To Hop Or Not To Hop

# Average 100m time and pulse on a marathon run!

Hop conditions:

* Store and forward: Correctly receive a packet before it can forward
* Cooperative relaying Techniques: Just send what you get! Sink will try to estimate the full package.

Distance

* Stationary target
* Moving target – when must it use a relay? “Frisbee Model”
  + Timeout after sending a package = using relay instead? (Chap 11)
  + One sink – One moving source
    - Central Organized
  + Two sink – one moving source?
    - Distributed Organization: In-Network Processing
    - Data-Centric Network
    - Time Synchronization
  + One sink – Two source/Sink – One moving Target
    - Central Organized
    - Time Synchronization
    - Localization
  + One sink – Four Source/Sink-One moving Target
    - Central Organized
    - Time Synchronization
    - Localization
    - Topology Control

Material

* Different material different power absorption of the signal amplitude
  + AIR
  + “Building”

Frequency

* Sampling Frequency
* Penetration frequency of material

Quality of data acceptance

* Store and forward
* Cooperative Relaying Techniques
* Aggregation: Do we need the entire signal or can we use average/min/max over some time?

SNR :

* Internal Noise
* External Noise

QoS:

* Bandwidth
* Delay
* Jitter
* Packet loss rate
* Robustness (Can we sell our idea as approved merchandise)

Lifetime considerations

* Time to first node death

Scalability

* One, two or many hop

Compression of data to give extra distance

* Correlation / temporal correlation
* Fidelity and accuracy in relation to estimations
  + Calculation powers?

Database and result considerations

* Central base database?
* Distributed database with mean values?

Time Synchronization: Chap 8

* Energy consumption of synchronisation algorithm
* Scalability
* Precision requirements
  + NTP: Network Time Protocol : Receiver synchronize to the senders’ clock
  + LTS: Lightweight time synchronization protocol : External “GPS maybe” reference time node
  + Diverse

Localization: Chap 9

* Physical position vs symbolic location
* Absolute vs relative coordinates

Topology Control: Chap 10

* Hierarchies and node restrictions