Bloodmobile

2.009 Yellow A
Sketch Model Review
Why Blood?

“Appropriate transportation ... for blood units remains a major challenge to many countries.”

- WHO Africa
Background

- > 50% countries lack temperature monitored facilities
- public transportation
- 2 million units/year (need 7 million)
- need cold-chain
Partners

- Dr. Amit Srivastava
  - Harvard Medical School
  - Boston Children’s Hospital

- Jose Gomez-Marquez
  - Innovations in International Health (MIT)
Two Requirements

Keep it cold

+ 

Keep it moving
How do we keep blood cold?

Peltier effect

“backwards thermocouple”

thermoelectric chip
How cold can we get?

Home-made device reaches 7°C in under 3 minutes with \(~15\) W
Can we cool blood?

- “Princess” can cooler/warmer
- 50 W
- cools 355 ml 10°C in 30 minutes

sufficient to keep blood cold during transport
How do we power it?

bicycle provides at least 100 W
How do we keep the blood moving?

vertical movement + rotation