

**Group 12**

**THE TWO WHEEL  
DEAL**

Greg Eakins  
Eric Geier  
Pete Dudash  
Jeremy Gries

# Environmental Concerns

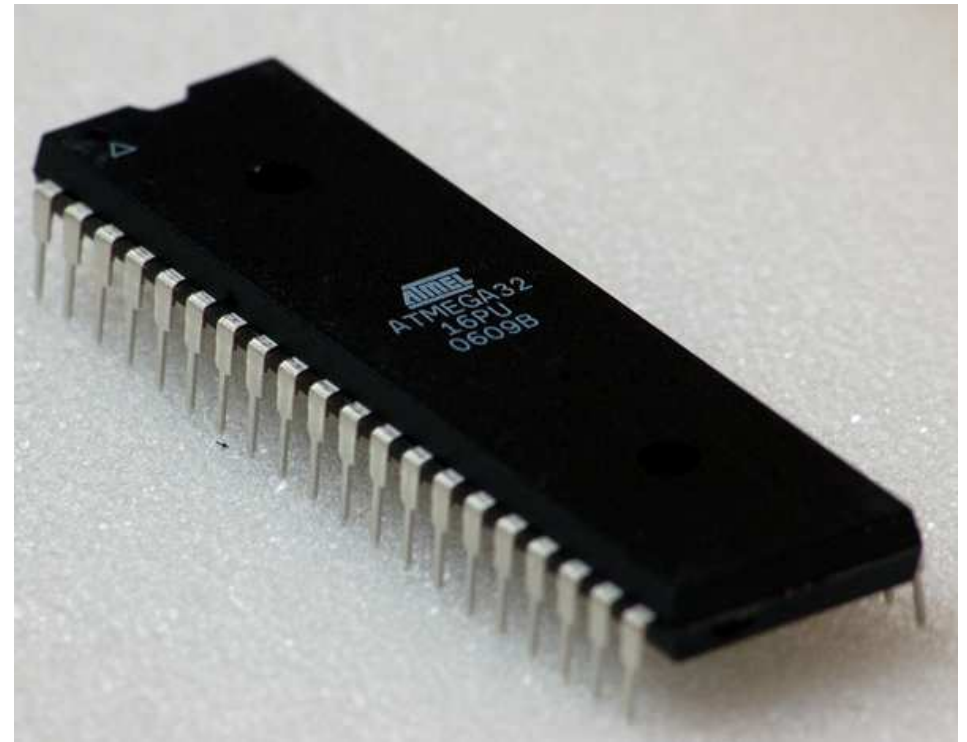
- Product Life Cycle
  - Manufacturing Stage
    - PCBs
    - Hardware Components
  - Normal Use Stage
    - Batteries
  - Disposal/Recycling Stage
    - Motors
    - Batteries
    - Wheels/Tires
    - PCB/Hardware/Rest of Vehicle

# Manufacturing Stage

- PCBs
  - Industrial wastewater from PCB rinsing
  - Acid waste from PCB etching/cleaning
  - Metals such as lead, chromium, palladium
- Problem addressed by:
  - Choosing a manufacturer who is RoHS compliant
  - Promoting recycling/reducing activities such as using multiple tanks in rinsing process, lowering bath concentrations, etc

# Manufacturing Stage

- Hardware Components
  - Traces of metals such as lead, cadmium, chromium
- Problem addressed by:
  - Choosing components that are RoHS compliant



# Normal Use Stage

- Batteries
  - Contain sulfuric acid and heavy metals
  - Can explode or spark if charged incorrectly
- Problem addressed by:
  - Providing handling directions for batteries in the user manual
  - Providing specific charging instructions for the batteries as well as warning signs to look for if the batteries are



# Disposal/Recycling Stage

- Batteries
  - Sulfuric acid/Heavy metals are environmental/health hazard if disposed of incorrectly
- Problem addressed by:
  - Giving customer core charge refund for return of old/bad battery
  - Sending the battery to a recycling center to be used in making new batteries



# Disposal/Recycling Stage

- Motors
  - Contain lots of metal that can be reused
- Problem addressed by:
  - Giving customer core charge refund for returning damaged or old motors
  - Sending the motors in to be refurbished or scrapped out for the metals



# Disposal/Recycling Stage

- Wheels/Tires
  - Contain rubber and plastics which can be recycled
- Problem addressed by:
  - Providing the customer with nearest locations to recycle tires or plastics
  - Providing the customer opportunity to return them to have the wheels/tires recycled





# Disposal/Recycling Stage

- Rest of Vehicle
  - PCB/Hardware contain hazardous metals
  - Metal from frame can be reused
- Problem addressed by:
  - Giving customer core charge refund for returning the rest of vehicle
  - The vehicle would be disassembled and parts that could be reused would be kept and everything else would be recycled

Questions?