Basic Idea

- Encode data as energy and transmit through some sort of medium.
- Decode the energy at the destination back into data.
- Energy can be electrical, light, radio, sound, ...
- Each energy form has different properties and transmission requirements.

Transmission Media

- Transmitted energy is carried through some sort of medium.
- A transmitter encodes data as energy and transmits the energy through the medium.
  - Requires special hardware for encoding the data.
  - Requires a hardware connection to the transmission medium.
- Depending on the energy type, the medium can be copper, glass, air, ...

Copper Wire

- Mature technology.
- Rugged.
- Inexpensive.
- Limited transmission speed.

Glass Fiber

- Higher speed.
- More resistant to electromagnetic interference.
- Spans longer distances.
- Requires only one fiber.
- More expensive.
- Less rugged.

Media at Gettysburg

- Copper wire and glass fiber for long-distance connection to the Internet.
- Copper wire and glass fiber between buildings.
- Copper wire within buildings.