FBE Business Plan

Executive Summary

This will be written tomorrow either in the morning or during class b/c the assignment isn't due till 2 and someone else should read it.

Market

Hobby-hackers

There is a large online community of people that do not possess the technical knowledge to build their own gadgets, but who wish to appear technically sophisticated. Hackers are people that enjoy modifying existing products or creating new devices to meet their own technological needs. They are seen as an elite group of people with skills that are developed as a result of a great deal of time and effort. Hobby-hackers are people who wish to control technology in a similar manner but lack either the time or the inclination to learn how to be a hacker themselves. This makes them the target market for technological after-market products. Hobby-hackers can be readily found on online forums; they are a part of an online sub-culture based around a limited number of full-fledged hackers and a much greater number of hobby-hackers. In order to capitalize on this sector, our product must be visible to these online communities and appear attractive enough to appeal to hobby-hackers.

Lecturers (users of presentation software)

Many people in businesspeople and academics could use a solution for controlling a presentation remotely. A professional presentation remote costs about fifty dollars and does not have all of the capabilities that a wiimote using our product would have. The biggest advantage of a wiimote over a presentation remote is that pointing and moving the mouse are done simultaneously and intuitively; using a presentation remote requires controlling the mouse with a joystick and using the remote as a pointer with its laser. While reaching this market might be difficult, it has the potential to yield a large number of sales if our team can provide an elegant and complete solution.

Wii Owners

People who already own a wii face a much lesser cost than others because they already own a wiimote. Paying a small price in order to gain the added functionality of using the wiimote with their computers is much less imposing than needing to buy a wiimote and our product to achieve the same end (especially since the wiimote is about three times as expensive as our product). This group has a significant overlap with the hobby-hacker group; many wii-owners lack the technological know-how to make their own infrared light source, but they might well be interested in purchasing a ready-made solution that would allow them to use all of their wiimote's capabilities to interact with their computers.

Market Size

We determined the size of our market by looking at the size of forums on the internet about the wii sensor bar and its modification. We looked at the number of people who posted on these forums and at the number of people who suggested potential variations of the wii sensor bar which performed similar functions to what our product would do.

We looked at forums from the following sites:

digg.com, engadget.com, ign.com, joystiq.com and others...

From these sites, we found that any topic pertaining to the wiimote sensor bar usually had approximately 20-40 active participants who posted a response.

Thus we can expect to see a market reachable through these forums of approximately 20-40 people per site that we advertise to (see marketing section).
Not all of these people would buy our product, but they are likely to take an active interest and actually visit our web page, or make some inquiry into what we are selling.

Looking at these sites, we also determined (via the content of the forums) the following product factors that would increase or decrease our market size:

- A wiimote sensor bar that ONLY works with your computer has a minimal market. A wiimote sensor bar that would work with your television (via attatchments) AND your computer, would have a much larger market share.

- There is market demand for both externally powered (ie wall socket or USB port) and self-powered (ie battery-powered) devices.

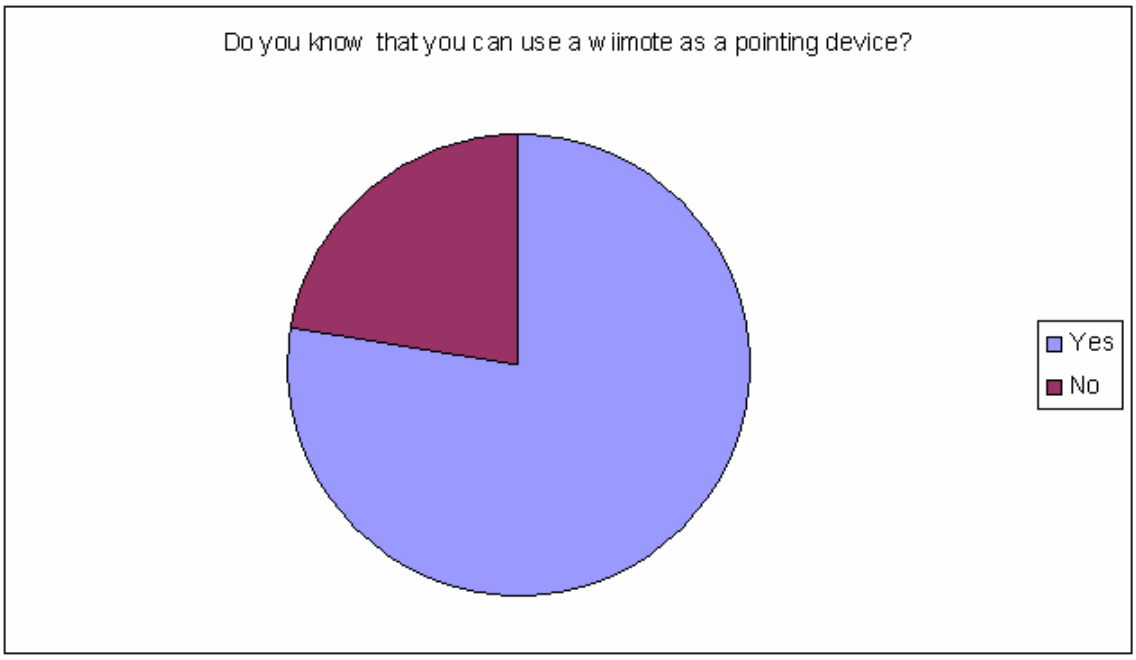
Survey Stats and results

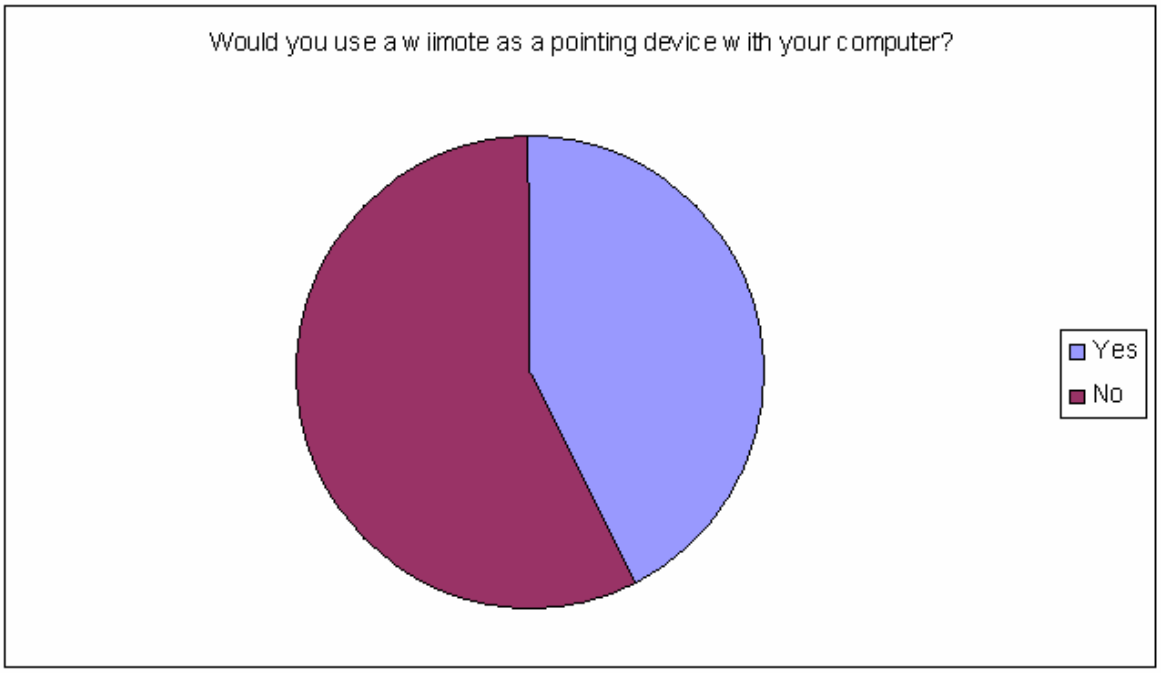
A survey with the following questions was conducted here at Olin:

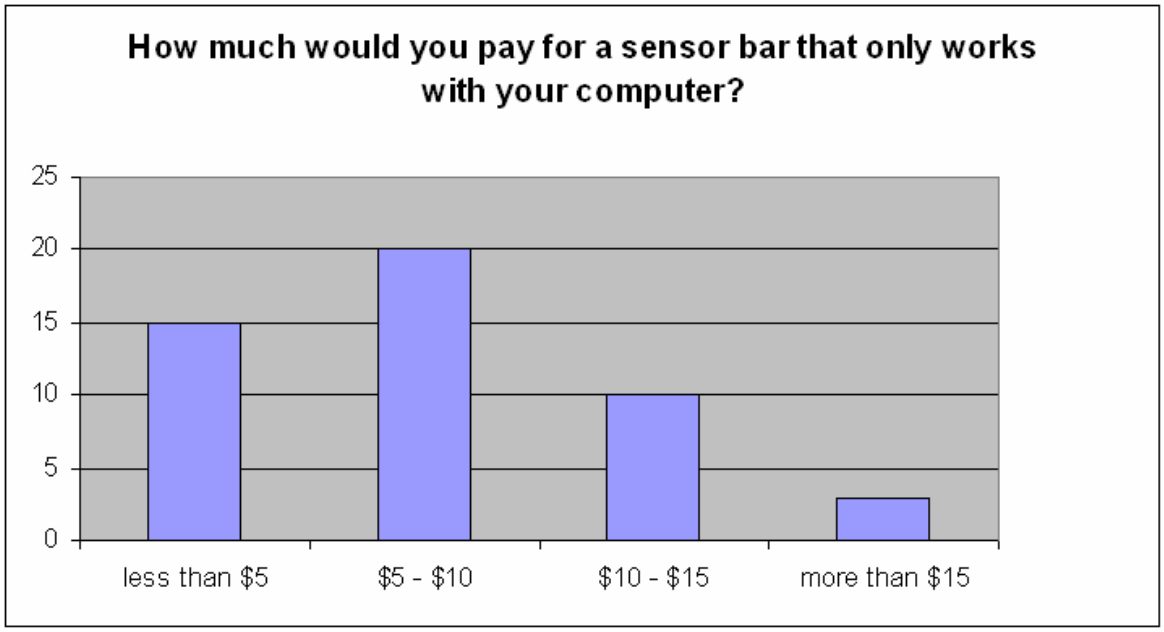
1. *Do you know that you can use a wiimote as a pointing device for a computer?*
2. *Would you use a wiimote as a mouse or pointing device of your computer?*
3. *How much would you pay for a wiimote sensor bar which ONLY works with your computer (5 V USB powered)?*
4. *Could you see yourself buying such a device*
5. *How much would you pay for a wiimote sensor bar which would work with your television as well?*
6. *Do you want the sensor bar to be (check one):*
    1. *AC powered / USB Powered*
    2. *Battery Powered (and thus 'wireless')*
7. *To what degree does the degree to which the sensor bar fits onto your display device matter to you?*

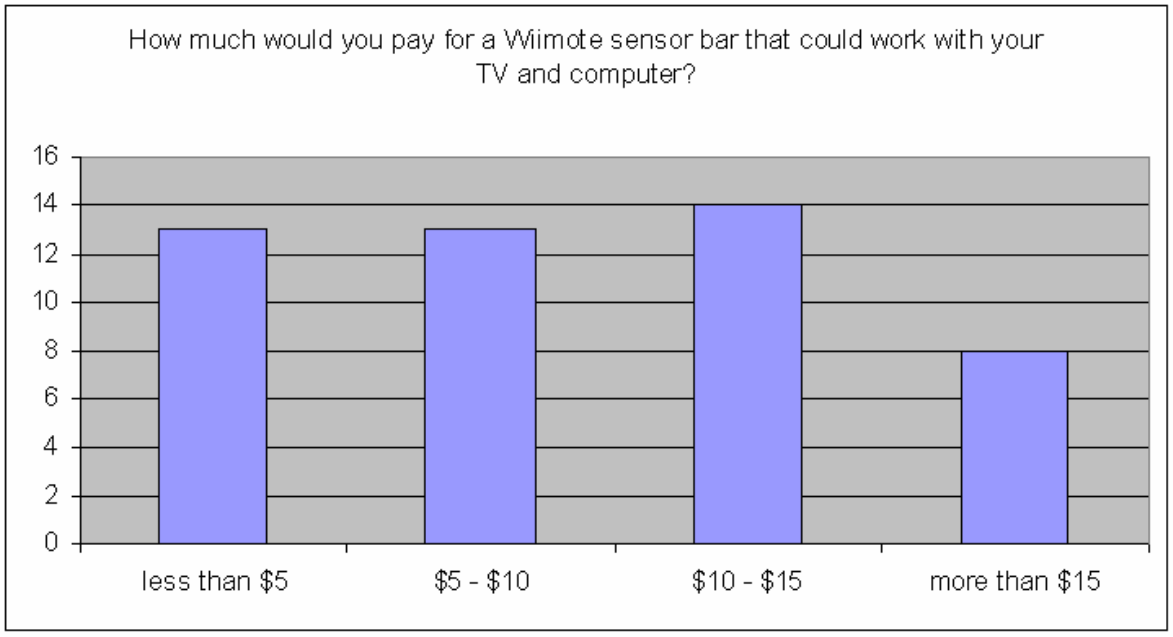
Survey Analysis

The survey shown above was administered to the Olin student population, and 49 students responded. The results of the survey are documented below.









Using a statistical analysis (z-test), I found with 95% confidence that 40.8 % of Olin's population would be interested in using a wiimote as a pointer for their computer, and 34.9% would actually like to buy one.

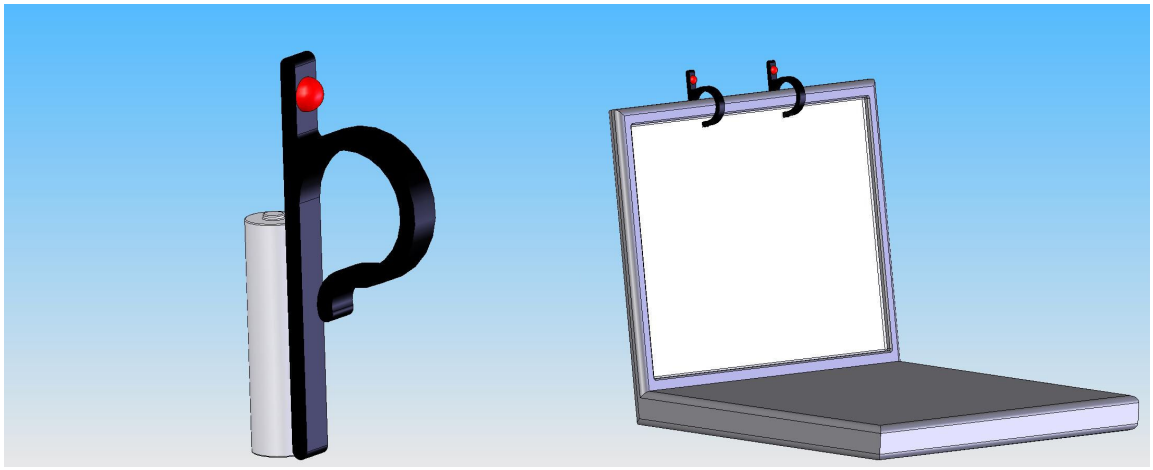
Product

Our product is a set of self-contained infrared light emitters that can be mounted onto a laptop for use with Nintendo's Wii Remote (wiimote). The Nintendo wiimote is a human interface device (HID) that uses bluetooth technology to transfer information about its angle in three axes, button presses and the direction that the wiimote is facing. It does this by combining information from three tilt sensors, a number of buttons and an infrared camera. A substantial amount of open-source or otherwise free software has been developed that allows the wiimote to be used as an HID peripheral for bluetooth-equipped computers. This software can accept all the information sent from the wiimote and interpret it for different uses (eg remote mouse control). One shortcoming that is often found is that the infrared sensing portion of the wiimote requires a source of infrared light in order to use the much-touted pointing function of the wiimote. For most users, the only readily-available source of infrared light is their Wii Sensor Bar. This is a bar that is meant to rest on top of the user's television. It is unfortunately limited by the fact that it needs a substantial surface to rest upon (ie not the lid of a laptop) and that it needs to be connected to the game console itself for power.

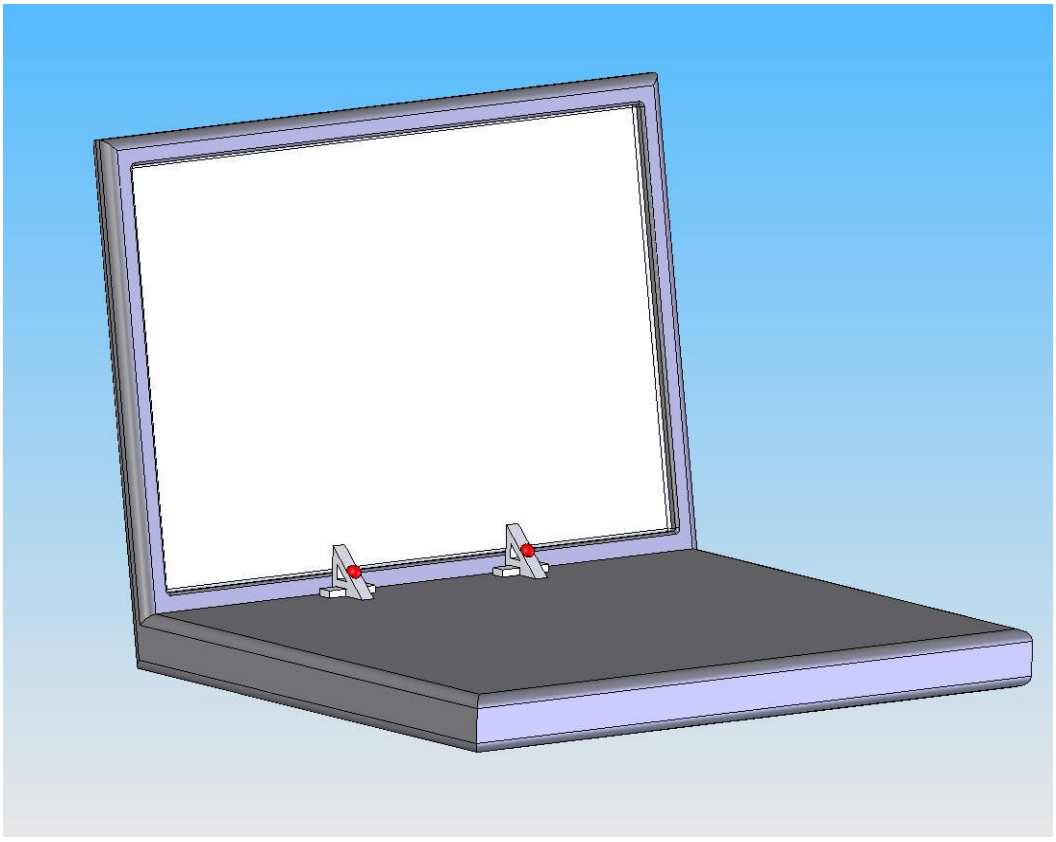
Innovative users have created solutions ranging from using candles to using a remote with a button held down to provide a source of infrared light output that can be seen and interpreted by the wiimote. Our business proposes to provide a better, more professional and less annoying solution that can conveniently provide infrared light to be used with existing software.

Our product will be made combining the design and engineering skills of our team with the machining tools available at Olin. Depending on the method of production we pursue, these tools will vary. The two primary methods of machining we are currently looking at are laser cutting or thermoforming. We will either be using the machine shop laser cutter to cut the pieces out of plastic, or using the machine shop vacuum thermoforming machine to mold the pieces. If we pursue the laser cutting option we will use ABS plastic because of cost and durability. Many members of our team are also very familiar with how ABS plastic acts with the laser cutter, drill press, and bandsaw. If we choose the thermoforming option, we will use Kydex T plastic because it produces the cleanest edges and finest thermoform molds. Both of these methods require post-machining (drilling holes) in order to attach the infrared LEDs, a resistor and the necessary wiring to power the infrared LEDs. Regardless of the method of primary machining we choose, we will need to use the drill press and belt sander in post-machining processes. The circuitry is minimal; it requires an appropriate resistor to limit the current flow to the diode. This would allow us to have a bright diode that uses little enough power to last for approximately 10 hours on a single AAA battery.

We are currently seriously considering two designs. One of them is a clip design that would allow the users to put the LEDs on top of their laptop screen. The other design is a stand for the LED that would rest on top of the laptop. In either case, the software parameters can be adjusted such that the virtual screen that the pointing function uses matches the actual laptop screen.



The proposed clip design shown as a unit and mounted on a laptop



The proposed triangle-stand design as seen on a laptop

Marketing

We plan to market our product on the internet and handle the sales through an online marketplace. To this end, we intend to deploy a website over the next week which will contain information on our product and links to our sales website. As previously mentioned, we also plan to advertise our product on the forums which we used earlier to establish our market size.

Tentative Sales Forecast:

Week	Sales at Olin	Sales Outside Olin	Total Sales
1	4	2	6
2	5	3	8
3	4	4	8
4	3	5	8
5	3	8	12
6	3	10	13
7	2	11	13
8	2	13	15
9	1	13	14

Thus, the total # of sales throughout the nine weeks is projected to be 97 devices in total, with 27 devices being sold at Olin and the remainder being sold online.

These numbers are based on the size of our 'interested' market, and the percentage of our market willing to buy our device (39%). We have adjusted the percentage for Olin, to account for inaccuracy in the survey. This correction which takes into account the fact that those interested in the wiimote device would have been more likely to take the survey than those not interested. For the external sales, we estimated that each

individual market consisted of ~20 percent of the 30 sites visited, and that we would hit additional sites weekly.

Strategies to Increase Number of Orders

We are considering giving Olin students a small discount off of our sales price to increase sales in what could be our largest market. We are also considering offering free attachments (which will result in a greater cost per unit), such as a USB battery holder which converts the product into an essentially wireless (self-powered) device.

Team

Matt Aasted

Position: CEO.
Responsibilities: Coordinates the management team and maintains team focus. Delegates to Mr. Dieseldorff, Mr. Switzer, Mr. Kratzer and Mr. Erzinger. Responsible for deadlines, meetings, and overall structure of the team and product.
Experience: Prototyping experience with laser cutter and thermo former. One and a half years of embedded systems design experience, three years of circuit design experience.

Kelly Butcher

Position: Electrical Manufacturing and Marketing
Responsibilities: Web site and market research under Mr. Switzer; electrical manufacturing under Mr. Dieseldorff.
Experience: Worked as electrical engineer on a project to modify a Nintendo HID.

Boris Dieseldorff

Position: Head of Electrical and Computer Engineering Manufacturing
Responsibilities: Responsible for the electrical design and circuit manufacturing. Ensures that an adequate number of components are available and that each product functions electrically. Delegates to Mr. Powers, Mr. Nissman, Ms. Butcher and Mr. Uttamchandani.
Experience: Harbors an extreme liking of circuitry and coolness. Has over a year of circuit design experience and has worked for the ECE stockroom since September 2006. Worked as an electrical engineer on a project to modify a Nintendo HID (ie N64 controller).

Eric Erzinger

Position: Head of Mechanical Engineering Manufacturing
Responsibilities: Responsible for the mechanical design and manufacturing. Ensures that sufficient quantities of plastic are available and that each product functions mechanically. Delegates to Mr. Raphael and Mr. Powers.
Experience: Very experienced in ABS prototyping and design. Currently enrolled in Fundamentals of Machine Shop Operation.

Zach Kratzer

Position: CFO

Responsibilities: Responsible for the financial planning and accounting of the company.
Experience: Financial and accounting knowledge. Several years of circuitry experience.

Chris Nissman

Position: Electrical and Computer Engineering Manufacturer
Responsibilities: Electrical Engineering under Mr. Dieseldorff
Experience: Experienced in thermoformer prototyping and soldering work. Worked as a mechanical/electrical engineer on a project to modify a Nintendo HID (ie N64 controller).

Brad Powers

Position: Electrical and Mechanical Manufacturing
Responsibilities:
Experience:

Jonathan Raphael

Position: Mechanical Engineering and Manufacturing
Responsibilities:
Experience:

Jim Switzer

Position: Head of Marketing and Sales
Responsibilities: Responsible for the marketing and selling of the product. Ensures that possible consumers are aware of and able to order the product. Responsible for web site and market research. Delegates to Mr. Uttamchandani and Ms. Butcher.
Experience: Programming, member of the general online community. Experience with plastic manufacturing and circuit design.

Avinash Uttamchandani

Position: Marketing and Sales Representative
Responsibilities: Finding out what the market needs are and advertising the product effectively and appropriately to our target market.
Experience: Experience with the design and manufacturing of plastic parts, especially with regards to modifying prototypes into a workable condition. Also, minor experience in the design of software and circuits.

Financials

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10
Starting Cash	**0.00**	**(249.00)**	**(137.00)**	**(25.00)**	**87.00**	**102.00**	**284.00**	**466.00**	**676.00**	**872.00**
Income										
Units sold of Product 1 (USB)	3	4	4	4	6	7	6	7	7	0
Price per unit of Product 1	$14.00	$14.00	$14.00	$14.00	$14.00	$14.00	$14.00	$14.00	$14.00	$14.00
Units sold of Product 2 (Battery)	3	4	4	4	6	6	7	8	7	0
Price per unit of Product 2	$14.00	$14.00	$14.00	$14.00	$14.00	$14.00	$14.00	$14.00	$14.00	$14.00
Revenue	84.00	112.00	112.00	112.00	168.00	182.00	182.00	210.00	196.00	0.00
Investment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Income	**84.00**	**112.00**	**112.00**	**112.00**	**168.00**	**182.00**	**182.00**	**210.00**	**196.00**	**0.00**
Expenses										
Manufacturing										
ABS Plastic	150.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LEDs	56.00	0.00	0.00	0.00	56.00	0.00	0.00	0.00	0.00	0.00
Resistors	2.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00
Battery Cases	45.00	0.00	0.00	0.00	45.00	0.00	0.00	0.00	0.00	0.00
Heatshrink	5.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00
USB Jacks and Cables	45.00	0.00	0.00	0.00	45.00	0.00	0.00	0.00	0.00	0.00
Equipment rental	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other										
Miscellaneous Costs	30.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Expenses	**333.00**	**0.00**	**0.00**	**0.00**	**153.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Ending Cash	**(249.00)**	**(137.00)**	**(25.00)**	**87.00**	**102.00**	**284.00**	**466.00**	**676.00**	**872.00**	**872.00**

ABS is $1.22 + shipping
LEDs are $1.12
Resistors are $0.04
Battery case is $1.80 + shipping
Heatshrink is $0.10 + shipping
USB Jack is $1.00 + shipping
USB Cable is $0.80 + shipping

Our predicted cash flow can be seen in the table above. It has a cumulative income of $1358 and cumulative expenses of $486, which yields a net profit of $872.

All of our costs were obtained using the prices per set in the table to the left. Shipping costs were estimated.

Break-even analysis

Our fixed costs are $150 for plastic upfront and $30 in miscellaneous costs for a total of $180.
Our variable costs are $3.06 per unit sold while we will take in $14 in revenue per unit.
As a result, we will break-even at 17 units sold.

Shouldn't all of our costs be up-front (fixed) we *are* buying LEDs and stuff up front not as we go right?