Redesigning the Kodak Power Flash Disposable Camera

EDSGN 100
Section 002
Team 4
Alex Arazawa
Chad Ebersole
Nick Long

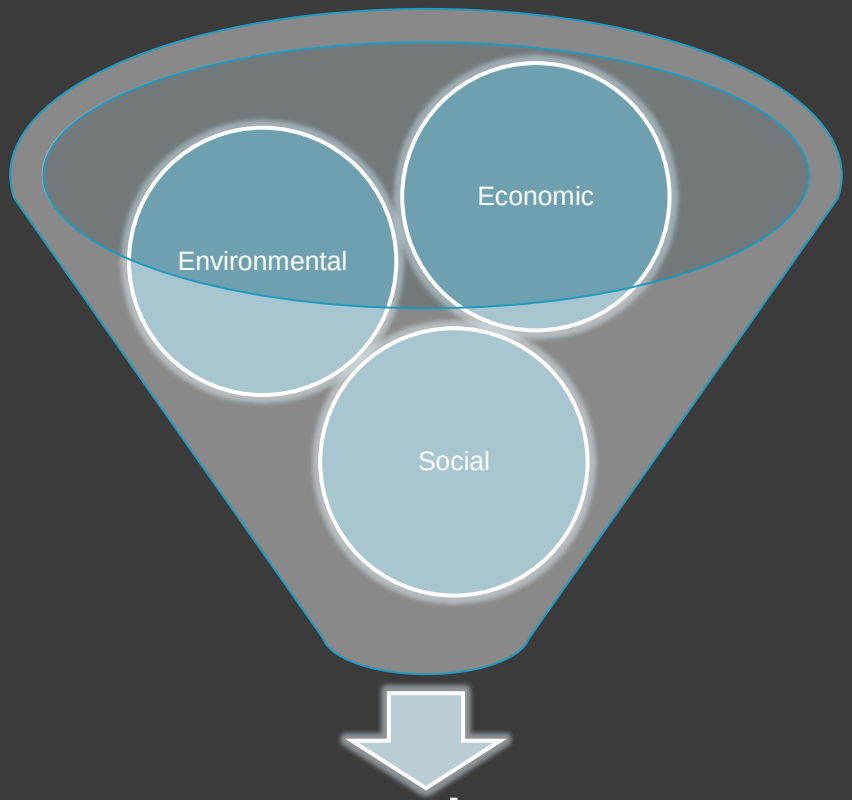
Table of Contents

1. Description of the Task
2. Sustainability
3. Market Survey
4. Concept Generation
5. Design Selection
6. Engineering Analysis
7. Final Design
8. Summary and Conclusion
9. Prototype
10. References

Description of the Task

- The current design of the Kodak Power Flash is losing market share and potential profits
- We recognize the need to redesign the Kodak Power Flash to increase its profitability and sustainability

Sustainability



Product Sustainability

Sustainability

- Increase Sales
- Decrease Manufacturing Costs

- Decrease Electronic Waste

- Add Themed Exteriors

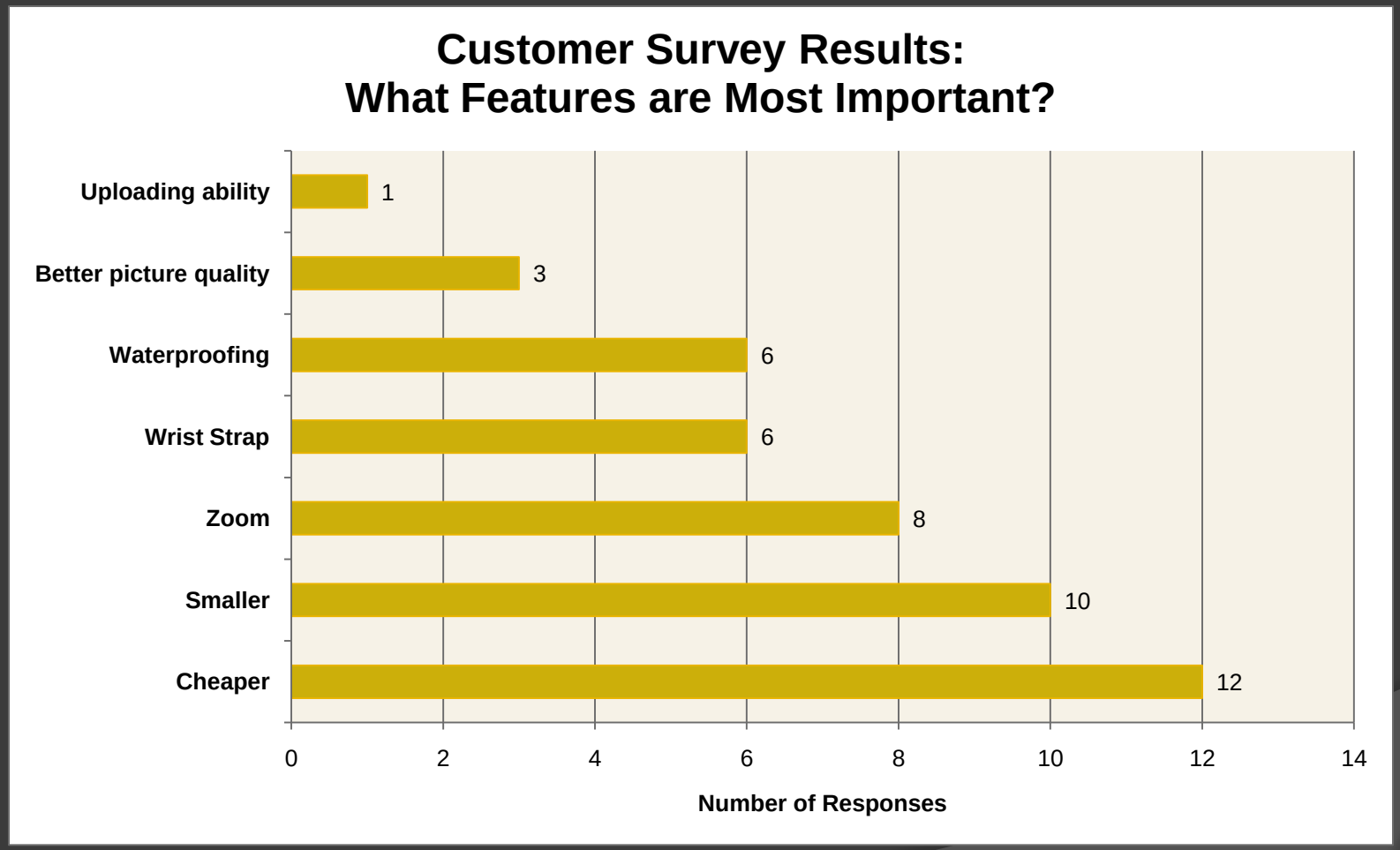
Sustainability

1. Increase Sales
   - Conduct a market survey and identify customer needs
2. Decrease Manufacturing Costs
   - Explore alternative materials
3. Decrease Electronic Waste
   - Analyze the circuit board and battery
4. Create Different Themed Exteriors
   - Look into possible designs

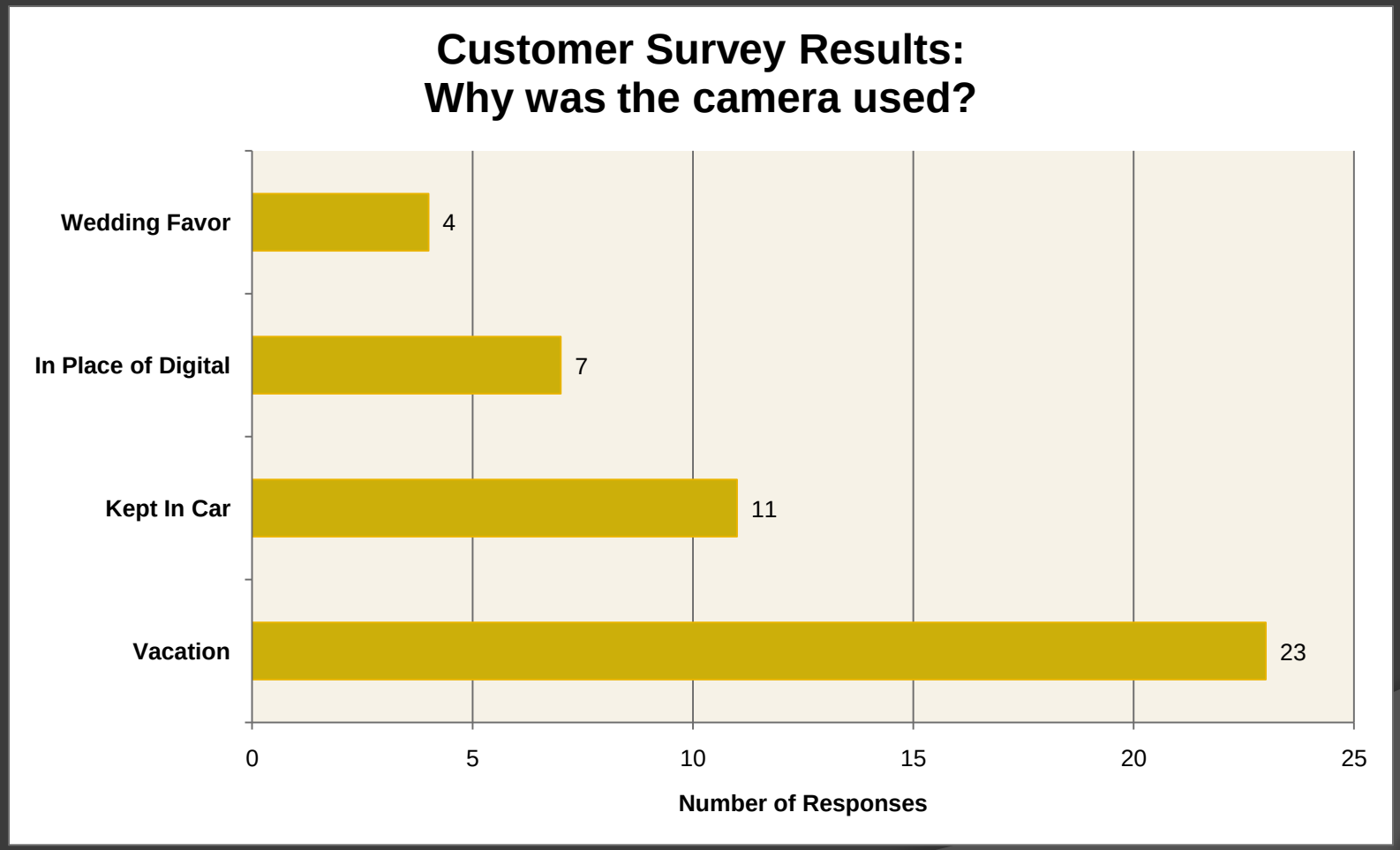
Market Survey

- Created an online survey
  - What features were most important?
  - Why the disposable camera was used?
- Sent to as many different demographics as possible
- Approximately 45 responses to the survey
- Analyzed the responses for desirable features

Market Survey



Market Survey



Concept Generation

- More Durable
- Waterproof
- Wrist Strap
- Zoom Feature
- Cheaper Plastic
- Smaller Size

Design Selection

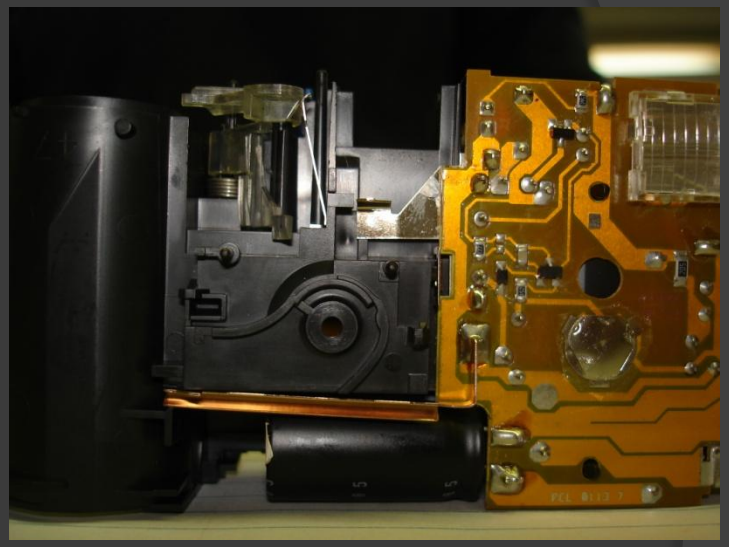
Criteria	Cheaper plastic	Smaller size	Add Wrist Strap	Zoom feature	Waterproofing
Cost	+	+	0	-	-
Size	0	+	0	0	-
Durability	-	0	0	0	+
Marketability	0	+	+	+	+
Sustainability	+	+	0	0	-
E-waste reduction	0	+	0	0	0
Total	+1	+5	+1	0	-1
Ranking	Tie 2	1	Tie 2	3	4
Decision	Combine	Move forward	Combine	Combine	Disregard

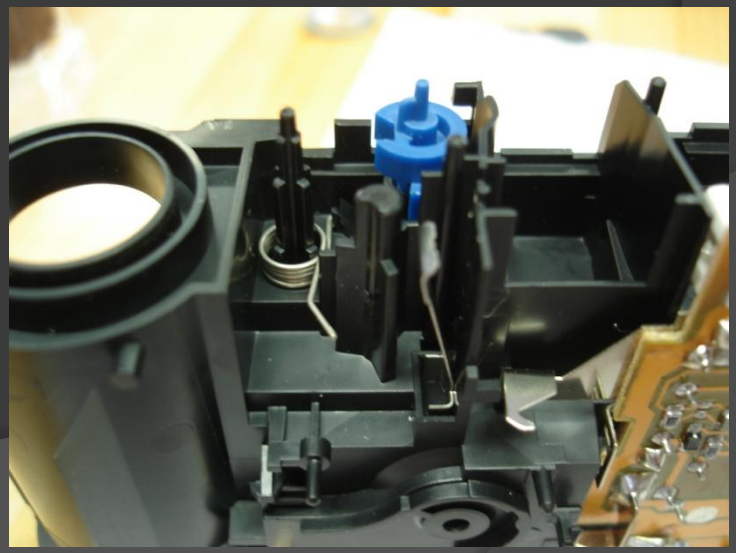
Design Selection

		Cheaper Plastic		Smaller Size		Add Wrist Strap		Zoom Feature	
Criteria	Weight	Rating	Weighted Score	Rating	Weighted Score	Rating	Weighted Score	Rating	Weighted Score
Cost	20%	5	1.00	4	0.80	2	0.40	1	0.20
Size	25%	2	0.50	5	1.25	1	0.25	1	0.25
Durability	10%	1	0.10	1	0.10	1	0.10	1	0.10
Marketability	20%	1	0.20	3	0.60	5	1.00	5	1.00
Sustainability	15%	3	0.45	3	0.45	2	0.30	2	0.30
E-waste reduction	10%	2	0.20	4	0.40	1	0.10	1	0.10
Total		2.45		3.60		2.15		1.95	
Ranking		2		1		Tie 3		Tie 3	
Decision		Develop		Develop		Maybe		No	

Engineering Analysis: Mechanisms

- The flash mechanism used a circuit board and AA battery
- Turning the wheel rolled the film and prepared the camera to take a picture
- Pressing the button engaged the shutter mechanism and discharged the flash capacitor





Engineering Analysis: Battery

AA Avg. AmpHour = .322

AmpHour for 1 flash = .0018

178 flashes = 6.5 cameras

AAA Avg. AmpHour = .180

AmpHour for 1 flash = .0018

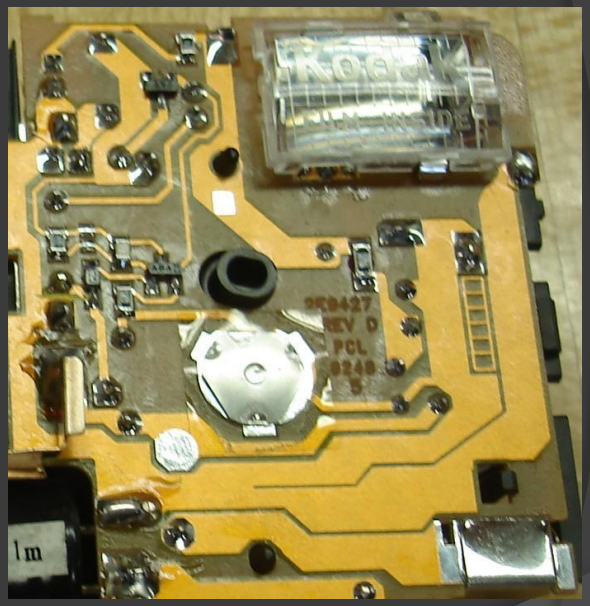
100 flashes = 3.7 cameras

Smaller battery,
Smaller case,
Less e-waste!

http://hobbiesrus.com.au/images/duracellAA.jpg
http://www.viking-direct.co.uk/pictures/gb/vkg/sk/lg/7028991_sk_lg.jpg

Engineering Analysis: Circuit Board

- Circuit board contains lead solder
- Lead's primary target is the central nervous system
- Lead can cause permanent damage to the brain and nervous system.
- Alternatives include tin and copper



Engineering Analysis: Cheaper Plastic

- The camera is largely made of polystyrene plastic
- Other plastics were explored, but polystyrene turned out to be the least expensive

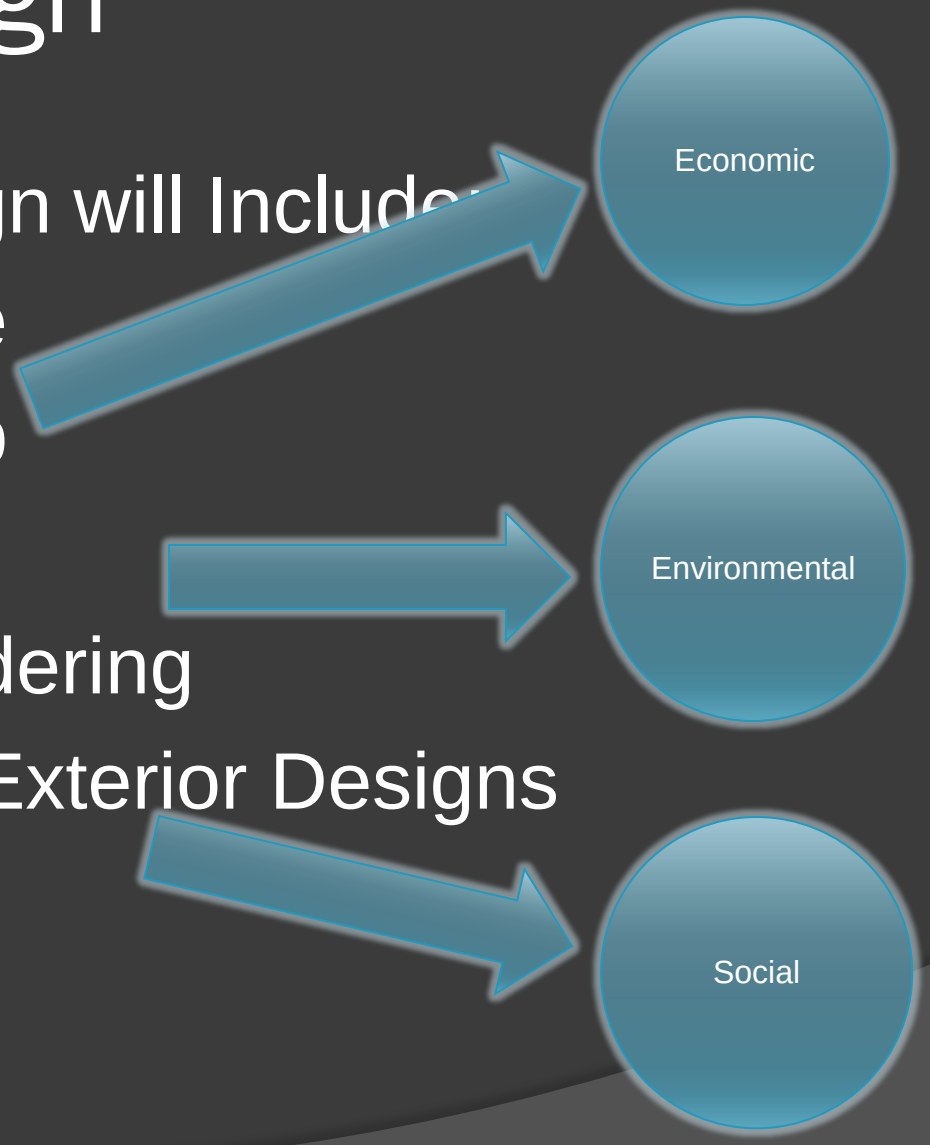
Engineering Analysis: Alternative Exteriors

http://drh1.img.digitalriver.com/DRHM/Storefront/Company/ekconsus/images//products/EKN014696/0900688a80bae587/0900688a80bae587_EKN014696_front_645x370.jpg
http://www.istockphoto.com/file_thumbview_approve/8326876/2/istockphoto_8326876-flower-design-pattern-or-background-blue-purple-pastels.jpg
http://www.psucentralmd.org/pages/events/lion.gif

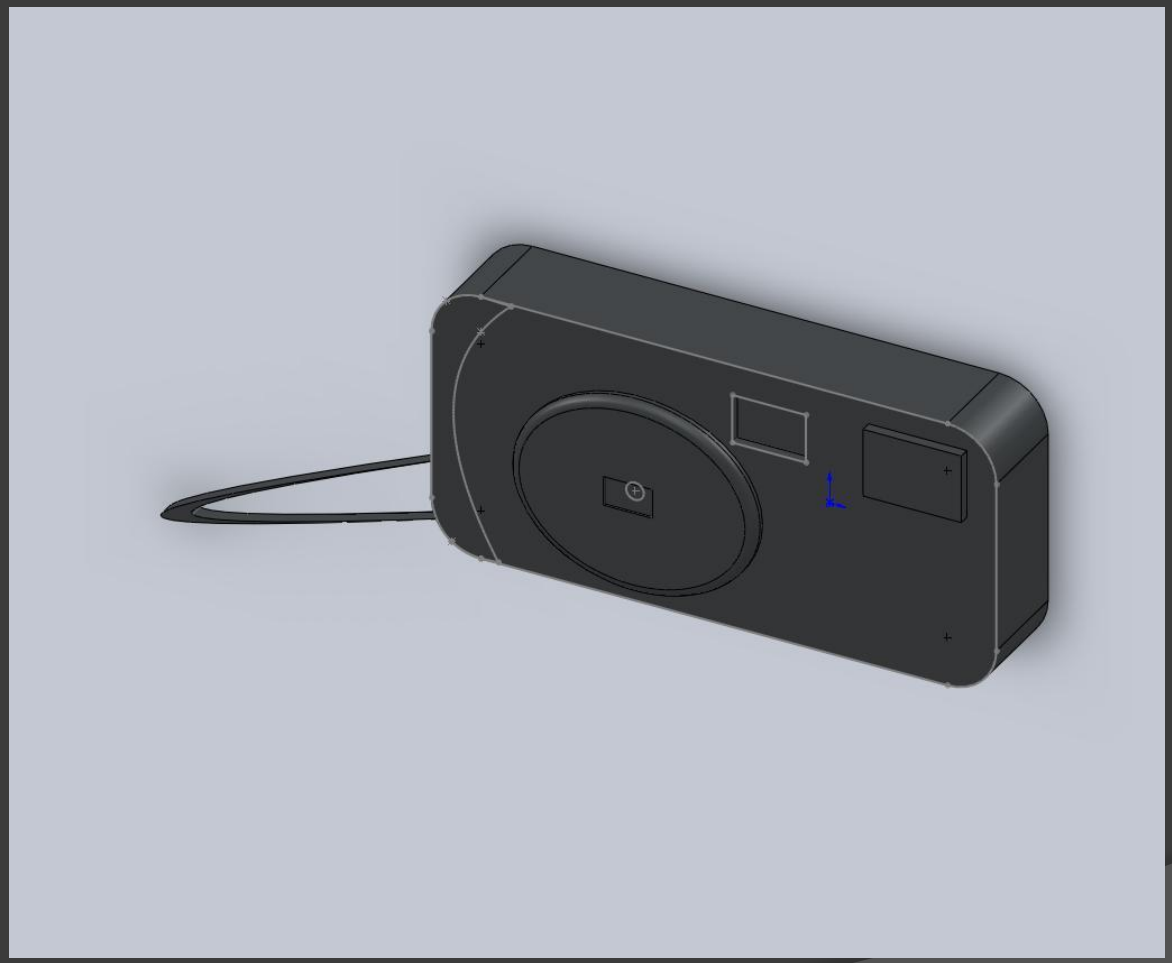
Final Design

Our new design will Include:

- Smaller size
- A wrist strap
- AAA battery
- No lead soldering
- Alternative Exterior Designs



Prototype



Summary and Conclusion

- We realized that price was the biggest issue associated with disposable cameras
- We kept the price about the same
- The wrist strap, smaller size, and stickers make the product more marketable
- Smaller battery decreases e-waste

References

- www.mcmaster.com
- http://www.greenbatteries.com/bachfa.html
- http://earthtrends.wri.org/features/view_feature.php?theme=3&fid=66

Any Questions?