

Bike Light – Power Supply

TriEmbed Presentation 5/9/2016

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Suggested Topics for Discussion

- Product / project overview
- Three tiers to *minimum* viable product
 - Electronics
 - Housing
 - Marketing
- Evolution of idea to prototype to first production run
 - Include top challenges in each area
- Deep dive based on interest in room

Product Overview

- Light for Mountain Bikers that ride at night
- Light System attributes
 - 12V power supply allows use of off-the-shelf automotive light bars
 - Long lasting (~3 hours at full power, much longer if dimmed)
 - Fully dimmable (0-100%)
 - Rugged and weather resistant
 - Easy to use with gloved hand
- Other possible markets / applications
 - Boat lights
 - Small motors
 - Any 12V automotive accessory



Concept to Prototype - Electronics

- Electronics functions
 - Turn on-off light
 - Dim light
 - Measure and display battery state
- Arduino Nano mounted on breadboard
 - Arduino IDE - had to “relearn” coding
 - Radio Shack & AutoZone parts
- Moved Arduino Nano to protoboard
 - Learned to solder
 - **Got working model that I was able to ride with**
- Found help to adjust design, layout PCB, create BOM
 - Went from huge high-amp switch to sleep mode on board
 - Traded potentiometer with dim-up and dim-down switches
 - Learned to solder small stuff to populate boards
 - Learn Atmel Studio IDE to help with debugging (still use Arduino libraries, though)
- Spec'ing battery packs
- Biggest technical challenge - measuring State of Charge

Concept to Prototype – Housing

- Started with water bottled cut in half and single switch (no electronics)
- Found 3D printing capability through 3D Hubs
 - Needed help modeling in CAD
 - Finally bought CAD software (GeomagicDesign)
- Had final design reviewed
 - Design for Manufacturing (DFM)
 - Design for Assemble (DFA)
- Biggest mechanical challenge – brackets to mount light on bike

Concept to Prototype – Marketing

- LightUpTheMountain.com/trail-light-bar
- Facebook ads / social media
 - To help choose names, logos, and best light bars
 - [Facebook.com/lightupthemountain](https://www.facebook.com/lightupthemountain)
 - Twitter - @lightupthemount
- Google AdWords
 - To determine initial market viability
 - A/B testing landing pages
- Riding the trails with friends
 - To get hands on feedback from riders



A dark, nighttime scene of a person on a bicycle. A large, bright, circular beam of light illuminates the path ahead of the cyclist, who is positioned on the right side of the frame. The background is mostly black, with some faint outlines of trees or structures in the distance.

Questions?

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