Building Your Project

-When to start building:

    -when the design is done....really done!

        -wiring diagram/flow chart/drawings

    -when all details are resolved, or...

    -if you have to test some unknown out first

Building Your Project

-Find the most suitable parts that you can afford

    -these are not necessarily *free parts*

    -free parts often allow you to be a alpha tester... not what you want!

    -buy as much technology as possible (don't reinvent the wheel)

    -justify parts supplied by single, overseas, or small supplier

    -find parts that are **well supported**
        -user groups
        -web sites
        -Google groups
        -documentation available, up to date, not preliminary

Building Your Project

-Carefully choose packaging for parts, especially ICs
    -many parts are almost invisible
    -get SMD adapters for small parts

-Stay away from the "latest thing" in technology
    -highest frequency switching power supplies
    -65nm FPGAs
    -Zigbee, Bluetooth... probably ok

-Watch for hidden complexity
       -USB, Web interface (uP with TCP/IP stack)

-Be wary of code/schematics obtained from the Web
    -you get what you pay for
    -can you debug somebody else's code?
    -if it dosen't work, what will you do?

Building Your Project

-Where to look for parts
   -Digikey, Mouser, Jameco, Newark Electronics, Allied Electronics
   -All Electronics, Electronic Goldmine, DC Electronics, Ocean State Electronics
   -Hosfelt Electronics, Dan's Small Parts

-Google can find anything with the right search keys
   -most popular parts finding tool for engineers – no kidding!

-For mechanical parts
   -Small Parts Inc, McMaster Carr

-For code:
   -stick to vendors example code, trusted sources

Building Your Project

-How to build
  -use an open framework
  -you will be debugging, prepare for it
  -add debugging features up front, lights, serial ports, printf's, etc.
  -don't miniaturize, make it easy to work on
  -modularize as much as practical
  -build bottom up
    -test each part
    -be totally sure and prove it works
    -don't stuff entire PCBs
    -don't code everything at once – use stubs
  -keep detailed notes on what you do or see
    -take measurements and see if they make sense
    -see something strange, measure the amount of strange
    -see something wrong, fix it first, then go on