Multi-Hop Ad-Hoc Networks

- Network without infrastructure
  
  - Use components of participants for networking

- Examples
  
  - Single-hop: All partners max. one hop apart
    
    - Bluetooth piconet, PDAs in a room, gaming devices...

  - Multi-hop: Cover larger distances, circumvent obstacles
    
    - Bluetooth scatternet, TETRA police network, car-to-car networks, mesh networks...

Ad-Hoc Networks: Routing

- Distance Vector
  
  - Periodic exchange of messages with all physical neighbors that contain information about who can be reached at what distance
  
  - Selection of the shortest path if several paths available

- Link State
  
  - Periodic notification of all routers about the current state of all physical links
  
  - Routers get a complete picture of the network

- Problems with these approaches:
  
  - Very slow convergence, large overhead
  
  - Highly dynamic, low bandwidth, low computing power

Example: Dynamic Source Routing

Sending from C to O
DSR: Route Discovery

Path: M, K, I, G