

University of British-Columbia

Faculty of Forestry

WOOD 465: Business management in the Wood Industry



[Business Plan]

[Lignius – Wooden Climbing Holds Manufacturer]

Term Assignment

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Executive Summary

Participation in outdoor sports and the market for products and accessories associated with these sports is growing. As well, there exists a rapidly growing market for green and ethically produced goods. Lignius Holds aims to enter into the emerging niche market of high end, wooden indoor climbing hand holds and hang boards. What separates our products from the competition are the aesthetics and texture of wood and the ecologically-friendly origin of our raw materials.

The texture of wood is ideal for high performance training and results in less wear on the skin than conventional hand holds. Lignius Holds will manufacturer all of its products from British Columbia grown, Interior Douglas-fir. Our supply of wood originates from mature stands of densely grown trees that have been thinned to manage forest fire fuel loading and to enhance Mule Deer winter habitat near Williams Lake, British Columbia.

Our success will be based on investments in the development of new designs, our ability to market the performance and ecologically friendly nature of our products and, with the aid of a computer numerically controlled router, to efficiently and accurately produce what has traditionally been a hand made product.

This business plan includes a financial analysis for this venture. It includes a summary of capital start up requirements, and a cash-flow projection for the first year of operations. This venture is forecasted to gross \$ 49,899.33 in the first year of operations and sales are expected to grow by 50% over the next five years. Over this time profits are also expected as utilization efficiency decreases per unit costs.

1.0 General Company Description

Lignius Holds was conceived by four students, Erik Holbek, Scott Witbeck, Natalie Noel and Christine Chien from the Faculty of Forestry at the University of British Columbia. Lignius will utilize the small-diameter Douglas-fir trees harvested from thinning operations designed to restore mule deer winter range and reduce fire hazard.

Lignius represents an innovative breakthrough in utilizing small trees by creating a value added product that exploits the available resources and technology and will not only produce an eco-friendly product but will strive to market it as such.

Lignius will be based in Williams Lake, in central British Columbia (BC). All products will be designed and manufactured in-house and distributed directly to the end-users through our website and through outdoor retailers. Our clients will be able to retrieve product information via the internet at www.lignius.ca. The website will provide functionalities for instant information exchange and thereby enhance our ability to respond to our customers needs.

2.0 Industry Analysis and Trends

2.1 Climbing History

Climbing was originally limited to the bold and adventurous but has changed rapidly over the last few decades. Advances in safety technology and an increased interest in outdoor recreation have led to a much wider demographic of climbers. With this increase in participation has come a differentiation in ethics, styles and disciplines of climbing. Most importantly for our company, the evolution of climbing led to the development of indoor climbing and bouldering.

Bouldering is loosely described as climbing without ropes. It is done both indoors and outdoors and usually with crash pads and a group of friends. Indoor climbing, as the name implies, is climbing on manufactured walls and holds in an indoor setting. Indoor climbing was originally developed in the basements and garages of dedicated climbers who wanted to climb when the weather or other circumstances kept them off the rock. It

has grown into a popular sport in its own right with multiple indoor climbing gyms in most major cities and home walls in houses across the world.

2.2 The Economic Sector

The market for sporting goods is heavily trade-dependent and approximately one-third of the market is subject to international trade flows (Industry Canada, 2004). Canadian producers have the opportunity to take advantage of Canada's international reputation as a provider of high quality, well-engineered and well-designed products (Ibid). The growth of e-commerce is providing Canadian suppliers with the opportunity to take advantage of this reputation and expand their markets internationally (Ibid).

2.3 The Industry

Climbing hold manufacturers distribute their products through outdoor equipment retailers and through internet sales. Annual sales cycles correspond with the seasons. Sales are lower in the summer when outdoor climbing and other activities are more popular and are higher in the fall, winter and spring.

Current research and development in the manufacturing of climbing holds is primarily aimed at designing new shapes and improving strength to weight ratios. In addition, most climbing hold manufacturers generally have a team of sponsored climbers to test and promote their products.

There is currently no industry wide certification for climbing hold manufacturers. There are a variety of certification schemes for safety products, including Consultants Europe Certification, ISO 9001 development and production certification and Personal Protective Equipment Certification. As well, there is the Climbing Walls Manufacturing Association that sets standards for wall construction and route setting, but none of these schemes are applicable to climbing holds.

2.4 Key Success Factors

Our company will be differentiated by our knowledgeable and dedicated staff, our commitment to the environment and by the aesthetics and performance of our product. Our holds will be made from wood, a renewable and recyclable product, harvested from forests managed to restore mule deer habitat. Our holds will emphasize the natural colour and grain of the wood and their texture will enhance strength training and minimize wear on skin.

Our competitive advantage will be in our access to high quality wood and our ability to market the ‘eco-friendly’ nature, aesthetics and performance of our product.

3.0 Markets

3.1 Demographics and Psychographics

Rock climbers embody the full spectrum of lifestyles, values, attitudes and opinions. Indoor climbers are generally made up of, college educated, professionally employed people between the ages of 25 and 35 (Krenek, 1997). In general climbers lead an active lifestyle, appreciate the outdoors and are more environmentally conscious than the population at large.

The 2001 Outdoor Recreation in America survey conducted by Sporting Goods Manufacturers Association (SGMA) found that the average age of indoor rock climbing participants was 18 and the average household income was \$61,300 (SGMA, 2001).

Table 1: Participation and Demographics

	Males/Females (Millions)	All Participants Average Age	Average Household Income	Average Years Participated
Artificial Wall Climbing	3.5/2.6	18.0	\$61,300	2
Mountain/Rock Climbing	1.3/0.6	22.4	\$54,100	4

Source: SGMA, 2001

3.2 Target Markets

Our two main target markets will be climbing gym owners and climbers with home walls. To differentiate themselves from the competition, climbing gyms are always looking for new holds to keep their customers psyched. The unique texture and style of Lignius Holds will help to fulfill that requirement. Climbing gyms are also a good venue to introduce Lignius Holds to climbers with home walls or who may build home walls.

Climbers with home walls are looking for a high performance training product. The texture and shape of our holds provide this. As well, the aesthetics of Lignius Holds which emphasize the natural beauty and colour of tight grain Douglas-fir make these holds works of art to display in the your house.

3.3 Market size

Climbing has become popular in all developed countries around the world. The largest markets are however, the North America and Western Europe. Through our website, we will be able to fill orders from around the world but shipping costs and market size make concentrating on the North American market the most rational.

3.4 Market Trends

According to the SGMA's Sports Participation Topline Report, participation in artificial wall climbing has increased 53% in the last four years (Table 2). Since its inception in 1983, Entreprise USA Inc., just one of many climbing wall manufacturers, has built over 3,500 walls around the world (EPUSA, 2004).

Table 2: Climbing Participation Trends

	Climbing Participation Trends*				
	2000	2001	2002	1 Year % Change 2001-2002	4 Year % Change
Artificial Wall Climbing	6,617,000	7,377,000	7,185,000	-2.6	+53.0
Mountain/Rock Climbing	1,947,000	1,819,000	2,089,000	+14.8	+4.2

Source: SGMA, 2003 (* U.S Population, 6 years or older, at least once per year)

The International Mountaineering and Climbing Federation (UIAA) was founded in 1932 and sanctions World Cup climbing competitions which mainly take place in Europe (UIAA, 2004). In North America, USA Climbing is the national sanctioning body for competition climbing and in 1999 the Professional Climbers Association was established with the goal of “creating a world class, media-friendly competition circuit for professional indoor climbing” in North America (PCA, 2004). These organizations are seeking Olympic recognition and the development of climbing as a respected competition sport in North America will increase the popularity of the sport and the demand for home training products.

Another indicator of the growing popularity of climbing is the emergence and growth of national and regional climbing advocacy groups such as the Access Fund and the British Columbia Climbers Access Society. These organizations work with management agencies and other groups to ensure the sustainable use of and access to recreational climbing areas, and are sponsored by climbers, gyms and outdoor retailers (Access Fund, 2004).

There is also an increasing demand for ‘green’ and ethically produced goods. According to Natural Business Communications, there is a rapidly growing \$226.8 billion dollar U.S. market for goods that appeal to consumers who base their consumption decisions on, among other things, their environmental values (Natural Business Communications, 2004). This gives Lignius a unique advantage as our products are made from a renewable and recyclable product that also contributes to forest health and sustainability.

4.0 The Competition

4.1 Competitive Position

4.1.1 Wooden Climbing Hold Manufacturers

There is currently only one company that is producing wooden climbing holds. Based out of Bend Oregon, USA Metolius designs and manufactures rock climbing and bouldering products. Metolius recently began offering retailers and wholesalers, in addition to numerous lines of plastic climbing holds, wooden climbing holds in sets of 5 and 25. Commercial production of wooden indoor rock climbing hand holds is a relatively new phenomenon. Previously, some climbers crafted home made holds and Metolius still produces all of their wooden holds by hand. More recently, mass production manufacturing of this product has been made possible with the use of computer numerical controlled (CNC) routers.

4.1.2 Comparison of Various Climbing Hold Manufacturers.

There are several companies in Canada and the United States that manufacture and sell climbing holds. A number of different producers sell complete lines of various hold types, while others only produce a specific type of hold, usually centered on the material it is made from. A comparison of a number of the major distributors of climbing hand holds and hang boards are outlined in Appendix I, Table 1.

4.2 Strategic Opportunities

A major strategic opportunity for this venture is the ability to produce wooden climbing holds with greater efficiency, precision and accuracy than or competition, which hand crafts its products. The largest hurdle to companies entering into the wooden climbing hold niche market is that they have not been mass-production-friendly. The intention of this strategy is over come this hurdle; to decrease the net unit cost of production through the use of a mechanized CNC machine. This will

increase the hourly unit output as well as the precision and accuracy of duplicating various wooden products. In addition, our company will specialize in producing wooden only climbing hand holds and training boards. These products will be marketed as the environmentally friendly choice.

4.3 Factors Affecting Ability to Compete

There are a number of factors that affect the ability of our company to compete. The following bullets outline the dominant factors that negatively influence this ventures ability to vie for a share of the indoor climbing hand hold and training board market.

- *Harvesting Cost:* As has been outlined by Ken Day, Forest manager of the license where the majority of the wood fiber will be supplied, the stump to truck cost of raw logs extraction is \$50/m³. This is a considerably higher cost compared to the vast majority of the BC interior ground based harvesting operations which averages around \$30/m³.
- *Processing Costs:* The most difficult part of producing wooden climbing holds is doing so in a mass production format. By utilizing the production efficiencies of a CNC machine, Lignius holds will be looking to reduce the manufacturing per unit cost.
- *Distance from Market:* The nearest and largest urban centers are Vancouver, Seattle, Calgary and Edmonton and these will be the markets our personal sales are targeted towards. In order to reduce shipping cost, we will be selecting the lowest cost courier option that best meets the needs of our customers. An e-business strategy will allow our company to market and sell to potential customers anywhere in the shipping world, thus Vancouver will also be the major distribution location for shipping to overseas markets.

4.4 Market Share Distribution

The current market share distribution of the indoor climbing hand holds is very difficult to determine as there is currently no quantitative statistics related to this market. It is assumed that the indoor rock climbing equipment manufacturers that are

carried by both Mountain Equipment CO-OP (MEC) in Canada and Recreation Equipment Incorporated (REI) in the United States make up a large percent of the rock climbing equipment sold in North America. To verify this assumption, we investigated the Vancouver indoor climbing retail market.

In the city of Vancouver, there are 10 climbing stores and 3 climbing gyms that together sell 11 different lines of indoor rock climbing hand holds. MEC and REI carry 80% of the same lines. Among them, our only niche market competitor, Metolius, is a major supplier. There are 25 identified North American web-based companies, which the majority of sell the more generic plastic and composite climbing hand hold types (See Appendix I, table 2). However, only 2 companies have been identified as high end hand hold producers. Petrogrips and Real Rock, both US based companies, produce high-end hand holds made from various types of stone (See appendix I, table 1).

4.5 Future Competition

The concern towards the future competition of this market is not paramount to the success of this venture as there is currently only one company selling the wooden climbing hand holds and none selling wooden hang boards. By focusing on the production of wood only indoor rock climbing products, Lignius Holds will be able to successfully compete with current or potential competitors.

4.6 Barriers to Entry

- Moderate capital investment and production Costs.
- Establishing this niche market among the larger and cheaper plastic and composite climbing hold market, as well as competing with other high-end climbing hold manufactures including wood and stone climbing holds.
- This product is included in the high-end climbing hold small niche market, and as such, finding a sufficient number of retailers that are looking to commence or increase the number of lines of high-end climbing holds they sell maybe a shortcoming of this venture.

5.0 Strategic Positioning

The premise of this business venture is to produce a product that has high aesthetic, and environmental appeal; to target those consumers that are looking for a high quality specialty product that has unique indoor rock climbing training characteristics and is sourced from “environmentally friendly” forests. A number of climbing companies produce and distribute rock climbing hand holds, but few target the same high end niche market we are attempting to enter. Currently, there is a small market for high end indoor rock climbing hand holds and hang boards. These products have a high aesthetic and training value and are crafted from natural materials such as rock or wood. Currently none of our potential competitors markets their product as an environmentally friendly choice.

The strategic positioning of this company is related to capturing the consumers who are interested in purchasing a recognizable, unique, eco-friendly, high quality product. These consumer groups include established indoor rock climbing business retailers interested in establishing a new hold type, as well as those consumers who are looking to fabricate a home climbing wall with original, eco-friendly, aesthetically pleasing materials. In addition, our company will use its ability to mass produce a product that has historically not been produced this way; thus reducing the unit cost of producing wooden climbing holds and training boards.

The use of e-business will allow our company to quickly access (computer user) markets all over the world and stay competitive, as the majority of climbing equipment manufacturers currently has e-business capabilities. We assume that many of our customers will have access to the internet and will use this as a tool in searching for the desired product.

6.0 Goals and Milestones

Through the first year of existence, the main company focus will be on creating product awareness. This will be undertaken through a combination of advertising campaigns in paper media, and through personal sales teams. Advertising will focus on local and region markets and will maximize advertising expenses in a cost effective manner. Within the first 6 months of operation, an advertisement campaign will be developed and ads will begin to appear in the 4 magazines outlined in section 6.4.3 of this plan. Personal sales teams will travel to indoor climbing businesses throughout the northwest US and Canada and will provide free demonstrations and information sessions with potential customers. As well, it is our intention to have representation at both the US and Canadian sports trade shows in 2005.

Through the second and third year of operations, growth of sales will be this company's main focus. We are looking for a growth in sales to approximate 50% over five years. This will be accomplished through strengthening our initial contact and customer base in the Pacific Northwest and increasing our product awareness through continued advertising campaign and sales promotions, as well as moving into markets out side of the Pacific Northwest. At the beginning of year two of operation, a sales promotion will be initiated that will give our customers a 10% mail in rebate with the purchase of one of our complete product lines. In addition, our personal sales team will travel to other North American Markets outside of the Pacific Northwest to promote and sell our product.

7.0 Marketing Plan

7.1 Marketing Strategy

- Build premium-quality and high-performance wooden holds for indoor climbing.
- Promote the environmentally friendly nature of our product.
- Promote the esthetic appeal of our product.
- Promote the performance advantages of our product.
- Continuously develop new and innovative and challenging product designs.
- Create demand for our product through the development advertising strategies customized for identified target markets.
- Foster good relationships with customers through effective web based and personal communication.

7.2 Marketing Mission and Corporate Values

Lignius is an employee-owned manufacturer of rock climbing holds committed to using wood as its exclusive material. Our products are born from the experienced hands and innovative brainpower of our employees and customers. We do not strive for high performance, unique design, and durability...we achieve it. We are devoted to the substance of our products, as it inspires and reflects our drive for environmental responsibility. Our holds, through superior quality and confection, will be the most comfortable holds you have ever laid hands on, helping you feel closer to the natural environment we seek to recreate. We will differentiate ourselves from our competitors by matching our customers' challenge-seeking mind-set and by providing them with the ultimate feel. We wish to power the advancement, innovation and improvement of our business by placing employee and customer input at the forefront of our development decisions. Build and maintaining a team of competent specialists will be indispensable to the success of our company, and therefore continuous improvement opportunities will be provided for our employees, so that they may upgrade their skills, extend their expertise and continue to put forward new designs. As part of our corporate practice, we aim to heighten the ecological awareness of our consumers by promoting the use of a natural and renewable material, while contributing to Mule Deer habitat restoration and forest

fire management. This environmentally responsible orientation will serve as a marketing milestone and help to differentiate us from our competitors.

7.3 Marketing Objectives

- To introduce a new and competitive substitute material for traditional climbing holds
- To make Lignius the industry leader and number one source for wooden holds by establishing a reputation for providing unique, high quality and high performance products.
- To utilize the most cost efficient and productive manufacturing machinery to ensure per unit costs are minimized and prices are competitive.

7.4 Product Strategy

- **Product level**

Lignius will produce a mix of high-quality, high-design, indoor climbing products. These products will be made of a single material: wood. At present, three distinct product lines will be offered, each including variations on multiple-items within the lines. Each product item will be engraved with the Lignius logo, as a dual reminder of our company trademark and our environmental orientation.



First Product Line: Climbing Holds

- *Hand holds* – These will be our most varied product items and will include different models such as slopers, crimpers, buckets, jugs, pinches and pockets.



The holds will vary in length, from 5 cm to 15cm, and in shape, angle, and slope.

- *Foot holds* – These items are of smaller dimension than hand holds, and are less varied in design. They are generally leveled off shapes, fitting closer and flatter to the wall.

Second Product Line: Training boards

- Although training boards all have similar shaping, we will produce them in a variety of sizes, and cut-out patterns. This product line will require the greatest quantities of wood to produce, and will be our largest individual units available for sale.



Third Product Line: Campus Rungs

- Campus rungs will be our simplest products. They require no carve-out work and are fast to manufacture. Our Campus Rungs will be all be of the same length, however, they will be sized to three dimensions of width (small-19mm, medium-25mm, large-32mm).



- **Type of product**

The individually-designed, climbing holds are intended to be high-quality *specialty* products. We will compete on uniqueness and authenticity of pieces, on quality, durability, and aesthetic value. As part of a more global strategy, our holds will be complementary to the current trend of using natural materials for building climbing holds, such as granite and limestone.

- **Total Product**

As part of Lignius' corporate philosophy, we believe that in order to exceed customer expectations, it is necessary to offer our products as part of a *total package of values*. This is why we have carefully laid out an *augmented product strategy* in which non-product features work to add worth to our products. We plan to successfully introduce our new product into an already booming market by differentiating ourselves in the following areas:

Service

Custom Specifications: Customers may submit their personal designs and we will fabricate individual units on demand.

Delivery: Everywhere. Ground-based shipping will be our principle method of delivery; however, other delivery options will be made available for overseas shipping (waterway or air delivery). For international shipping or for requested rapid delivery, extra costs will be incurred by the customer.

Quality

Strength: Our holds are made from slow-grown Douglas-Fir which has a high wood density. Douglas-fir is already intrinsically much stronger than Alder, the species currently being used by our direct competitor, *Metolius*. This not only differentiates us, but gives us a competitive advantage. Finally, only knot-free wood is used which further increases strength.

Reliability & Durability: Wood has elastic properties at low and intermittent levels of stress. Since the forces exerted by climbing are similar (discontinuous, and low-level), it means that our grips will retain their form. Our climbing holds are extremely durable since wood wears at a much slower rate than the other polymers used to make holds.

Environmentally conscientious

Wood is one of the oldest and best-known structural materials, and one of the few renewable natural resources. Wood is a desirable material for construction because it requires less energy to produce a usable end product than do other materials. Since wood holds require no pigmentation or dyes, our holds remain mercury and lead free, creating a safer climbing hold for the buyer and the manufacturer. An additional marketing advantage comes from the fact that our wood supply contributes to Mule Deer habitat and forest fire management.

Style

The image we convey through our products is simplicity at its most challenging. No fluff, no ribbons, no extravagant colors, or superfluous detailing. For style, we rely on the matchless designs of warm tones and curvy lines found naturally in wood grain.

Accessories

Black anodized bolts which will add to the aesthetics of our high-end products, giving them more cachet and good T-wrenches will be included with every hold we sell.

Packaging

Since we want our packaging to be pure and simple, yet practical, we will ship all of our products in nicely styled, recyclable and reusable, cardboard boxes, garnished with our logo. Our packing material will be composed of wood chips from our production residues.

Lifetime Warranty

Lignius will guarantee to replace, free of charge, any broken holds, regardless of the cause of failure. This will contribute to building a reputation of high performance, quality products, and unparalleled customer service.

Online Access

To keep in touch with our customers, Lignius will run its own website (www.lignius.ca). This comprehensive web site will provide the following services:

- Convenient ordering and purchasing.
- An online store including a products catalogue with photos, and product descriptions.
- Information on the layout and construction of home walls, training tips and other technical advice.

- A *Wood Knowledge* section explaining the source (commercial thinning on mule deer winter range) and species of the wood used to manufacture our holds.

7.5 Price Strategy

Our prices will be competitive, but we will be differentiated by and compete on, quality, style, uniqueness and innovation. We have therefore determined that the best pricing model to adopt is *value-based pricing*. By having customers recognize that our products are superior, high-end items, we will be able charge prices that reflect these traits. More specifically, we will employ a *price skimming strategy* (Riley, 2003), where we will charge a relatively high price for the short time that our product is launched onto the market. This strategy will offset some start up costs and contribute to establishing a high quality reputation. Prices can later be lowered when profitability and competition increase. There is currently only one other company which produces wooden holds and we will not exceed their prices by more than 10%.

7.6 Promotion Strategy

Our primary promotion goal is to create awareness and recognition of our products so that they can become well-known rapidly. Financially, most of the promotion will be aimed at deriving as much benefit as possible from the “newness effect” of our products. Product demand will be generated through the following promotion tactics:

- **Models for Promotion**

- Mass selling

- Advertising*: Our holds will be advertised through print ads in four major climbing magazines: *Gripped*, *Rock & Ice*, *Climbing Magazine* and *VBouldering*. We will also advertise our products by placing our company website in the *Links* section of these popular climbing directories:

- www.webcrag.com
 - www.rockclimbing.com
 - www.bouldering.com

Publicity: Lignius will increase its exposure by sponsoring the American Championships for Competition Climbing, the Canadian Championships for Competition Climbing as well as smaller regional competitions in the Pacific Northwest. Also, Lignius will strive to be present at several climbing events during the year, such as the *International Climbing Festival*, to display and promote our products. These events, which often attract media coverage, will provide lots of contact with potential customers.

Sales promotion

End User (Home owner): We will communicate the attributes of our products directly to end users through point of purchase displays at our major retailers.

Personal selling

Missionary Sales: We feel that the best way to demonstrate the features of our products is to have people see, feel and test the holds first hand. We will target our personal sales to the climbing gyms in the major cities in Alberta and the Pacific Northwest. Indoor climbing gyms will be visited, and free demos will be given for trial within the gym. We will build relationships through routine follow-up visits and as new product lines are formed.

Table 3: Cities and gyms to be visited

Country	City	Number of climbing gyms
<i>Canada</i>	Vancouver/Lower Mainland	7
	Edmonton	2
	Calgary	8
	Seattle	3
<i>United-States</i>		

Source: USA Climbing, 2004

Future Opportunities: In the future Lignius would like to cooperate with a home renovator who would like to build custom home walls exclusively furnished with wood holds. These would be high end, high design walls. It is important to

mention that home walls do not replace indoor climbing gyms; rather, they are complementary. By building such a relationship with a wood-holds only wall, we ensure a steady demand for our products and create an attraction that will function as an ongoing promotional device.

7.7 Place Strategy

- **Distribution and Supply Chain Management**

Lignius will be sold directly to consumers through our website and through outdoor retailers. Strong links of communication with both businesses and consumers will allow us to monitor customer satisfaction and continually improve supply chain management.

Contact information will be provided on the company website. The provision of technical information and services and the reception of comments and complaints will be accomplished through phone and email communication. Replies will be prompt.

Communication between Green Grips and other businesses such as outdoor retailers and climbing gyms will be more heavily based on personal communication. Free quotes and an estimate of production time, based on size, complexity and quantity, will be provided for custom hold designs.

All customer orders will be received through the company website, processed and packaged by the office manager, and transported by ground based courier. Shipping will be within five business days and standard shipping for orders over a \$100 within North America will be free. Overseas customers and customers requesting next-day shipping but will be required to cover the additional costs.

8.0 Marketing Research

Marketing research will initially be exploratory and will rely on customer comment-cards made available in gyms to provide insights on any possible problems or customer dissatisfaction. Our website will also contain a simple survey on customer satisfaction relating to product characteristics. As the company grows and as the products pass from

our company will certainly invest greater sums towards in-depth quantitative research by hiring professionals to assess and forecast consumer trends.

9.0 Operating Plan

9.1 Location

Production facilities will be located in Williams Lake, British Columbia. This will minimize the transportation costs of raw materials and overhead costs for production facilities. Below is the break down cost of the facilities (Table 4); the complete facility layout is appended to the end of the report (Appendix IV).

Table 4: Break Down of Equipment Costs

Equipment Costs	
Machines	Total Fixed Costs
Wood Mizer	\$ 10,136.79
CNC Router	\$ 17,213.00
Radial Arm Saw	\$ 2,220.20
Drill Press	\$ 344.17
Dust Collector	\$ 790.68
TOTAL COSTS	\$ 30,704.84

9.2 Labor Force and Costs

Listed below is a summary of Lignius employees and their annual salaries (Table 5).

Table 5: Annual Costs of Labour

Position	Annual Salary
General Manager and Sales Rep	\$ 40,000
Production Foreman and R&D	\$ 30,000
Operator	\$ 25,000
Accountant	\$ 21,000
Programmer	\$ 10,000
Total Annual Salary	\$ 126,000

9.3 Production Schedule

Upon completion of all machine installations, the first month is expected to be the “starting phase” before the operation goes to full gear. This period is necessary to allow for training in areas such as safety and continuous improvement and to work out production bugs. Once operating the following production plan will be followed:

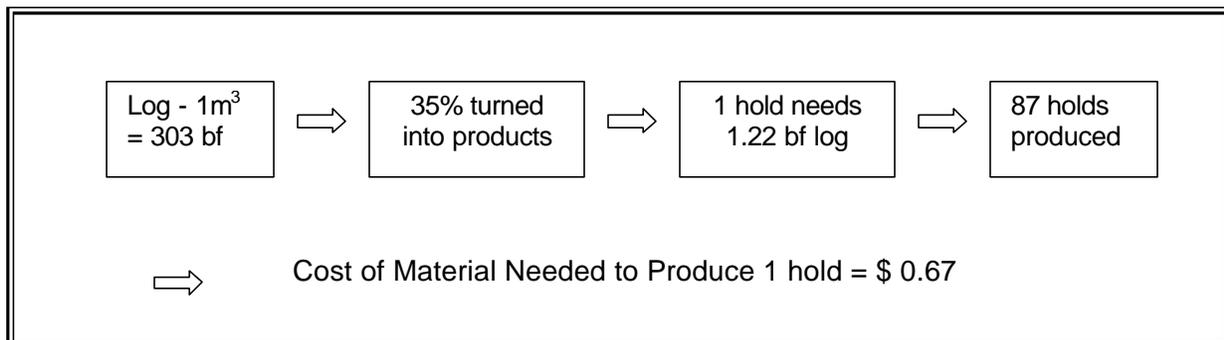
- 1 shift per day
- Hours of operations: 8 hrs per day
- First year: 55% production capacity (1 shift)
- 40 hrs / week x 50 weeks / year = 2000 hrs/yr

As sales of our core products are stabilized, with the increase in production, we expect to have the plant running at 80% capacity in the mid-second year.

9.4 Material Procurement

Lignius will purchase logs freshly harvested from the forest and processes the remaining steps in-house.

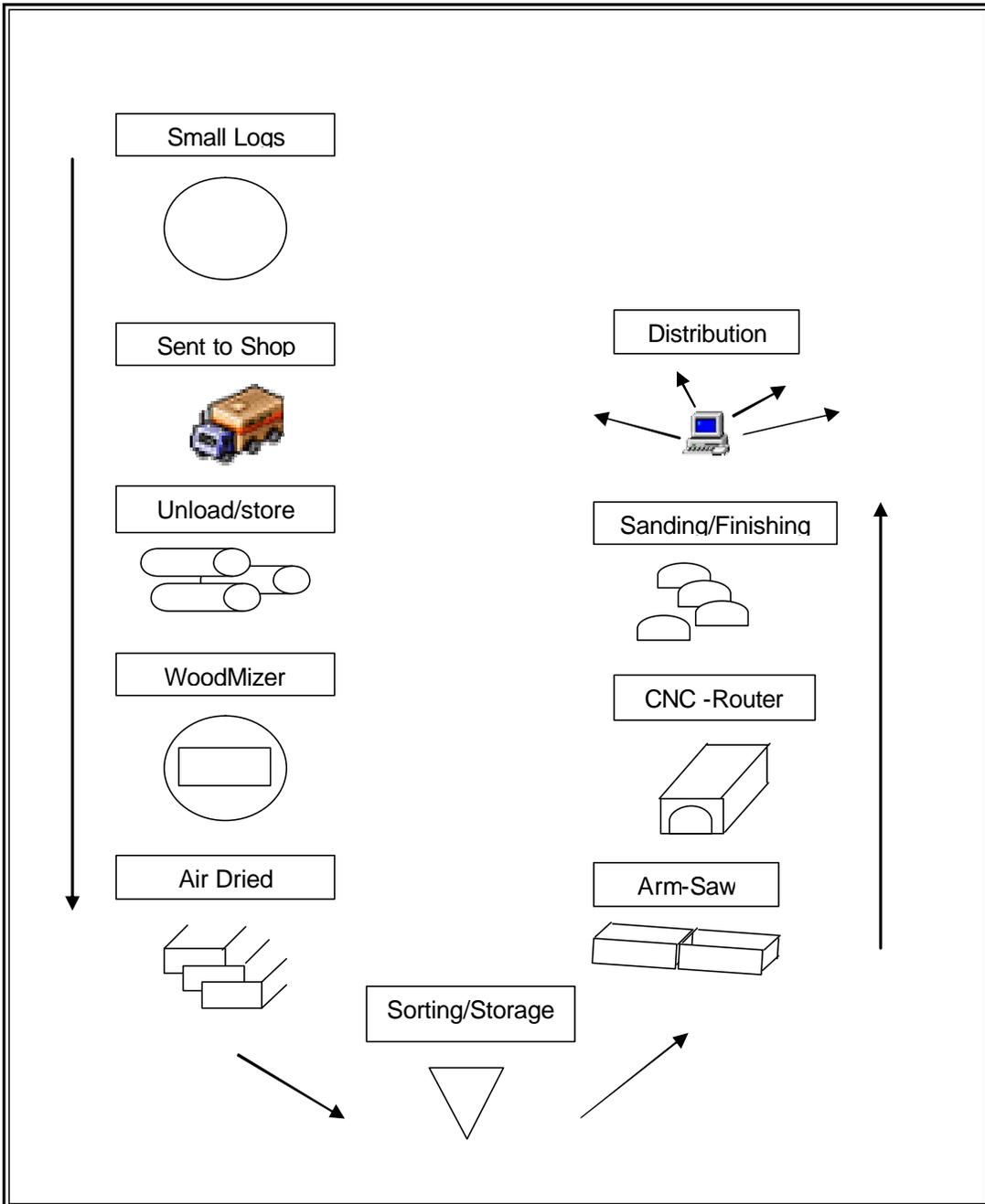
Figure 1: Costs of Manufacturing



9.5 Work Flow

In order to maximize the production efficiency, all personnel on the shop-floor will get adequate training and follow standardized work procedures. Physically, operators will work in a robust, synchronous manufacturing system to meet quality control standards as well as the WCB safety regulations. Figure 2 shows the material and work flow:

Figure 2: Work Flow



9.6 Inventory Management

To maximize cash flow, Lignius will manage its inventory with the goal of minimizing the amount of inventory necessary to meet customer needs. We will use inventory control software to manage inventory levels and keep track of past sales in order to project future inventory needs. Tracking of product shipments will be managed by the courier company.

9.7 Long Range

Lignius will continuously refine production processes and strive for continuous improvement in efficiently producing quality products using its existing plant. In the long run we will expand into a larger facility. As we grow, a larger profit margins and economies of scale will enable better utilization of machine capacity and division of labour and will result in lower average per unit production costs.

9.8 Technology Plan

We also believe that innovation is the key to productivity growth. It leads to technological improvement and helps us develop new techniques and new products. For this reason, Lignius will invest 30% of its profits into Research and Development. Also, we will progressively work with the machine suppliers in improving and innovating new production technology.

10.0 Management and Organization

10.1 Management Team and Staff

Lignius will consist of a total of 5 employees in the first 12 months of operation. The key employees include 1 general manager and sales representative, 1 production foreman also in charge of research and design, 1 shop floor employee/equipment, 1 accountant and 1 part-time programmer. Positions and roles are summarized in Table 6 below.

Table 6: Employment Summary

POSITION	SKILLS REQUIRED AND RESPONSIBILITY
General Manager/ Sales Representative	Direct all employees and build teamwork environment; organize and conduct staff meetings; make final strategic decisions; promote product through missionary sales
Production Foreman	Operations management: raw material ordering, manufacturing; quality control; develop new designs and work closely with the shop floor employees, ensuring the design is practical and profitable.
Operator	Operate and maintain shop equipment including manual CNC router and WoodMizer; hand-carve the detail designs of the holds and apply surface finishing.
Accountant	Organize online-data order tracking system, keep records of all financial activities and produce financial statements.
Programmer	Maintain the company's website and to update new catalogue and information from time to time. This person will be paid on an hourly basis.

10.2 Management Style

Lignius encourages group effort and open communication to discuss quality control health, safety and issues. Cross-functional teams will work as a team toward the same goal for new product development, quality improvement, and various other issues.

11.0 Financials

Gross monthly revenue has been estimated for the first year of operations based on estimated monthly sales and per unit cost of \$12. Cost of goods sold and selling, general and administrative expenses have been subtracted from these to calculate earning before taxes.

In the first operating month (July) no sales will occur. This will be a period of organization and preparedness for the commencement of sales in the up coming month. From August to October, we do not expect to sell enough units to turn a profit. Growth in sales is expected to rise in the winter months, as sales are directly related to the high season for indoor climbing. In the months following October up until April, a profit is expected each month.

Fixed costs include wages, benefits, utilities, office supplies, rent, and loan payments. Variable costs include raw logs, fasteners, hardware, packaging, freight and travel expenses. In an attempt to reduce both fixed variable costs, we have attempted to find the most efficient option for each of our costs and we will continue to search for opportunities to find savings in this area. Capital expenses have been broken down into two categories: machinery and working capital.

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Website: www.usclimbing.org, visited 07/04/04

Appendix I- Price and Product Comparison

Company Name	Hold Type	Line name	Sets	Retail Price (\$)
Metolius	Plastic	Pure Force CNC	1-hang board	59.95(us)
Franklin	Plastic	Power station III	1-hang board	39.50(us)
Metolius*	Wooden	Wooden Grips	5- piece	39.95(can)
Metolius*	Wooden	Wooden Grips	25- piece	179.00(can)
Metolius	Plastic	Flowstone Micro 5	5- piece	26.00(can)
Metolius	Plastic	Super 7	7- piece	26.00(can)
Metolius	Plastic	All American-MJ	5- piece	37.00(can)
Teknik	Plastic	Cricket	10-piece	49.00(can)
Teknik	Plastic	Runner	10-piece	37.00(can)
Nicros	Plastic	Large Holds	2-piece	14.95(us)
Nicros	Plastic	Micro Holds	5-piece	19.95(us)
Franklin	Plastic	Jumbo Jibs	10-piece	18.95(us)
Xcilver	Composite	Rock-off 1	1-piece	25.00(can)
Xcilver	Composite	Rock-off 2	1-piece	28.00(can)
Petrogrips*	Granite	Micro	1-piece	3.85-4.05 (us)
Petrogrips*	Granite	Bucket	1-piece	4.50-5.30 (us)
Petrogrips*	Sandstone	Micro	1-piece	3.75-3.95 (us)
Petrogrips*	Sandstone	Mushroom	1-piece	9.95-12.00(us)
Real Rock*	Rock	Large pac-a-rocks	10-piece	55.00 (us)
Real Rock*	Rock	Natural stones	4-piece	30.80 (us)

(* signifies direct competitors of the high end indoor rock climbing hand hold market).

Appendix II – North American Hold Manufacturers

Alpine Artworks (505) 471-5016
P.O. Box 22982
Santa Fe, NM 87502-2982
America Sporting Division (614) 421-1176
348 King Ave #5, Suite #5
Columbus, OH 43201
Anatomically Correct Holds (203) 235-0581
522 East Main Street
Meriden, CT 06450

Blue Water - GettaGrip Holds 1-800-533-7673
<http://www.bluewater-climbing.com>
209 Lovvorn Road
Carrollton, Georgia 30117
Climb-It 1-800-75CLIMB
climb-it@primenet.com
3845 S. Main Street
Santa Ana, CA 92707

Ecogrips
<http://www.hotwebdesign.com/ecogrips/english/>

Ent Holds (604) 944-3392
1101-930 Cambie Street
Vancouver, BC, Canada V6B 5X6

Entre Prises 1-800-580-5463
<http://www.ep-usa.com>
20512 Nels Anderson Place, Bldg. 1
Bend, OR 97701
Feller Stone
1-800-776-2206

Franklin Climbing Equipment (541) 317-5716
mail@fcephq.com
P.O. Box 7465
Bend, OR 97708
GR Holds (519) 977-9261

Grab Hold
P.O. Box 60532
Colorado Springs, CO 80960

Grip Head (914) 688-7157
<http://www.griphead.com>
5251 Rte. 212
Mt. Tremper, NY 12457

Groperz 1-800-476-7366
1935 South Halstead Street
Chicago, IL 60608
Independant Holds 1-888-463-5653
P.O. Box 481125
Denver, CO 80248
Juggernaut (403) 282-7311
<http://www.juggernet.com>
3202 7th Street NW
Calgary, AB, Canada T2H 1E4
Metolius (541) 382-7585
metolius@empnet.com
63189 Nels Anderson Rd.
Bend, OR 97701-5739
Nicros 1-800-699-1975 (orders) (612)
778-1975 (walls)
<http://www.nicros.com>
519 Payne Avenue
St. Paul, MN 55101
Passe Montagne 1-800-465-2123
1760 Montree 2 Rang
Val David, Quebec, Canada J0T 2N0
Petrogrips (814) 867-6780
<http://users.penn.com/~petro/index.html>
108 E. Cherry Lane
State College PA 16803
Pusher 1-888-3PUSHER
<http://www.pusher.com>
209 west Utopia Ave.
Salt Lake City, Utah 84115
Stone Age (650) 595-2527
<http://www.stoneage-gear.com>
170 Glenn Way #8
Belmont CA 94002
Straight Up (303) 444-2779
6661 Araphoe Rd. Suite #7
Boulder CO 80303

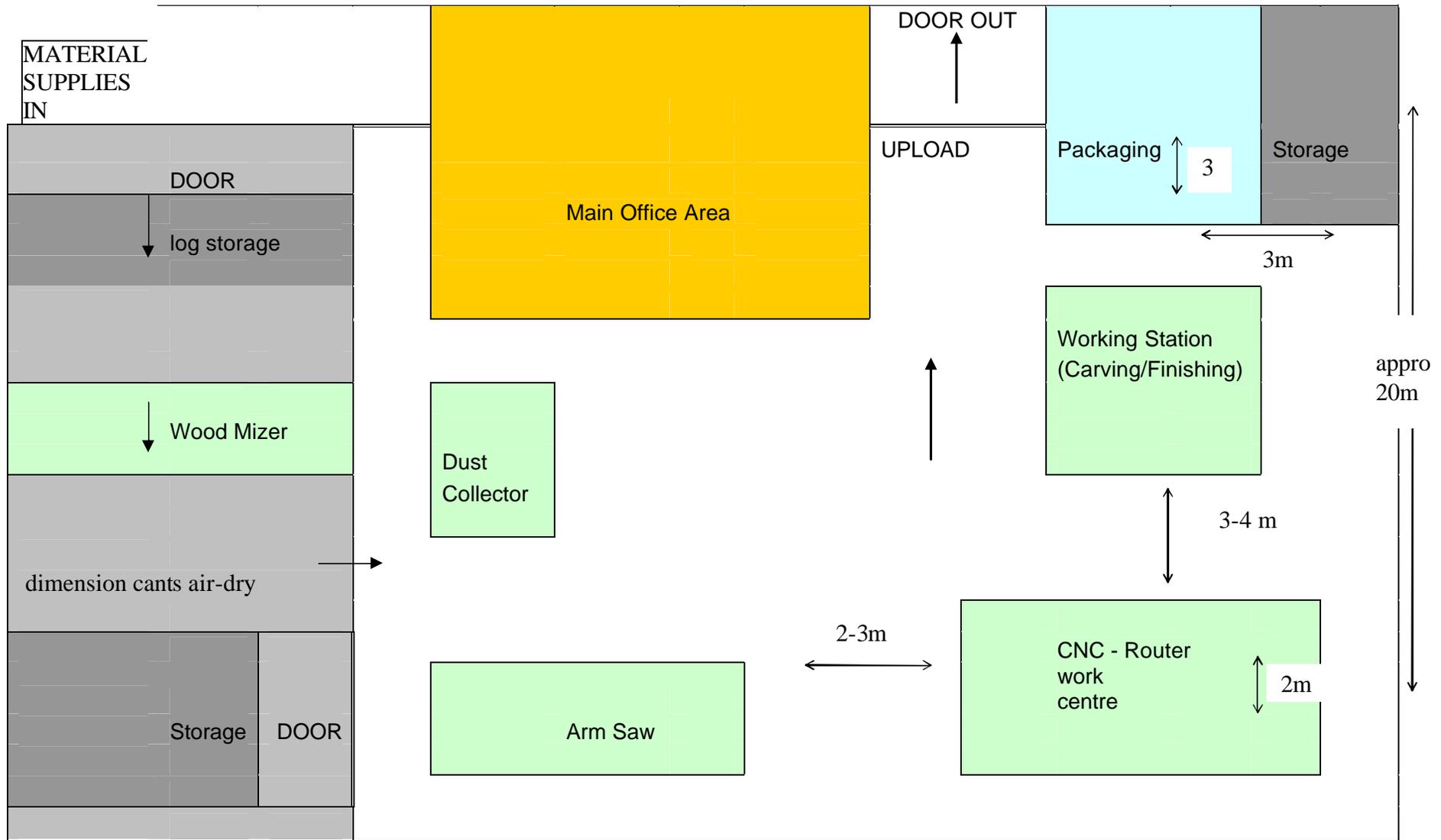
Tenze Climbing Holds 1-800-871-7818
P.O. Box 87 Bozeman, MT 59771
<http://www.mcn.net/~tenze>
VooDoo 1-800-883-6433
voodoo2@flash.net
2074 Hancock Street
San Diego, CA 92110

APPENDIX III – Facility Costs

MACHINES	ONE-TIME FIXED COST						
	Name	Model	Supplier	Cost of Machine	Installation	Shipping	Depreciation
Woodmizer	LT15	Wood-Mizer	\$ 8,917.08	\$ 100.00	\$228.00	\$ 891.71	\$ 10,136.79
CNC Router	Engraving3000	Precix	\$ 15,000.00	\$ 200.00	\$513.00	\$ 1,500.00	\$ 17,213.00
Radial Arm Saw	RS 830	Delta	\$ 1,654.00	\$ 150.00	\$250.80	\$ 165.40	\$ 2,220.20
Drill Press	14-650R	Delta	\$ 267.43	\$ 50.00	\$ -	\$ 26.74	\$ 344.17
Dust Collector	50-851	Delta	\$ 563.16	\$ 80.00	\$ 91.20	\$ 56.32	\$ 790.68
TOTAL COSTS							\$ 30,704.84

Parts+Tools+Maintenance	VARIABLE COSTS				
	Tools	Utilization	Maintenance/yr	Holdings Made by Parts	\$/Hold
Woodmizer	\$ 380.00	55%	\$ 209.00	3934	\$ 0.15
CNC Router	\$ 400.00	70%	\$ 280.00	1230	\$ 0.55
Radial Arm Saw	\$ 200.00	60%	\$ 120.00	1639	\$ 0.20
Drill Press	\$ 40.00	40%	\$ 16.00	1000	\$ 0.06
Dust Collector	\$ 130.00	80%	\$ 104.00	1000	\$ 0.23
TOTAL COSTS					\$ 1.19

APPENDIX IV – Facility Layout



approx. 40m

30

APPENDIX V – Web Design Quotation

Dear Lignius,

From the website, I see about 15-20 public pages potentially with 5-10 employee-only accessible pages. Here is the functionality I extrapolated from the current contents so far:

Database design & implementation: \$300
E/R diagrams, Schema, SQL

Static Content: \$100 per page (est \$1700)
Site layout and design; HTML/CSS

Dynamic Content: \$225 per page (est \$1575)
Product Inventory, Catalogs, Articles, Guides, Dealers, Stores, Back-end processing; PHP

E-commerce solution: (estimate \$300) determined on type of service and interface.

Estimated cost \$3875 (300 + 1700 + 1575 + 300)
Estimated time for completion: 4 weeks

Technical Support: \$25/hr for server maintenance, \$40/hr for programming, \$60/hr telephone support. On-site service is \$50 + hourly rate.

Web-hosting starts around \$13/mo CDN and includes PHP scripting with a MySQL database, 50MB storage and 1GB monthly traffic. (\$25 setup fee applies)

Note that more bandwidth and storage capacity will result in an increase in the monthly rate. It is scalable to the size of your business with lots of room to grow. Migration between these services is virtually transparent.

Server software installation and configuration is \$60/hr
(Linux/BSD operating system, web server, database, PHP/JSP)

Terms:

All work is to be performed on a contract basis. No work outside of the contract will be performed without the creation of a new work order. Customer pays an upfront deposit for the preliminary design and mockups. When the design is approved, customer must pay 50% of the remainder of the total project cost before further implementation. Upon completion, customer will pay the remainder balance of the project and the source code and any documentation will be delivered.

Estimate provided by Colin Louie on the 14th day of April, 2004.
KCNGROUP

604.767.3665
sales@kcngroup.org

APPENDIX VI – Financial Data

Price List

Product	Number of Holds	Price	Price per Hold
Small Hangboard	1	\$85.00	\$85.00
Large Hangboard	1	\$125.00	\$125.00
Starter Set	60	\$350.00	\$5.83
Partial Starter Set	45	\$290.00	\$6.44
Jug Set	4	\$55.00	\$13.75
Sloper Set	6	\$45.00	\$7.50
Crimp Set	10	\$50.00	\$5.00
Foot Set	10	\$40.00	\$4.00
Small Campus Rung Set	5	\$35.00	\$7.00
Medium Campus Rung Set	5	\$40.00	\$8.00
Large Campus Rung Set	5	\$45.00	\$9.00

Capital Requirements

MACHINERY		
	Woodmizer	\$10,136.79
	CNC Router	\$17,213.00
	Radial Arm Saw	\$2,220.20
	Drill Press	\$344.17
	Dust Collector	\$790.68
WORKING CAPITAL		
	12 Months Salaries and Wages	\$126,000.00
Inventory		
	Raw Logs	\$14,500.00
	Fasteners and Hardware	\$10,000.00
	Shipping Boxes	\$643.20
Miscellaneous		
	Website Design	\$3,875.00
Office Supplies		
		\$1,000.00
TOTAL		\$186,723.04

APPENDIX VII – Financial Statement

		July	August	September	October
UNIT SALES PLANNED		0	1000	1400	2500
DOLLAR SALES PLANNED		\$0.00	\$15,000.00	\$21,000.00	\$37,500.00
COST OF GOODS SOLD					
Materials					
	Raw Logs	\$1.76	\$1.76	\$1.76	\$1.76
	Fasteners and Hardware	\$0.40	\$0.40	\$0.40	\$0.40
	Packaging	\$0.08	\$0.08	\$0.08	\$0.08
	Total	\$2.24	\$2.24	\$2.24	\$2.24
Total Materials		\$0.00	\$2,240.00	\$3,136.00	\$5,600.00
Direct Labour		\$0.00	\$3,333.33	\$3,333.33	\$3,333.33
Overhead					
	Benefits	\$0.00	\$666.67	\$666.67	\$666.67
	Equipment Depreciation	\$0.00	\$5,140.97	\$5,140.97	\$5,140.97
	Utilities and Supplies	\$500.00	\$500.00	\$500.00	\$500.00
TOTAL		\$500.00	\$11,880.97	\$12,776.97	\$15,240.97
SELLING GENERAL AND ADMINSTRATIVE EXPENSE					
	Loan payments	\$1,250.00	\$1,250.00	\$1,250.00	\$1,250.00
	Salaries	\$7,166.67	\$7,166.67	\$7,166.67	\$7,166.67
	Benefits	\$1,433.33	\$1,433.33	\$1,433.33	\$1,433.33
	Freight	\$0.00	\$225.00	\$315.00	\$562.50
	Travel	\$2,250.00	\$2,250.00	\$2,250.00	\$1,800.00
	Rent	\$1,000.00	\$1,000.00	\$1,000.00	\$1,000.00
	Office Supplies	\$50.00	\$50.00	\$50.00	\$50.00
	Coffee	\$20.00	\$20.00	\$20.00	\$20.00
	Depreciation				
	Miscellaneous				
TOTAL		\$13,170.00	\$13,395.00	\$13,485.00	\$13,282.50
OPERATING PROFIT		\$13,670.00	\$10,275.97	-\$5,261.97	\$8,976.53
EARNINGS BEFORE TAXES					
	Earnings Before Taxes	\$13,670.00	\$10,275.97	-\$5,261.97	\$8,976.53

November	December	January	February	March	April	May	June	TOTALS
2700	3400	2400	3100	2600	2100	1600	1200	24000
\$40,500.00	\$51,000.00	\$36,000.00	\$46,500.00	\$39,000.00	\$31,500.00	\$24,000.00	\$18,000.00	\$360,000.00
\$1.76	\$1.76	\$1.76	\$1.76	\$1.76	\$1.76	\$1.76	\$1.76	
\$0.40	\$0.40	\$0.40	\$0.40	\$0.40	\$0.40	\$0.40	\$0.40	
\$0.08	\$0.08	\$0.08	\$0.08	\$0.08	\$0.08	\$0.08	\$0.08	
\$2.24	\$2.24	\$2.24	\$2.24	\$2.24	\$2.24	\$2.24	\$2.24	
\$6,048.00	\$7,616.00	\$5,376.00	\$6,944.00	\$5,824.00	\$4,704.00	\$3,584.00	\$2,688.00	\$53,760.00
\$3,333.33	\$3,333.33	\$3,333.33	\$3,333.33	\$3,333.33	\$3,333.33	\$3,333.33	\$3,333.33	\$36,666.67
\$666.67	\$666.67	\$666.67	\$666.67	\$666.67	\$666.67	\$666.67	\$666.67	\$7,333.33
\$5,140.97	\$5,140.97	\$5,140.97	\$5,140.97	\$5,140.97	\$5,140.97	\$5,140.97	\$5,140.97	\$56,550.67
\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$6,000.00
\$15,688.97	\$17,256.97	\$15,016.97	\$16,584.97	\$15,464.97	\$14,344.97	\$13,224.97	\$12,328.97	\$160,310.67
\$1,250.00	\$1,250.00	\$1,250.00	\$1,250.00	\$1,250.00	\$1,250.00	\$1,250.00	\$1,250.00	\$15,000.00
\$7,166.67	\$7,166.67	\$7,166.67	\$7,166.67	\$7,166.67	\$7,166.67	\$7,166.67	\$7,166.67	\$86,000.00
\$1,433.33	\$1,433.33	\$1,433.33	\$1,433.33	\$1,433.33	\$1,433.33	\$1,433.33	\$1,433.33	\$17,200.00
\$607.50	\$765.00	\$540.00	\$697.50	\$585.00	\$472.50	\$360.00	\$270.00	\$5,400.00
\$1,200.00	\$1,200.00	\$600.00	\$600.00	\$300.00	\$300.00	\$300.00	\$300.00	\$13,350.00
\$1,000.00	\$1,000.00	\$1,000.00	\$1,000.00	\$1,000.00	\$1,000.00	\$1,000.00	\$1,000.00	\$12,000.00
\$50.00	\$50.00	\$50.00	\$50.00	\$50.00	\$50.00	\$50.00	\$50.00	\$600.00
\$20.00	\$20.00	\$20.00	\$20.00	\$20.00	\$20.00	\$20.00	\$20.00	\$240.00
\$12,727.50	\$12,885.00	\$12,060.00	\$12,217.50	\$11,805.00	\$11,692.50	\$11,580.00	\$11,490.00	\$149,790.00
\$12,083.53	\$20,858.03	\$8,923.03	\$17,697.53	\$11,730.03	\$5,462.53	-\$804.97	-\$5,818.97	\$49,899.33
\$12,083.53	\$20,858.03	\$8,923.03	\$17,697.53	\$11,730.03	\$5,462.53	-\$804.97	-\$5,818.97	\$49,899.33

