

Simple Scaling for RFID-based Pervasive Computing Systems

David Wetherall and Joshua Smith
University of Washington & Intel Labs



WISP tag

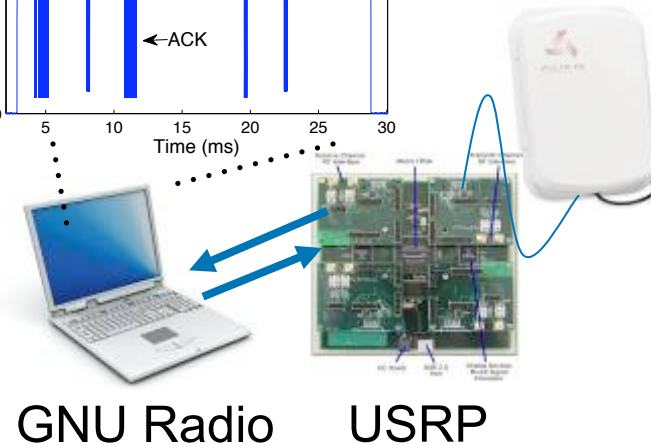
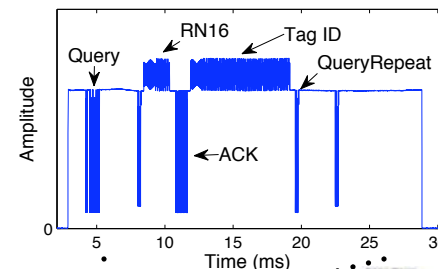
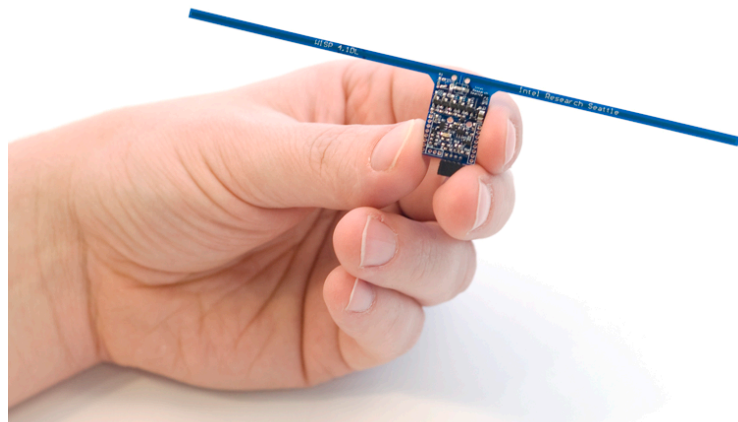
We build RFID-based pervasive systems

WISP tag

- Passive, harvests power
- Programmable (CPU, memory)
- RFID decoding with backscatter
- Sensors: 3D accel, light/temp, ...
- Available to research community
- See <http://wisp.wikispaces.com>

Software-defined Reader

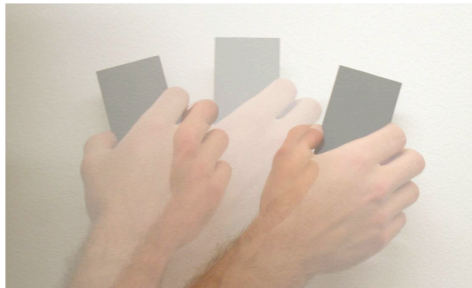
- Laptop, USRP/antenna and software
- Speaks EPC Gen 2 RFID
- Or roll your own protocol ...



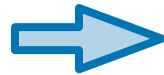
Simple scaling for these systems

Goal: scale up to substantial tag and application deployments

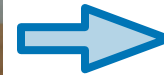
- System scaling from decentralized architecture
- Treat tags as “hosts” running apps that use reader services
- Treat readers as “routers/APs” providing power and network service to connect tags and Internet hosts



Gestural interface



Activity recognition
in mock apartment



RFID Ecosystem

