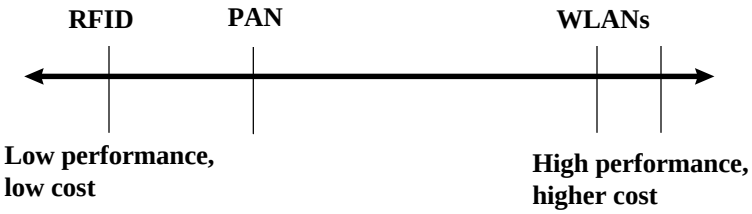
Intermec

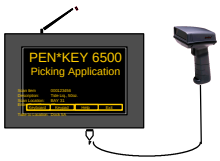
Wireless Solutions



- Continuum of needs for wireless products
- No one product which can fill all needs
- Family of complementary devices

Targeted Applications

- **Cable replacement (point to point)**
  - **Barcode scanner to portable/mobile computer**
  - **Printer to portable/mobile computer**
- **Personal area connectivity (peer to peer)**
  - **hand held computer to numerous peripheral devices including scanners, printers, wide area network radios, etc.**



Applications Solution Requirements

- **Very low cost**
- **Low power consumption**
- **Small size**
- **Interference immunity**
- **Ease of use**
- **Standardized interfaces**
- **Unlicensed, international usability**
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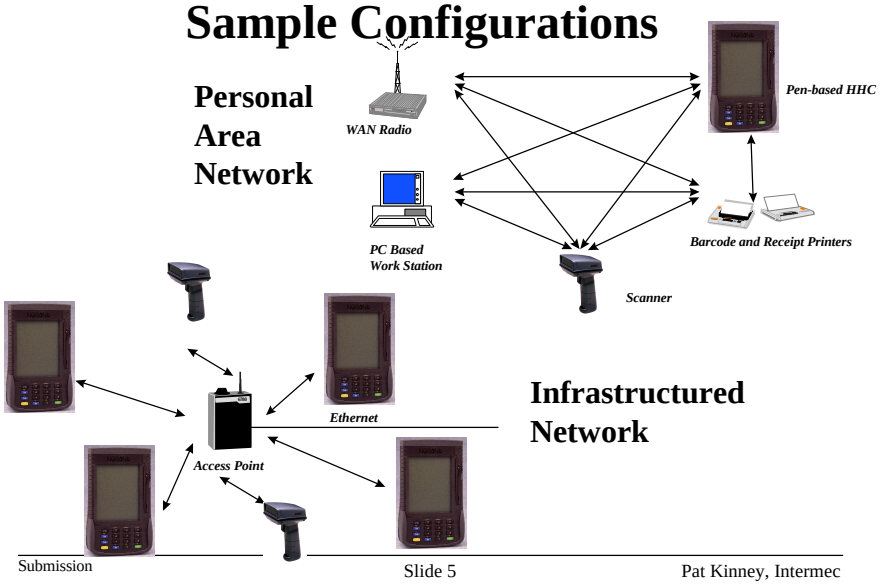
Wire Replacement Concept

- **Complementary to WLAN/IEEE 802.11 devices**
  - **–lower range**
  - **–lower throughput**
- **Lower complexity than WLAN devices**
  - **–reduced RF specifications**
  - **–reduced MAC/PHY complexity**
- **Features which do not add recurring costs**
  - **–peer to peer with up to 10 nodes per PAN**
  - **–**

Short Range Radio System Sample Configurations

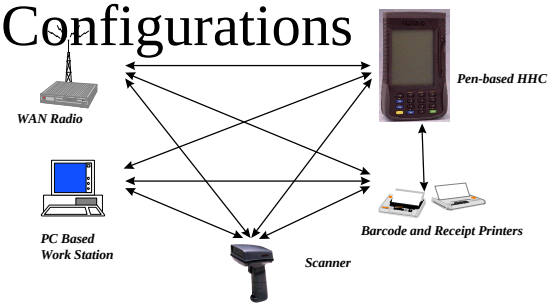
Personal Area Network



Infrastructured Network

Short Range Radio System Configurations

Personal Area Network



- **Personal Area Network (PAN; Peer-to-Peer)**
  - **Multiple Networks co-habitate (20 or more)**
  - **Up to 10 devices in a single PAN**
  - **Dynamic PAN and device IDs with network initiation**
  - **Network maintained devices coming and going**
  - **Temporary devices also supported**

Short Range Radio System Configurations

Limited Infrastructured Network

- **Limited Infrastructured Network**
  - **Main device (access point) has power at all times (fast access)**
  - **Support for more than 10 devices**
  - **Ethernet access points with higher layer protocol**
  - **Communications to the NT Base (STAR Base)**
  - **Switch from PAN to LAN and back**

Short Range Radio System Desirable Features

- Interface
  - Simple interface for intelligent and “dumb” devices
  - Dumb devices
    - Serial, RS232 like interface (19.2kbps)
  - Intelligent devices (Ability to establish and control net parameters)
    - Serial, RS232 like interface (up to 115.2kbps)
    - Parallel/ PC Card optional
- Very Low Power Consumption
  - Minimized while not operating (e.g. 6mA or less)
  - Operational, fast, low power comm. (e.g. 80mA or less)
  - Very low full day average (e.g. 10mA avg. over 10 hours)
- Fast Response (Variable Speeds)
  - “Wired Response” (e.g. avg. response time under 125mS)
  - Various speeds for optimum response/range/current
  - CSMA/CA; collision sense/collision avoidance

Short Range Radio System Desirable Features

- **Immunity**
  - **Frequency Hopping to avoid fixed interferers and multipath interference**
  - **Able to coexist with other frequency hopping systems**
  - **Reduced range decreases the impact of co-located networks**
  - **High data rate reduces "air time"**
- **Size**
  - **Under 1/3rd the volume of typical 802.11 radios**
- **Cost**
  - **In mass production, should be under 25% of the projected cost of an 802.11 radio**

Short Range Radio System Desirable Features

- **Non-licensed, ISM bands**
- **World Wide Regulatory**
  - **2.4GHz frequency hopping: ETSI 300 328**
  - **Low power output: FCC Part 15.249**
  - **Japan: RCR 33**