th>Table 1: Financial Forecast Highlights</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Net Revenue</strong></td>
<td>3,150,000</td>
<td>15,750,000</td>
<td>39,375,000</td>
</tr>
<tr>
<td><strong>Net Income</strong></td>
<td>(647,880)</td>
<td>544,302</td>
<td>2,655,960</td>
</tr>
<tr>
<td><strong>Break Even Volume ($)</strong></td>
<td>5,722,839</td>
<td>4,862,719</td>
<td>4,646,419</td>
</tr>
<tr>
<td><strong>Ending Cash Balance</strong></td>
<td>35,420</td>
<td>517,552</td>
<td>2,859,412</td>
</tr>
</tbody>
</table>
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1 Company Introduction

1.1 Company Introduction

Sherpa LLC is a small start-up company based in Grand Rapids, Michigan; it was founded in 2009 after four engineering students at Calvin College collaborated on their capstone senior design project. While the company consists primarily of these four young electrical engineers, the technical training in school has provided them with a critical sense of skill and management necessary to move the company in the required direction.

1.2 Vision Statement

At Sherpa, we aim to be the world leader in handheld navigation products and related services by designing the safest, most reliable products on the market through the use of superior technology and engineering. We will earn our customers’ enthusiasm through continuous improvement driven by integrity, quality, teamwork, and technological innovation.

1.3 Mission Statement

Sherpa is a company dedicated to improving the safety and well-being of outdoor enthusiasts by developing high-quality, dependable handheld navigation devices. By using the latest developments in inertial sensor technology, these products are provided at a lower cost and, are more accurate than our competitors’ products.

1.4 Company Values

There are several values which drive Sherpa’s mission and vision:

- Transparency. Our company wishes to develop products with understandable, consistent, reliable, and predictable design. In doing so, we wish to communicate honesty and integrity to the user.
- Caring. Our company values not only creating safe-to-use products, but also designing products which increase the safety and well-being of the user.
- Quality. We value creating products to the highest quality standards attainable; in doing so, we demonstrate our desire to create trustworthy designs and satisfied users.
- Growth and Profitability. Through company growth, we become better positioned to help and serve a greater number of people.
- Innovation. We spend significant money and man hours on research and development to ensure that our company will constantly develop fresh ideas and better, more advanced products.

1.5 Strengths Weaknesses Opportunities Threats (SWOT) Analysis

1.5.1 Strengths

One of the main strengths of our company is that it is small, making it very agile. If our target market changes its needs, we can quickly adapt our product to meet their new needs. This allows us to continually meet the needs of the niche market we are addressing. We also offer additional features over our competition, namely the ability to navigate without a reliable GPS signal.
1.5.2  **Weaknesses**

There are several weaknesses which must be identified as we market our product. The first is our limited customer base. In order to address this, we must aggressively market our products and our company in order to ensure that the market we are attempting to reach knows and trusts us.

Another weakness is that the average consumer perceives GPS signals as being reliable, accurate and ubiquitous. Marketing will be a key factor in convincing consumers of their need of a product such as the Sherpa One.

The last major weakness we face as a company is that many customers are accustomed to high-quality maps in their devices, but we would only be able to offer first generation maps as we are a start-up company without access to our own GPS maps. This may make our product less appealing to customers, at least while initially entering the market.

1.5.3  **Opportunities**

One large opportunity our product addresses is that there are currently no inertial navigation systems (INS) devices available on the market. This gives our product enough differentiation to tap into a new customer base, namely extreme outdoor adventurists who find themselves in areas without GPS signals.

There is also potential that with this new technology one of the large GPS manufacturers would want to license Sherpa’s technology and adapt it for their own devices. This would allow for higher sales volume of Sherpa technology, since the large GPS companies, such as Garmin or TomTom, have a large consumer base and high sales volume.

1.5.4  **Threats**

There are also several threats in the near future. The last several years have shown the notable development of smart phones; from connecting to the internet, to having GPS navigation functions built in, smart phones are able to do more in smaller form factors. This causes an immediate threat to PNDs, as customers must be convinced to buy another device which does what their smart phone can already do. Consumers must be shown the benefits of a device such as the Sherpa One, and PND products must have sufficient features beyond what smart phones are capable of. Furthermore, as INS sensors become cheaper and more prominent in commercial devices, inertial navigation may even become another function built into smart phones.

2  **Industry Analysis**

The following chapter examines the personal navigation device (PND) industry. The critical components to this investigation include significant trends, key success factors for the industry, and outlook for the future.

2.1  **GPS Personal Navigation Device Industry**

2.1.1  **GPS PND Background and Overview**
The global positioning system (GPS) was developed by the US Air Force between 1978 and 1993, and is available for use by both the military and civilian markets. It consists of 24 satellites which provide signals for tracking of a GPS receiver all around the globe. However, GPS has a major drawback; it requires that the receiver have a clear view of the sky.

GPS based PNDs have become extremely popular since their initial release in 1993. In the second quarter of 2008 alone, 3,729,110 PNDs were sold (Canalys, 2008). Along with massive growth in sales, the technology behind the navigation devices has advanced significantly and continues to grow. All GPS devices must be produced in accordance with the SIC 3812 code (Search, Detection, Navigation, Guidance, Aeronautical, and Nautical Systems and Instruments).

2.1.2 Significant Trends

There are many significant industry trends which affect PNDs released onto the market. One of the first is that consumers want the devices to be more and more technologically advanced while keeping prices low. This has put pressure on manufacturers to cut costs in order to maintain acceptable margins.

Another trend is that more technologically advanced smart phones which have GPS functionality are being released onto the market. This reduces the number of PNDs which can be sold, since an individual with a GPS enabled smart phone will not be likely to purchase a separate PND. This trend requires that PND designers include features and improve designs so that PNDs outperform GPS enabled smart phones.

2.1.3 Growth Rate

Between Q2 2007 and Q2 2008 PND shipments rose 96% (Canalys, 2008). This figure represents a steady growth in PND shipments. Furthermore, the nature of PNDs is such that there is a high replacement rate after only a few years of ownership. As such, sales can continue to remain strong, but will not likely grow indefinitely.

2.1.4 Barriers to Entry and Exit

The largest barrier to entry is that the market is largely saturated and controlled by three major companies. The top three PND producers control 80% of the market (Canalys, 2008). Breaking into the market and taking market share from these established companies would be extremely difficult. Furthermore, these established companies are able to produce PNDs at low cost due to volume, making it even more difficult to compete.

2.1.5 Key Success Factors in the Industry

Two of the key success factors for competing in the PND industry is name brand and brand loyalty. Consumers who trust the brand name often return to the brand when buying future products. Without an established brand name, it would be extremely difficult to gain and maintain market share. Because of this, significant effort must be put forth to market and sell the Sherpa One and thereby gain popularity among consumers.

2.1.6 Outlook for the future
The outlook for the future is mixed. While the industry continues to show growth, the short term growth is likely to be limited due to economic difficulties in the consumer market. However, this may mean a large period of growth once the economic downturn is passed.

The largest problem which the PND market is facing comes from GPS enabled smart phones. Recently Google has entered the market by releasing Google Navigation which comes free with any Android 2.0 smart phone. Furthermore, the latest version of the iPhone has a GPS capability. These entries into the market signal a possible change in the market from PNDs to smart phones which cannot be ignored.

2.2 The Stage of Growth for the GPS PND Industry

The PND market has matured quickly over the past ten years. While it is a mature industry, it is also one which changes often and rapidly. In order for a company to be successful in the industry it must continually be innovating and moving forward with its design and technology.

3 Customers

Some of the largest customer groups for PNDs are based on geography. The North American market represents the largest share of the PND market. However, Europe and Asia are also large markets which continue to see growth.

Another major distinction in customer groups is the purpose and use that the consumer has for the device. The two largest segments in the consumer electronics market for PNDs are automobile and outdoor use. While the automobile market dominates sales of PNDs, the outdoor market also represents an area where sales and profits can be made.

The demographics for the Sherpa One remain fairly large for its specific use. Outdoor enthusiasts can be either male or female, ranging from young adults or teens to middle age and even beyond. While the customer may be the outdoor enthusiast directly, it could also be sold to rental companies or national parks, where many different people pass through who would find use for such a device, but have no need to purchase one. Either way the buying frequency will remain somewhat lower; individual consumers would buy a couple devices every several years, while a rental or outdoor adventures company would purchase a larger volume over a similar time period. The income status of our customer will be middle to high, as this range of income allows the person to take up some of these sometimes costly pastimes.

The geographic area for such a product is very wide, as there are many places across North and South America, Europe and Asia where people regularly adventure in places remote enough to get lost. This allows the Sherpa One to be sold, with shipping costs incorporated into the price, across a very wide user market.

4 Market Analysis

4.1 Target Market
The target market is for outdoor enthusiasts who desire to have more reliability and assurance of their
location when enjoying the outdoors. Extreme hikers and cave spelunkers are two niche markets that
are to be targeted in the selling of the product.

4.1.1 Problem to be Solved or Benefit to be Offered

The traditional methods of navigating in the outdoors are using a map and/or using a handheld GPS;
however, there are times when neither of these solutions is ideal. A map and compass can become
cumbersome to carry and different to read if the user is not skilled. A handheld GPS can sometimes lose
its GPS signal and thus no longer be able to update the location of the device. There is a need in the
market for a device that does not have these external limitations and can be completely self-reliant.

4.1.2 Complete Demographics Profile

The demographic profile for the targeted consumer would be a person active in the outdoors who is
looking for more security than is currently offered by the handheld GPS devices available today. The
person can be of any age or gender. Economically, the target is for middle-class individuals, able to
afford middle to higher end price for this type of device.

4.1.3 Other Significant Customer Characteristics

The niche applications for this device are extreme hikers and cave spelunkers. While spelunkers are a
smaller part of the user-base, they are no less important for the success of this device. The spelunkers
can use the device as the primary means of navigation underground where there would be no available
GPS signal.

4.2 Customer's motivation to buy

The customer is motivated to buy the Sherpa "One" to fulfill their need for maintaining their safety
through the knowledge of their location at all times.

4.3 Market size and trends

4.3.1 Market Size

The US market is significantly large with over $70 billion dollars spent every year on outdoor electronics
and applications. In the year 2005, there were 13.3 million backpackers with 2.1 million of them
classified as frequent backpackers. Out of 30 million hikers there were 4.8 million frequent hikers.
Mountain climbing had 900,000 frequent participants out of 3.8 million total mountain climbers.

An additional market is for cave measurement for the National Speleological Society, Inc (NSS). There
are 12,000 members of the NSS and there is much interest in a means to facilitate the measurement and
mapping of caves as the current methods are tedious. The market is small, but there is an opportunity
here for a niche market that might have higher than expected adoption rates and could provide
excellent word of mouth advertising for breaking into the larger markets.

4.3.2 Market Trends
The market is continuing to grow, in spite of the down turn in the economy. In 2007 Q2 there were 1.9 million PNDs sold. That increased 96% to the following year with 3.7 million units sold. The market is definitely growing. The number of outdoor enthusiasts who might purchase this product is not forecasted to shrink, but instead remain steady or grow over the coming years. The outdoor market for PNDs is growing. As stated in Garmin’s 2008 financials: “Combined, the outdoor and fitness market is the fastest growing in the company.”

4.3.3 Special Considerations

It is the belief of the management team at Sherpa that over the next few years, there will a significant change in the focus of the handheld GPS market and that Sherpa will need to continue to be aware of the changes that are in the works for future years. Sherpa sees the role of smart phones with built-in GPS playing a large role in supplanting PNDs from the market. With a GPS already in one’s phone, there is less reason to want a product that offers duplicate functionality. The Sherpa "One" will address those issues by offering the additional features of GPS independent navigation.

5 Competition

Before entering the market, an effective competitor analysis has been performed to know what we must avoid in our competition and where our strengths lie. This analysis includes existing competitors as well as potential future competitors.

5.1 Existing Competitors

The existing competitors are Garmin, TomTom and Magellan, as well as other GPS companies. These three companies give a good representation of the current market requirements for PNDs, as they have together 82% of the current market share. Table 2 shows an analysis of what our product offers compared to our top three competitors. Various critical aspects of the products’ design are compared to demonstrate how each product compares with others.

<table>
<thead>
<tr>
<th>Summary of Features</th>
<th>Sherpa</th>
<th>Garmin</th>
<th>TomTom</th>
<th>Magellan</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>User Interface</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maps</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Topographic Maps</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Touch Screen</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td><strong>Functionality</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GPS Independent</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>N</td>
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<tr>
<td>PC Connection</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Waterproof</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
</tr>
</tbody>
</table>

Some apparent strengths of the competition are their well developed road maps. However, since our device does not aim to meet this aspect of navigation, this aspect is not critical. There is also a large market share held between these three large companies. This will pose the greatest hurdle to overcome.
The main weakness of these companies which our product focuses on is navigation independent of GPS. Without a reliable GPS signal, our competition’s products can no longer navigate. This is a major drawback to those who find themselves more often in places with poor reception.

5.2 Potential Competitors: Companies That Might Enter the Market

Several potential competitors that may enter the market are Apple and Google with their smart phone releases. As smart phones continue to become more widespread and contain more features, the chances for them to develop technologies similar to our device increase, potentially bringing them into the same market as ours. This would likely steal a portion of our developed market share; however there will be customers without smart phones, who would prefer our product. If that is not the case, then our product must differentiate itself even more and seek a new application for our product.

5.3 Strengths Weaknesses Opportunities Threats Analysis

This SWOT analysis covers the aspects of the current major players in the GPS industry, such as Garmin and Magellan.

5.3.1 Strengths

Current industry leaders have substantial strengths due to their presence in the market over the past years as GPS devices have grown in popularity. These strengths take form in several different ways. One way is the large market share and well recognized name. Since their names and products have been around for several years, people have come to know and trust what they get. This gives them almost the entire market share and a large customer base. From this come large revenues, giving them access to many resources for development of new products.

5.3.2 Weaknesses

While the companies themselves are very robust, they are still only as strong as their weakest link, which comes down to the technology itself. Since the companies are still primarily GPS companies, their company falters where the GPS technology falters: in the wilderness. Unfortunately, this happens to be where it is most critical to have accurate position readings, so while to most GPS users this may not be an issue, when it is an issue, it is serious.

5.3.3 Opportunities

Even though their products don’t use inertial navigation technology, the platform is still there for them to incorporate it with the rest of their design. This would allow them to overcome their weaknesses and broaden their reliability and customer base even farther.

5.3.4 Threats

With the integration of more functions into single devices, such as smart phones handling music, web and email, and GPS, the role of the stand-alone GPS device becomes less significant. There is also a growing trend for GPS technology to be incorporated directly into vehicles, forcing them to search for new market areas to remain competitive.
5.3.5 Conclusion

While these companies have formidable strengths, we are able to overcome their weaknesses and threats to make ourselves worthy competitors. Using INS for navigation, the unreliability of the device encountered in remote locations is no longer an issue, giving it accurate readings all the time. The threats can also be overcome by selling our integration software and methods to other companies who would be interested in incorporating INS methods with their devices.

5.4 Competitive Strategy

5.4.1 Cost Leadership

The company is not striving for cost leadership in the sense of high volume, low price production. Cost saving will be achieved by remaining a high efficiency, low overhead company. Consequently, the device will cost less than competing products in the market.

5.4.2 Differentiation

The company is looking to focus strongly in differentiating our product offerings as a higher end, high reliability device that separates itself from the typical PND. The largest feature which gives differentiation is the ability to track position without a GPS signal. Through differentiation the company can access the niche markets that current GPS companies miss.

5.4.3 Focus

The focus for the device will be reliability, as well as an intuitive interface that makes the device simple to operate. Reliability will be achieved through GPS independent tracking as well as robust physical design. Since our target market may not be the most technologically inclined, intuitive interface is essential so that the user does not become frustrated by operating the device and not use it. The device should be so that the user can turn it on at the beginning of their excursion and then not need to think about it until they need it, and then it should be reliable to guide them safely back.

6 Marketing / Sales Plan

The sales effort will not be directed at personal sales directly to the consumer. Instead, the sales efforts will be focused on advertising to the consumer to increase demand for retailers to purchase and stock the device. As such, there will be no initial sales force in-house with contract sales forces from outside the company being tasked to market the product in place of a sales force. This will limit the startup risk of hiring too few or two many sales persons.

6.1 Desired Image and Position in Market

Company image is a critical aspect to breaking into the current market as a new company. With this in mind, we must be sure to project the right image of our company and find the most effective position in the market for our company to fill. Since we are a small start-up company, we will present ourselves as a high-quality company aimed at satisfying our target customers’ specific needs.
6.2 Advertising and Promotion

6.2.1 Media Used

The company will task the contract marketers to use a variety of advertisement strategies. Shying away from expensive TV advertisements, the object of focus will be outdoor magazines, trade shows, and online advertisement services such as Google, and then an online store front. Using social media sites like Facebook and Twitter, Sherpa would generate product anticipation through word of mouth advertising and taking advantage of the viral nature of modern communication habits. We want to get those most likely to be excited about our product, vocal in telling others about how great our product is through their honest evaluation of our product.

Since our market is very niche, it is important to effectively focus media advertisements. Print ads will be used in a variety of backpacking, hiking, mountain climbing, and outdoor enthusiast magazines. While magazine ads can be costly, full-color, glossy images will sell our consumer electronics device well; furthermore, the magazines target our demographic well.

Newspaper and radio advertisements can be significantly more cost effective, but are usually localized and thus are difficult to target our demographic. If any newspaper or radio ads are used at all, they will only be placed in high-volume, popular hiking or mountain climbing destinations. Television advertisements will be unrealistic because of costs and the market demographic.

Because of the high costs of ads and the small size of our startup company, a large portion of our advertisements must rely on word-of-mouth, internet sources, and positive reviews. A website highlighting our company and our products is essential, especially for a consumer electronics product line.

6.2.2 Media Costs

As mentioned above, the majority of advertising media costs will come from magazine ads. An advertising agency will not be used because of their high cost (and because we will have our own small in-house marketing team), but hiring a freelance graphic designer would be an effective investment, at $20 to $80 an hour. The cost of advertising in magazines varies, depending on readership and ad size, but can typically be a thousand dollars or more for each issue. Pamphlets are not a significant cost, although a graphic designer may also be used in this situation. The cost of starting up and running a website must also be considered, as we will have a web presence for the Sherpa One. Total anticipated advertisement cost is expected to approach $1 million US dollars leading up to the initial launch of the Sherpa One.

6.2.3 Frequency of Usage

The ads will run for the first twelve months after the product release, well into the life of the product. Pamphlets will be frequently used for trade shows and similar functions, and will be continuously updated with the latest company and product information. The company website will be used frequently and updated at least monthly.

6.2.4 Plans for Generating Publicity
It has been shown in recent years that online blogs have been an effective way for generating hype and publicity for high-quality, innovative products. By targeting vocal users who are likely to discuss their experiences with the product we strive to take advantage of this self-advertising. In general, our product will gain publicity for its high quality and technological advantages over the competition.

6.3 Pricing

6.3.1 Cost Structure

Since we do not have our own factories and production lines, the primary source of all manufacturing is contract-based. Therefore, there are no significant product-based fixed costs; most of the cost structure is variable. This includes all manufacturing, marketing, sales and administration, and warranty support.

6.3.2 Desired Image in Market

Sherpa has a desired image of honesty, trust, and professionalism, with a great emphasis on customer communication. We seek to create an image that manages itself, primarily by acting out the image that we would like to portray. We strive to produce the most reliable and safe navigational device on the market.

6.3.3 Competitor’s Pricing Comparison

There are a few large GPS navigation companies which provide challenging competition on the market. Similar products from Garmin, TomTom, and Magellan are priced from $200 to $600 MSRP, depending on the level of functionality. Our products will release in the $400 range of devices with a price of $350 MSRP. In this way, there is a cost advantage for Sherpa.

6.3.4 Discounts

Discounts will be achieved on all first-time shipments to major distributors to establish both good-will in our partnerships and confidence in the quality of our product. Discounts may also be awarded to long-standing customers with a strong commitment for on-time payments and dedication to open, clear communication. We recognize the importance of our customers for the success of our business; therefore, fostering healthy business relationships becomes critical. Discounts are just one way in which these relationships will be developed.

6.3.5 Gross Profit Margin

Our gross profit margin is $141 per unit, which is a result of our unit revenue with unit material cost and unit manufacturing cost subtracted out.

6.4 Distribution Strategy

6.4.1 Online

The main method for distribution of the Sherpa One will be through online retailers. Sherpa will leverage the widespread use of online stores such as Amazon.com and Newegg.com. Furthermore, an online store dedicated to Sherpa LLC’s products will be developed and used to market and sell devices. The key to success in online distribution is to give consumers easy access when purchasing devices.
Furthermore, the websites which sell the devices will contain all the information that the purchaser needs to make an informed decision regarding a purchase of the Sherpa One.

6.4.2 Brick and Mortar

The consumers which are being targeted by Sherpa’s products purchase their electronic devices online rather than in brick and mortar stores. As such, distribution through brick and mortar stores will be limited.

7 Human Resources

7.1 Key Managers and Employees

The management team consists of four principals, Andrew Hoogendam, Danny VanderSpek, Dave Moelker, and Anthony Boorsma. The members of the management team are all equal partners in the company Sherpa LLC.

7.1.1 Backgrounds and Experience

Anthony Boorsma is a senior engineering major with a concentration in Electrical and Computer Engineering and a minor in Mathematics. He grew up in West Michigan in the city of Hudsonville and has recently moved to Grand Rapids Township. He has worked at Gentex Corporation as an intern in the Software Testing Group and is currently employed by local embedded systems engineering company DornerWorks as an embedded systems intern while attending Calvin College. He is interested in computer technology and embedded systems design.

Andrew Hoogendam grew up in the area of St. Catharines, Ontario, and is concentrating in Electrical and Computer Engineering. While interning at Fifth Light Technology, he has dealt with reducing energy usage in lighting. While interning at PlanET Biogas Solutions, he has dealt with the production of renewable energy through biogas. Andrew is interested in pursuing a career in green energy and power systems.

Dave Moelker is an Electrical and Computer Engineering student from Chatham, Ontario. For the past two summers he has been an intern at TwiStiInk, a small embedded systems and industrial design firm in Holland, MI. His work there has included development of testing hardware and software for circuit boards, automation of testing procedures, and programming software for data acquisition. His interests include developments in computer technology, and embedded hardware and software design.

Danny VanderSpek is from Florence, Ontario, and is currently studying Electrical and Computer Engineering. Danny has spent his last two summers as an intern in test and measurement at Gentex Corporation, a position that has given Danny production experience with electrical hardware and software troubleshooting. His interests include technology trends, engineering policy, and international business and engineering.

7.2 Additions to the Management Team

In order for Sherpa LLC to function well in all areas of its business, additional personnel are required. The two main areas where these additional personnel will be operating are sales and marketing. Due to
the engineering background of the four principle managers, having individuals with strengths in the areas of marketing and sales will be critical for the success of Sherpa LLC.

7.3 Board of Directors or Advisers

There will be a board of directors to represent the interests of the investors and the company, elected by the private investors, who will be minority share holders in the company.

8 Operations

To effectively operate the business, a role breakdown is required. Also, an appropriate choice of company business entity is required to get the most beneficial legal standing for the company's liability.

8.1 Form of Ownership

The business entity chosen for our company will be limited liability company (LLC). The reasoning for this is to provide limited liability to the owners, as well as allowing the company’s credit to be independent of the owners’ assets. In the event that the company must foreclose, there will be lessened risk to the owners of the company.

8.2 Company Structure

The company structure is critical if the company is to run as efficiently and effectively as possible. All four principals will have joint roles in the engineering development of Sherpa’s products. The breakdown of the structure can be seen in Figure 1. As can be seen, there will be the CEO who will make the final decisions, and the R & D VP, Marketing VP, Sales VP and Financial VP will submit their input in regular company meetings. This will allow for flexibility in the company to make quick decisions while still allowing input from the appropriate parties involved. The engineering team will begin with the five principles and expand into a engineering Program Manager for a full group of electrical and mechanical engineers to bring the product to production. The accountant will be contracted out at the start of the business and will be hired in once the sales have grown enough to warrant full time work. We anticipate all these individual positions and teams to quick growing into full departments and teams and sales and product demand grows.
8.3 Compensation and Benefits Packages

Sherpa will strive to pay each employee the no less than the industry average appropriate for their position, and will make special consideration to candidates with great potential. Sherpa will try to retain employees through appropriate raises and incentive based bonuses. One specific incentive offered will be three weeks paid vacation to all starting employees. The employees are budgeted for with an additional one-third of their budget. This addition provides typical benefits and insurance expected by today’s workers, including a 401k.

8.3.1 Facility and Employment Needs

Being a small company, we will only need a small rental space for operating initially. As sales and production increase we can move to new locations and expand our business. We will have a few engineers, each focusing on different aspects of the business but able to work collectively on the same task, until the product demand increases enough to require additional man power. There will be the CEO and vice presidents of research and development, marketing and financial. All four leaders will have joint roles in the engineering development of Sherpa’s products. This will allow for flexibility in the company to make quick decisions while still allowing input from the appropriate parties involved. We will not hesitate to hire new employees when the need arises as we understand the necessity of being properly staffed for higher demand as the business grows.

9 Research and Development Plan

9.1 The Sherpa “One”

Sherpa LLC will offer consumer electronic devices in the PND industry and will not initially focus on offering additional services. The initial product, called the "One", will be a GPS-independent PND that is capable of presenting the location of the user without relying on a GPS signal to be available at all times. In many ways, it will be similar to what is available, but will differentiate itself through increased functionality. Error! Reference source not found. demonstrates how GPS technology fails. The GPS device requires a signal from multiple satellites to determine its position, so when the user is around
objects such as trees or mountains, the signal may be blocked and the device will stop working. This is also a common problem in automobile GPS devices when driving through cities where tall buildings block the satellite signals. In places where the GPS signal is unavailable, the Sherpa One will use other tracking methods until the GPS signal becomes available again.

9.1.1 The “One” Features

The Sherpa “One” will have the following features:

- Navigational Tracking
- Touch Screen User Interface – with rugged glass screen
- Menu Driven Interface
- Speaker for Alerts and Directions
- USB connection for PC updates and Tracking path data
- GPS navigation
- Topographic and Street Maps - Perhaps an offline Google Maps
- Rugged Enclosure, capable of withstanding harsh drops without loss of navigational functionality or device usability.

The Sherpa “One” will have the following services.

- Navigational Services for locating and orienting the user
- Path Tracking Services
- Past Trip Tracking Services

9.1.2 Customer Benefits

The Sherpa “One” will provide the customer with the following benefits.

- Prevent users from becoming lost in the wilderness
- Additional navigation redundancy separate from relying entirely on GPS
- Provides comfort of mind to the consumer, allowing them to know that they have greater security when using our device.

9.1.3 Warranties and Guarantees

The Sherpa "One" will have the traditional 1 year limited user warranty for all labor and parts with a complimentary 90 days of online support, email and live chat on the website. Phone support will not be available initially, to keep up front startup costs low. Once the company begins to establish its revenues streams, phone support can be added to the support services to better serve the customer base.

9.1.4 Uniqueness
The technology of GPS independent navigation in the consumer market is pretty unique, although in the military and aerospace markets it has been occurring for some time. There are few other products available in today's market for consumers to use non GPS devices. The American GNC Corporation has manufactured a similar product called the Palm Navigator, so it is not completely unique (although it is currently unknown whether or not the Palm Navigator actually went to market).

### 9.2 Patent or Trademark Protection

At this time, Sherpa is not seeking any patent protection on the device. Patents by NovAtel, American GNC, and Honeywell already cover many of the technological aspects of the device. Further investigation will be required to determine if it is legal to produce these devices without paying royalties or licensing fees to the patent holders.

### 9.3 Description of Production/Manufacturing Process

The Sherpa “One” will be manufactured by a US manufacturing contractor.

### 9.4 Future Product or Services Offered

Sherpa will begin with one product offering but wants to implement the second revision of the Sherpa "One" to the market within one year of the initial product offering. Sherpa is aware of the rapidly changing nature of the consumer electronics market, and to not be continually updating the product line would be unwise, likely sinking the company before it even begins.

### 10 Financials

The following chapter examines the financial estimates for the first three years of operation for Sherpa.

#### 10.1 Key Assumptions

There are several key assumptions which have been made in order to do the financial estimations for the first three years. The first assumption is that the first product being sold will be developed before year one and will be the flagship model for the first two years. Additionally, during the first two years the second product will be in the process of development and will be released in the third year as the new flagship model. However, the first model will continue to be sold in order to sell off remaining units.

The second set of assumptions is the sales figures for each year that the products are being sold. Table 3 outlines the assumed sales for the first three years of product sales from Sherpa.

<table>
<thead>
<tr>
<th>Products 1 Units Sold Y1</th>
<th>50000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Products 1 Units Sold Y2</td>
<td>50000</td>
</tr>
<tr>
<td>Products 1 Units Sold Y3</td>
<td>25000</td>
</tr>
<tr>
<td>Product 2 Units Sold Y3</td>
<td>100000</td>
</tr>
</tbody>
</table>
The third key assumption is that the goods and manufacturing cost for each unit will be $145. This value is based on the material cost of the device and on assumed further discounts which will be realized through higher volume production.
10.2 Financial Statements

<table>
<thead>
<tr>
<th>Year</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales revenue</td>
<td>15,750,000</td>
<td>15,750,000</td>
<td>39,375,000</td>
</tr>
<tr>
<td>Variable Cost of Goods Sold</td>
<td>8,700,000</td>
<td>8,700,000</td>
<td>21,750,000</td>
</tr>
<tr>
<td>Fixed Cost of Goods Sold</td>
<td>870,000</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Depreciation</td>
<td>33,300</td>
<td>47,830</td>
<td>35,900</td>
</tr>
<tr>
<td>Gross Margin</td>
<td>6,146,700</td>
<td>7,002,170</td>
<td>17,589,100</td>
</tr>
<tr>
<td>Variable Operating Costs</td>
<td>4,725,000</td>
<td>4,725,000</td>
<td>11,812,500</td>
</tr>
<tr>
<td>Fixed Operating Costs</td>
<td>600,000</td>
<td>600,000</td>
<td>600,000</td>
</tr>
<tr>
<td>Research and Development</td>
<td>700,000</td>
<td>1,000,000</td>
<td>3,000,000</td>
</tr>
<tr>
<td>Operating Income</td>
<td>121,700</td>
<td>677,170</td>
<td>2,176,600</td>
</tr>
<tr>
<td>Interest Expense</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Income Before Tax</td>
<td>121,700</td>
<td>677,170</td>
<td>2,176,600</td>
</tr>
<tr>
<td>Income tax (40%)</td>
<td>48,680</td>
<td>270,868</td>
<td>870,640</td>
</tr>
<tr>
<td>Net Income After Tax</td>
<td>73,020</td>
<td>406,302</td>
<td>1,305,960</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beginning Cash Balance</td>
<td>(3,000,000)</td>
<td>6,320</td>
</tr>
<tr>
<td>Net Income After Tax</td>
<td>73,020</td>
<td>406,302</td>
</tr>
<tr>
<td>Depreciation expense</td>
<td>33,300</td>
<td>47,830</td>
</tr>
<tr>
<td>Invested Capital (Equity)</td>
<td>3,000,000</td>
<td>-</td>
</tr>
<tr>
<td>Increase (decrease) in borrowed funds</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Equipment Purchases</td>
<td>(100,000)</td>
<td>(10,000)</td>
</tr>
<tr>
<td>Ending Cash Balance</td>
<td>6,320</td>
<td>450,452</td>
</tr>
</tbody>
</table>

10.3 Break-Even analysis

<table>
<thead>
<tr>
<th>Year</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Fixed Costs</td>
<td>1,503,300</td>
<td>647,830</td>
<td>635,900</td>
</tr>
<tr>
<td>Contribution Margin %</td>
<td>15%</td>
<td>15%</td>
<td>15%</td>
</tr>
<tr>
<td>Break Even Sales Volume</td>
<td>10,183,645</td>
<td>4,388,526</td>
<td>4,307,710</td>
</tr>
</tbody>
</table>
10.4 Ratio Analysis with Comparison to Industry Standards

The following is an investigation of the profit margin ratio. The results for profit margin for each year are shown in Table 4, along with a sample electronics industry average and the profit margin for Garmin, the industry leader in the PND market.

<table>
<thead>
<tr>
<th>Table 4: Profit Margin Ratio Comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>Profit Margin Y1</td>
</tr>
<tr>
<td>Profit Margin Y2</td>
</tr>
<tr>
<td>Profit Margin Y3</td>
</tr>
</tbody>
</table>

While the profit margin is low, this is acceptable due to the fact that Sherpa is a startup company and is attempting to break into the market. As the Sherpa brand name is established, the profit margins will be increased in order to realize higher profits.

10.5 Loan or Investment Proposal

10.5.1 Amount Requested

In order to develop, manufacture, and sell PNDs, Sherpa requires a total of $3 million from venture capitalists and investment firms. Sherpa understands that in the reality of today’s economy, bank loans will be unobtainable until sustainability and profitability of our company model has been proven in the marketplace.

10.5.2 Purpose and Uses of Funds

The purpose of the funds is to pay for the development of the initial product that Sherpa will launch as well as cover all of the associated fees for the initial product launch. The largest costs associated with the launch of the initial PND are research and development costs, and goods and manufacturing costs. Additionally, the money will be used to fund further product development so that in the third year a second product will be launched in order to remain current in the market.

10.5.3 Repayment Schedule

The loans associated with the initial product launch will start to be paid off in the second year, and will continue to be paid off in the third year. However, in order to continue to leverage the debt that the company can support, all of the debts will not be paid off. In the future if it is determined that additional loans may be required, they will be acquired at that time.

The investors will be compensated based on how well Sherpa is able to generate positive cash flows. Financial estimates indicate that little compensation will be possible in the first year. However, as the company grows with time, compensation will be increased and the return on investment for investors will be competitive with similar investment options.
10.5.4 Timetable for Implementing Plan and Launching the Business

Table 5 outlines the key milestones and dates along the path to implementing this plan and the launching of Sherpa.

Table 5: Timetable for Sherpa

<table>
<thead>
<tr>
<th>Key Milestone</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design of Product “One” Complete</td>
<td>12/15/2010</td>
</tr>
<tr>
<td>First Units from Manufacturing</td>
<td>1/15/2011</td>
</tr>
<tr>
<td>Ship Units to Retailers</td>
<td>1/30/2011</td>
</tr>
</tbody>
</table>

11 Sources


Note: for full disclosure of the terms of the Business Plan “originality clause”: the idea of a solution for the shortcomings of handheld GPS devices originated from Todd Burghgraef, VP of Engineering and Technology, but the ideas presented herein have been entirely developed by Sherpa LLC (engineering senior design Team 10: Sherpa).