Everything I know about software radio in 10 minutes or less

Wayne Wolf
Dept. of EE
Princeton University
wolf@princeton.edu

What is software radio?

- Broadly speaking, a radio implemented with software running on a processor.
- Realistically, many people use FPGAs, CPUs, hardwired logic, and analog under the general heading of software radio.

Software and cognitive radio

- Software or configurable radios enable cognitive radio.
  - Bandwidth scavenging by selecting bands with no activity.
  - Secure communications.
  - Cooperative networking.

But does it work?

- Uniprocessors don't have enough horsepower to run realistic radios.
- Heterogeneous multiprocessors can help.
- Configurable analog is important.

Application and design leverage

- Preston Marshall (DARPA) believes that redesigning the stack is most important.
  - Limited leverage on the physical layer.
  - Rethink comm/networking/security for wireless.

- Heterogeneous multiprocessors will be key.
- FPGAs will be critical.