Student Project: 4 Motes & a PC

Jim Gaskell

WPI – Prof Kinicki
CS577 – Fall 2011
Goals

- Get real knowledge about Motes
- Understand the Operating System
  - TinyOS
- Learn the Programming Language
  - nesC [Network Embedded Sys + "C"]
- Work with Radios
Method Used

- Come up with a fairly simple system
- Get it working in all major respects
The "Simple" System

- A BaseStation Mote connected to a Laptop via USB
- A stand-alone "Aggregator" Mote one-hop from the BS
- Two additional Motes one-hop from the Ag Mote; that's 4 Motes total
How to measure Success

- Can the 4 Motes automatically form a Network that recovers from disruptions?
- Can the Network gather information from the field and deliver it to the Laptop?
Other Details

- Just a barebones wireless protocol
- Motes share their Xmit power and Recv signal strengths to:
  - Allow for optimizing xmit power
  - Be aware that comms is getting iffy
A "Real World" use

I own a multi-unit apartment building in Worc (30 mins from my home).

It has central heating and there are rules I need to meet for tenant comfort.

Temperature sensing motes in each unit both warn me of problems and provides evidence in case of complaints.

A Laptop in the basement wired to the Internet ...
Time for Discussion

Please ask questions
or offer some comments

Jim Gaskell