



## **2 Company Description**

### **2.1 Summary**

AutoLoad, INC. will be a small company made up of three smaller divisions. The first division, the management team, will be given the task of growing the company into new markets and interfacing with the customers. The second division, the engineering department, will create and test the robot. The third division will interface with the company's business partners. These partners will include manufacturing companies that will create all the parts necessary to build and maintain the robot. The starting partners will be Caterpillar and FedEx. Since most of the manufacturing of the robot will be done by Caterpillar, the company will be small and centralized.

### **2.2 Company Ownership**

AutoLoad is a privately owned by four initial individuals, Kyle Cullen, Micheal Lindsey, Robert Stranghoener, and Rebecca Owen. Each owner owns 25% of the company. The company is an S corporation because we will have the option of going public and not be double taxed by the government [1]. Each of the board members has a specifically design role in the company. Kyle Cullen is the CEO and sales manager. Micheal Lindsey is the President of Engineering. Robert Stranghoener is the Vice President of Engineering in charge of communications with Caterpillar. Rebecca Owen is the Vice President of Engineering and in charge of the software group which programs the robots' movements.

### **2.3 Company Location**

AutoLoad will be located in Memphis, Tennessee mainly because of its close ties to FedEx. They have a large distribution hub in Memphis that ships packages all over the world. Caterpillar has manufacturing plants in Decatur, Alabama and Jacksonville, Florida. Memphis is a centralized location near these Caterpillar manufacturing sites, has an international airport, and an industrialized city with several different types of commerce in the area.

### **2.4 Company Facilities**

Since the manufacturing of the robot and the onsite testing will be done at other locations outside of AutoLoad's main facility, AutoLoad's main facility can be a pre-existing 8000

sq foot building. This building will include test laboratories, shop facilities for creation of small test equipment, president's office, three vice presidents' offices, employee offices, demonstration area, conference room, break room, restrooms, and waiting / delivery area.

## **2.5 Company Strategy**

AutoLoad will rely on its reputation to compete in the narrow market of airplane freight loading. Customer service will be held paramount to keep its reputation strong and increase repeat business. AutoLoad will also continuously improve the technology of its robots to keep up with the companies' customers' growing needs and wants.

AutoLoad will get its funding from one of two places. The first strategy will be to get venture capital. Since the robots that the company builds will cost anywhere from \$300,000 to \$500,000 a large investment from a venture capital company would be needed. Due to the vast amount of capital necessary to produce a prototype, finding funding from a venture capital firm or personal investors was abandoned. The second approach is to have FedEx solely support the project financially. In return AutoLoad would design the prototype for FedEx. After the first year of having an operational prototype FedEx would be given the option to obtain a monopoly on AutoLoad's robots. This would allow FedEx to be the only company that loads its airplanes in a totally autonomous fashion. During the three year monopoly minor changes would be made to the robots functions and research would be conducted on its reliability and functionality. During the three year monopoly AutoLoad would be working on the next generation of airplane loading robot. The second generation robot will be released sometime during the third year. After the three year monopoly expires the company would offer FedEx another three year monopoly, but they would have to make a considerable purchase and contribution to AutoLoad in order to receive the monopoly. The third generation of the robot will be finished sometime in the last year of the second monopoly or the seventh year. After the first or second monopoly is finished the airplane loading robot would be marketed on the open market. Once AutoLoad's third generation robot has been on the open market and the company has seven years worth of physical evidence of a successful product then at least 43% of the market of the big four package carriers (FedEx, UPS, United States Postal Service, and DHL) should be obtainable.

After ten years when the airplane loading market has been dominated by AutoLoad's products then the company strategy will undergo a renovation and the target market will be change into the warehouse management. AutoLoad will create a new robot that will work with RFID technology to fully manage a warehouse. The new robot will take the product directly off the assembly line and place it in the warehouse and then load it onto the outgoing transportation vessel. The robot will be made to order for each individual customer. That means that AutoLoad could build a robot for Walmart that takes a product off a truck and places it in a warehouse and then places that product on another truck a few days later without human intervention. This type of robot could be used for any company that has a need of managing boxed inventory in a warehouse. Such customers could include L.L. Bean, Walmart, K-mart, Weber, Sony, and Serta.

AutoLoad has decided to have Caterpillar create and assemble the mechanical portion of the robots per detailed specifications. Caterpillar is already established in the market of making large construction machinery and would be a great partner to help create these large scale robots. AutoLoad will purchase the robotic shell from Caterpillar and Caterpillar will be able to say it has entered into a new market and increase its prestige in the heavy machinery market.

## 2.6 Start-Up Costs

The cost to produce a complicated robot that is the size of an earth mover is extraordinary. AutoLoad will have a total of 20 employees to accommodate the complexity of creating the product and managing the project. The entire cost will be financed through an exclusivity agreement with FedEx. FedEx will purchase a single prototype for the total cost of \$8.7 million from AutoLoad and in turn AutoLoad will give FedEx the exclusive rights to purchase robots for three years after the first prototype has been created. Each subsequent robot will be purchased at a price between \$300,000 and \$500,000.

**Table 2.6.a: Start-up Expenses**

<b>Operation Costs</b>	
<i>Yearly</i>	
Building	\$6,000
Furniture	\$7,000
Office Supplies	\$300
Utilities	\$3,000
<b>Total for 3 years</b>	<b>\$48,900</b>
Salaries (20ppl @ \$65k)	\$1,300,000
Benefits	\$60,000
<b>Total for 3 years</b>	<b>\$4,350,000</b>
<i>Initial</i>	
Testing Equipment	\$15,000
Computers	\$16,000
Software and Licensing	\$4,000
Small Robotic Parts - Testing	\$10,000
Legal	\$120,000
Consultants	\$5,000
Insurance	\$20,000
Sales	\$50,000
Travel Expenses	\$15,000

<b>Total</b>	<b>\$4,653,900</b>
<b>Prototyping Cost</b>	
Caterpillar Fee	\$1,500,000
Materials	\$2,000,000
Electronics	\$500,000
<b>Total</b>	<b>\$4,000,000</b>
<b>Total Costs</b>	<b>\$8,653,900</b>
<b>Assets</b>	
Cash – Line of Credit	\$200,000
Miscellaneous Cash	\$100,000
<b>Liabilities</b>	
Short Term	\$0
Long Term	\$0
<b>Total Liabilities</b>	<b>\$0</b>
<b>Investments</b>	
Seed Investment 1 – Year One	\$1,721,300
Cash Line of Credit – Year One	\$200,000
Seed Investment 2 – Year Two	\$1,466,300
Cash Line of Credit – Year Two	\$50,000
Seed Investment 3 – Year Three	\$1,466,300
Cash Line of Credit – Year Three	\$50,000
Prototype Payment	\$4,000,000
<b>Total Funding Necessary (3Years)</b>	<b>\$8,953,900</b>
<b>Summary</b>	
Total Start-Up Expenses	\$8,953,900
Total Assets	\$300,000
Total Start-Up Requirements	\$8,653,900
Total Investments	\$8,653,900
Total Liabilities	\$0
Total Investments and Liabilities	\$8,953,900
Loss at Start up	(\$8,653,900)
Total Capital	\$300,000
Total Capital and Liabilities	\$300,000

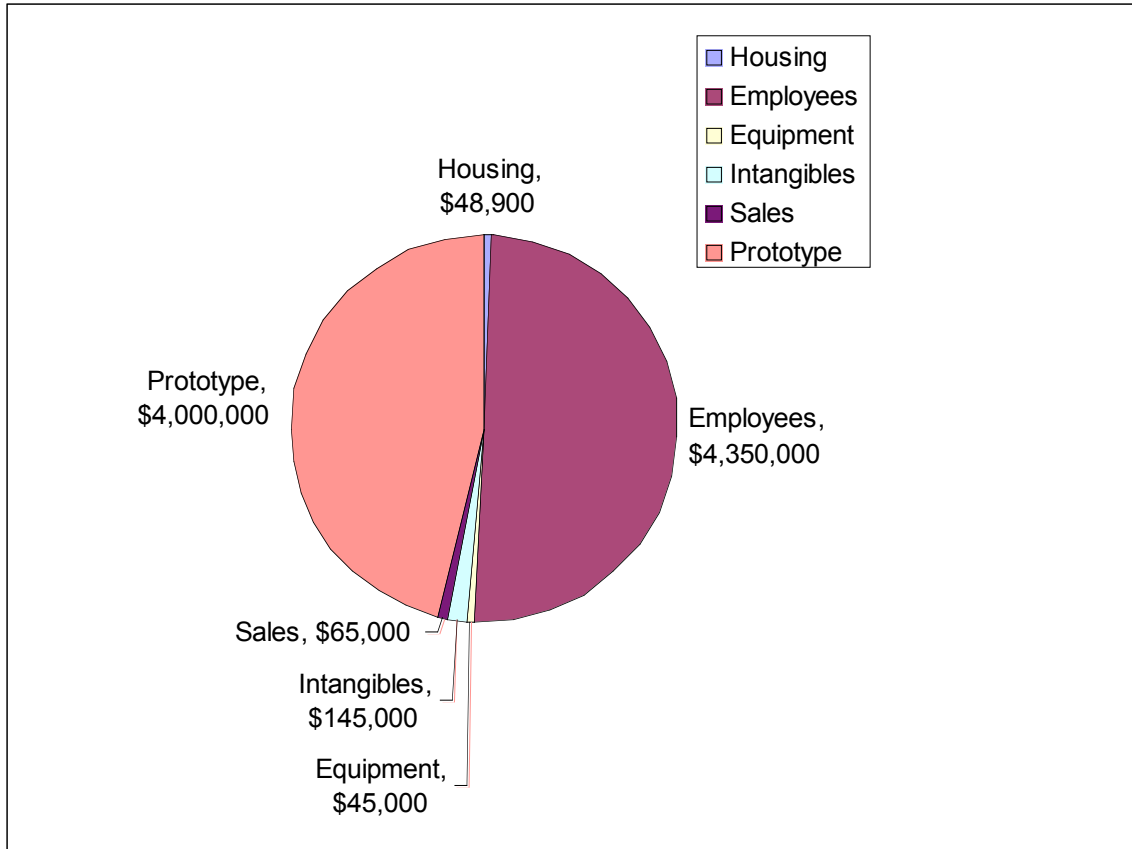


Figure 2.6.a: Pie Chart – Cost Breakdown

### 3 Product Description

AutoLoad will create a number of robots that will autonomously load airplanes with packages. After a package makes it way to FedEx’s hub in Memphis it is routed to a storage location. Then the packages are loaded, by one of the robots, into metal containers that are shaped like the inside of an airplane. These containers are called “cans.” Another one of AutoLoad’s robots will collect the cans and place them into the appropriate airplane without human intervention. This system will determine where the can will need to be placed by an RFID tag inside the can. The system that loads the cans will write to the RFID tag when it has finished filling it with boxes. When a new airplane is parked on the jet way and is ready to be loaded a technician will send the position and destination data to the robot via a wireless communication device.

#### 3.1 Product Market and Competitive Comparison

At the moment the cans are hand loaded by FedEx employees. This is AutoLoad’s competition. When humans load packages into containers all day they are prone to error because of their lack of attention. A robot on the other hand can execute the same set of instructions for days or weeks on end without a single failure or mistake. The robot loader will have at least ten times the accuracy of a human and thus a ten times less error

rate. If FedEx can lower their error rate then their cost margin will decrease and in turn their profitability will increase. Also, a robot will be able to load the packages into the cans and then into the airplanes at a much faster rate than humans. If FedEx were to use robots to load its airplanes then the package thrower's job will become unnecessary, and FedEx can decrease its employee base. Once the employee base is decreased, the employees' salaries and benefit plans can be added into the company's bottom line.

### **3.2 Product Costs**

The majority of the cost of the robot will be accrued by the mechanical cost. The cost of producing the shell and mechanical structure of such a large robot will outweigh the cost of the electrical components and the coding process. The coding and design process will take a large initial cost but will stretch over a vast number of robots which will drive the cost per unit down. The price set point will be between \$300,000 and \$500,000 per robot.

### **3.3 Sourcing**

Most of the robot will be built by other companies. The mechanical structure will be produced by Caterpillar INC. The electrical components will be assembled by outside vendors but then placed and wired into the mechanical components by AutoLoad employees to ensure the quality of the product. Since each robot will be made to order then there will be no need for AutoLoad to hold large quantities of parts or assembled robots. Once an order is placed it will be passed on to the individual vendors and the robot will be assembled.

### **3.4 Technology**

AutoLoad's main role in the creation of the product will be the engineering services to create the code and design of each robot. This will allow AutoLoad to concentrate on the technology and implementation of Jacobian based algorithms to produce the movements necessary to load packages.

### **3.5 Future Products and Services**

After three years the first prototype should be completed, but that is not the end of the company's development. AutoLoad plans to develop a newer version of the robot every three years. AutoLoad will create three revisions each with nuances that will allow the robot to perform a variety of tasks. Also when a company purchases a robot from AutoLoad they will have the option to buy a limited service plan that will allow them to have AutoLoad employees perform on-site repairs and modifications to their robot.

#### References

[1] "INC. vs. LLC: Which legal structure suits your Business?," Feb 7, 2006. [Online]. Available: [http://www.bankrate.com/brm/news/biz/Biz\\_ops/20000831.asp](http://www.bankrate.com/brm/news/biz/Biz_ops/20000831.asp)