Sensor Networks and Mobility

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Assisted Living and Residential Monitoring - AlarmNet

Patient Interface

Body Networks

Emplaced Sensor Network

PDAs

Human Interfaces

Nurses Stations

Backbone

Back-End Database

Internet

University of Virginia
Smart Living Space
Real-Time Display
Sensors Everywhere

- Cell phones with sensors
- PDAs with sensors
- Laptops with sensors
- Workstations with sensors
Requirements (1)

- Real-time
- Location based
- Discontinuous operation
- In network aggregation
- 2 mobile end points
- Spectrum coordination
- Energy aware
Requirements (2)

- Security
- Privacy
- Multi-cast and anycast
- Ad hoc formation
- Reliable and available
Fundamental Principles

- Asymmetric Placement
- Adaptation via Reflection
- Spatial-Temporal
- Overlays
- Self-Healing
Creating This Today

- New architectures based on fundamental principles
  - IP for Internet
  - SP for sensor network
  - MP for mobile network
  - Maybe an ISMP

- Allow for “sensing”
1. An unmanned plane (UAV) deploys motes

2. Motes establish a sensor network with power management

3. Sensor network detects vehicles and wakes up the sensor nodes

VigilNet