Helmet 911

Orange B Sketch Model Review
Introduction

• Problem
  – 580,000 emergency room visits in US each year from crashes involving cyclists
  – Cyclists can have an accident and may not be able to call 911

• Most Likely to Affect
  – Long distance cyclers riding alone
  – Adventure Cyclists or Bike Tours
Solution

• Helmet that
  – Senses Impact
  – Calls 911
  – Reports Location
Technical Challenges

• Impact sensor: Differentiate between crash impact and normal activities
• Location of sensors
• Size and weight of components
• 911 transmission
Helmet Testing

- Dropped helmet from various heights, measured G-Forces
- Normal Cycling Trial
Results

- Shaking Head, Cycling, Impact (6”, 4mph)
Sensor Placement Findings

- **Back:**
  - **Call cancel button**
  - **On button**

- **Head:**
  - **Least frequently impacted region**
  - **Accelerometer**

- **Front:**
Component Size, Weight

Ultralife 9 Volt Lithium Battery

- Weight: 0.1 lbs
- Dimensions: 1.9" x 1.04"

70G Accelerometer

- Weight: 0.2 lbs
- Dimensions: 0.2" x 0.2"

Microprocessor
Transmitting Call and Location

- E911 Capable Wireless (location info)
- Available in 96% of US locations
- Public Safety Awareness Point (PSAP)
- Cell tower triangulation or GPS
Attitude Survey

- 75 people from MIT Cycling Club responded
- 40% in last 5 years have been in one or more accidents requiring medical attention
- Most would pay $50-100 for this feature
- Concerns: weight, aerodynamics, subtlety, false positives, weather proof
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