In the Beginning...

- The Telephone Network
  - (Actually has an even more ancient history - more later)
  - User dials a telephone number, network sets up a connection
- Mobile Radios (Walkie-Talkie)
  - User selects a channel
  - Push to talk, one can talk, everyone on the channel listens
  - Manual connection to the telephone network.

Better service

- Use two channel, one to talk, one to listen
- Make the connection to the telephone network automatic (add dial-pad to the walkie-talkie)
- Still
  - Not very many channels available
  - No good way to call the mobile

Today

- Many more channels available
- Channel coverage is small
  - A channel is used in a "small" area
  - Channels are re-used a short distance away
- Cell phones are part of the overall telephone network
  - Can call a cell phone regardless of its location
A tale of two continents

- The US
  - Started with a single universal cell phone standard (AMPS). Any phone would work anywhere, with any carrier.
  - Deregulation and competition have produced
    - Lower prices
    - Many more services
    - Phones that generally are “locked” to a carrier

...The other continent

- Europe
  - Started with a large number of incompatible systems
    - First in Scandinavia
    - Converted to a single, pan-European system (GSM)
    - Phones are not always compatible, but
    - Subscriber information is stored on a smart card
    - On a trip, if your phone won’t work, rent an “empty” phone and insert your smart card

Lets not leave out...

- Asia
  - Started a little later
  - Uses standards adapted from GSM as well as some US standards
  - Much, much further in the adoption of multi-media phones and applications

Topics and Questions

- What is a channel?
  - For that matter, what is “frequency” (or “wavelength”)?
  - What is “spectrum”
    - What is “spectrum coordination”
  - What is the ITU and the FCC, and what do they do?
- What is the nature of information
  - What does the reading mean by “analog” and “digital” systems?
  - We will start here!
More Topics

- How do we transmit information?
- Based on a telephone number, how do we figure out where a call is supposed to go?
  - Sounds simple, but there are complications
    - Mobile phones are, well, mobile.
    - People can move numbers from provider to provider.
- Who keeps track of telephone numbers and who they are assigned to?