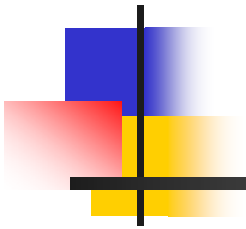
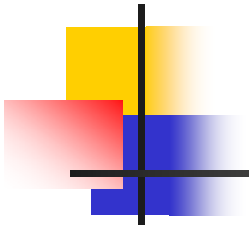


# Meshed High Data Rate Personal Area Networks

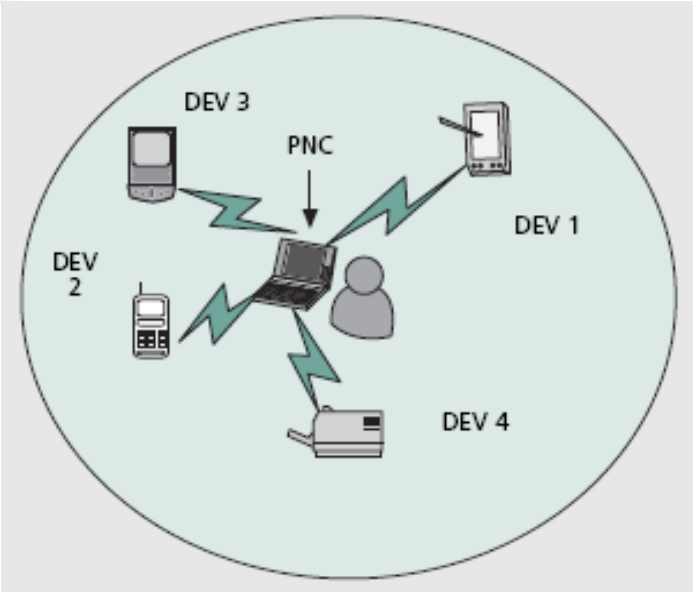
Reading Group: Nov-12-2008

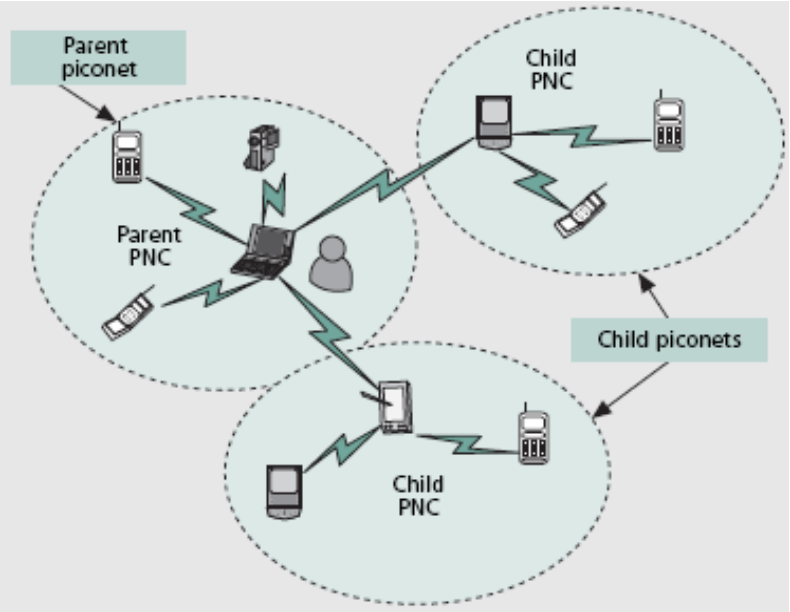


# Introduction

- Big picture of the paper.
- Bluetooth, Wireless PAN and WLAN.
- Wireless Mesh Networks.

# Overview of 802.15.3



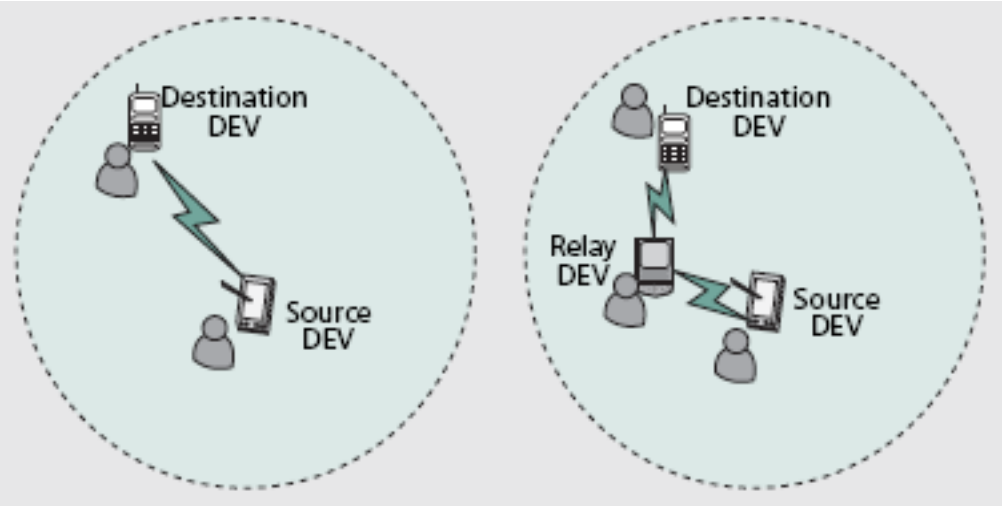

- Piconet, PNC, peer-to-peer communication.
- Starting a piconet.
- Child piconet vs neighbour piconet.

# Limitations of 802.15.3

- Parent-child and parent-neighbour model are not mesh configurations.

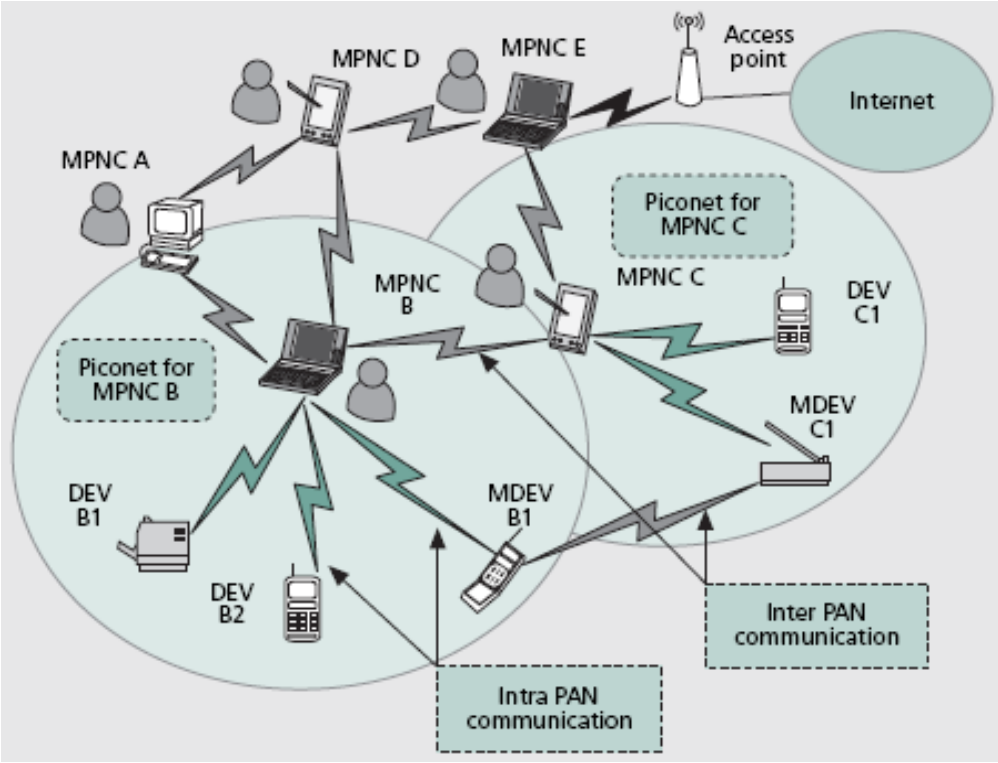
# Impetus Behind Meshing PANs

- Advantages of meshed 802.15.3
  - Power
  - Reliability
    - Rout redundancy
  - Network Configuration



# Architecture

- Extensions made to the high data rate PAN (802.15.3).
- Issues faced by meshing PANs.

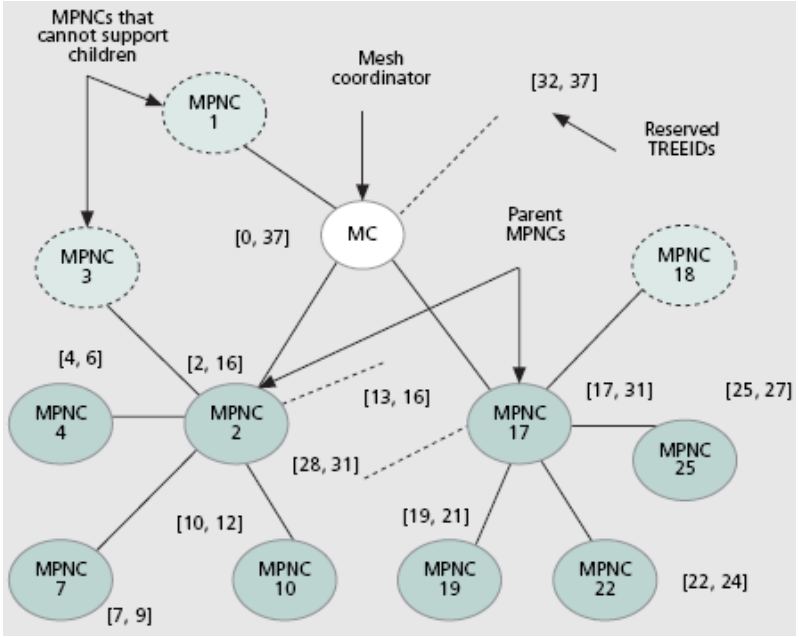


# Operation in a Mesh Configuration

1) Beacon Alignment
   - Two independent piconets might overlap.
2) Starting a Mesh Enabled Piconet

# Operation in a Mesh Configuration

3) Network Self-Organization
   - Mesh Coordinator (MC).
   - Other MPNCs joins the tree > descendant number.
   - Disassociation.
- Important issues:
   - High mobility of MDEVs.
   - Pragmatic value for descendants.



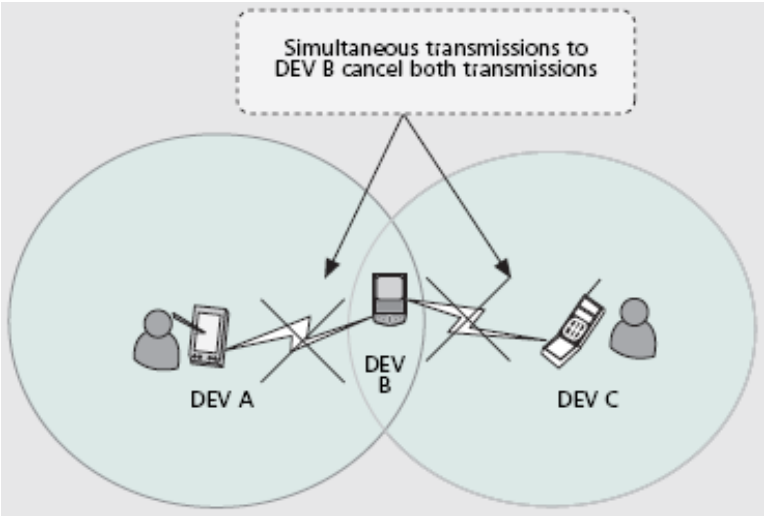
# Operation in a Mesh Configuration

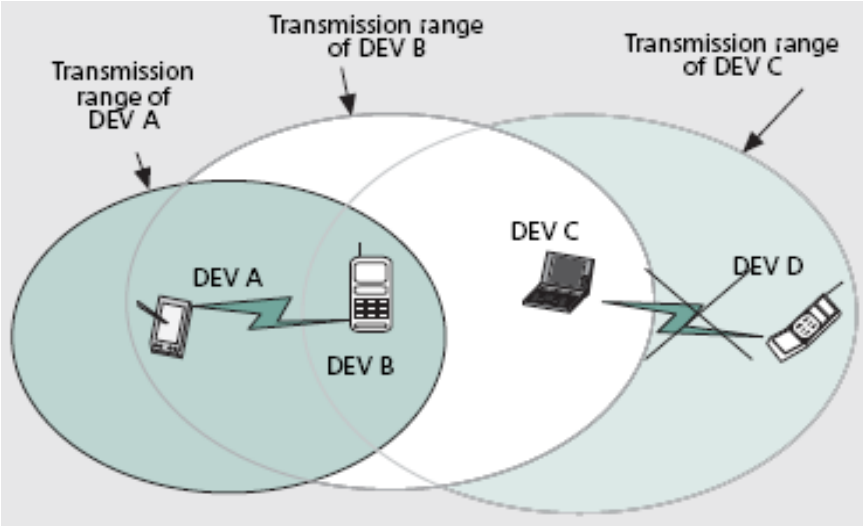
4) Address Assignment

- Well-known techniques:
  - Hierarchical, centralized, distributed.
- They are not suitable for tree MWPAN.
- Tree topology should be known.
  - MC broadcasts a tree topology discovery frame.

# Hidden Node and Exposed Node Problems

- Hidden node problem: Request To Send/Clear To Send (RTS/CTS)
- Exposed Node Problem: neighbour table (How?)



# Routing

- Well-known ad-hoc routing algorithms can not be used.
- Different algorithms:
  - Table
  - Using tree structure and TREEID
  - Centralized routing: topology server
  - Accurate measurements: coordinate system
  - Distributed routing: using rout discovery frame