Wireless LANs & IP Networking

Wireless Local Area Networks (Wi-fi)

Small, short distances (hotspot)  
Autonomous Networks(ad-hoc)

Difficult media  
- variance over space & time = diversity   
RFID – zigby

Mobility  
- variation in link reliability  
- battery usage: requires power management  
- want seamless connections

Security  
- no physical boundaries  
- overlapping LANs (avoiding interference)

Requirements  
- Single MAC to support multiple PHYs  
-- Supports single and multiple channel PHYs  
- Should allow overlap of multiple networks in the same area and channel space  
- Need to be Robust against Interference?  
-- ISM band (Industry, Science & Medicine)  
--- Microwave, other non-802.11 interferers  
--- Co-channel interference.  
- Need mechanisms to deal with Hidden Nodes  
- Need provisions for Time Bounded Services

Architecture Overview  
- One MAC supporting multiple PHYs  
-- Frequency Hoppin Spread Spectrum  
-- Direct Sequence Spread Spectrum  
-- Infrared  
-- Orthogonal Frequency Division Multiplexing  
- Two configurations  
-- Independent (ad hoc) and Infrastructure  
-- Hybrid configuration is being studied  
- CSMA/CA (collision avoidance) with optional Point Coordination Function (PCF)