SwiftSecure

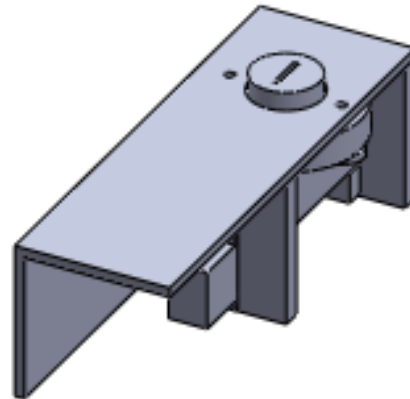## Mockup Review
10/20/11

2.009 BLUE A

Product Vision

- Electronic bike lock

- Self-locking

- Proximity sensing

- Efficient

Product Contract

- Product Description: Self-locking electronic bike lock
- Intended Customers: Urban cyclists, students
- Market: Bicycle accessories

Customer Needs	Product Attributes	Engineering Specifications
Portability	• Weight • Dimension	• Less than 5 lbs • Between 1' – 1.5' in length
Theft prevention	• Security • Robustness	• Resist all human attempts • At least two minutes in time to failure for power tools • Resist all conventional methods of electronic hacking
Standardized lock/ unlock mechanism	• Effective range • Time	• 10' max radius for unlocked bike range • Mechanism locks/unlocks within two seconds
Feedback status	• Audio alert • Visual interface	• Beeps twice when locked or unlocked • Continuous beeping if jammed • Flashing light for low battery
Long battery life	• Power consumption	• 150 lock/unlock life cycles
Mechanical override	• Multiple entry	• Similar to normal bike lock (key entry)

Risk Analysis

Risk	Key Findings
Portability	• Size can be reduced to that of a normal U-lock
Theft prevention	• Possible to create 2^{40} unique lock IDs • Physical strength matches competing products using similar materials
Standardized lock/unlock mechanism	• Possible to send signals between sensor and lock reliably • Need more powerful receivers and transmitters to improve security
Mechanical override	• Manual key lock can be incorporated in electronic mechanism

Future Challenges

Category	Goals
Portability	• Ensuring total weight of hardware and electronics is within range of competing products
Standardized lock/ unlock mechanism	• Protecting electronics and locking/unlocking mechanism from extreme weather conditions
Feedback status	• Integrating audio feedback for notifications and errors • Visual feedback for low battery life • Ensuring that product is intuitive to use
Long battery life	• Increasing the number of lock/unlock cycles per battery charge • Decreasing amount of time electronics remain on
Mechanical override	• Electronic override in case sensor is lost or misplaced

Future Steps

Key tasks from mockup to assembly milestone

	Week 1 10/16	Week 2 10/23	Week 3 10/30
Mockup Review	10/20		
Final Product Selection	10/21		
Product Contract			
Preliminary Design			
Customer Surveys			
Assembly Review			11/1