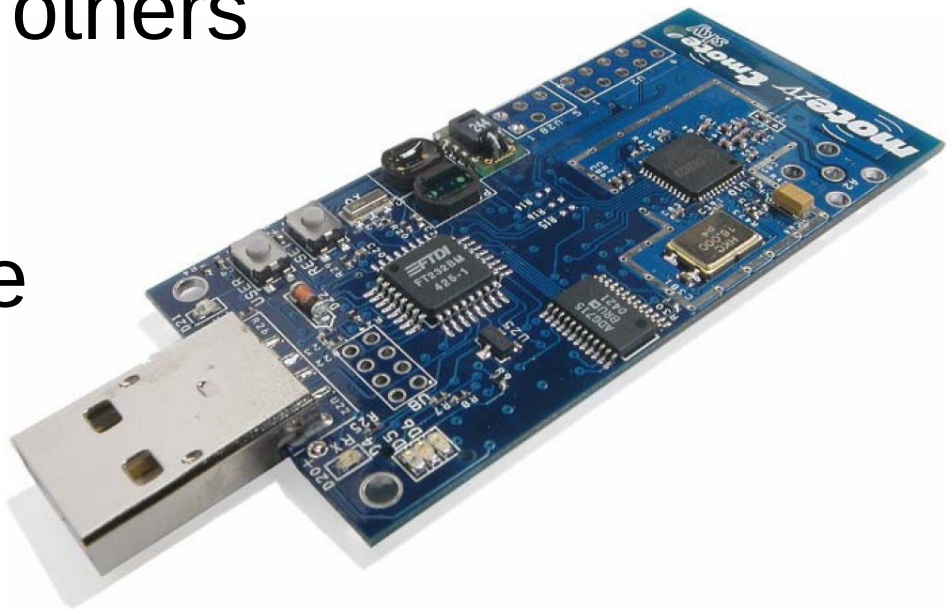
Extension and Evaluation of a Sequence Detection System in Wireless Sensor Networks

Introduction

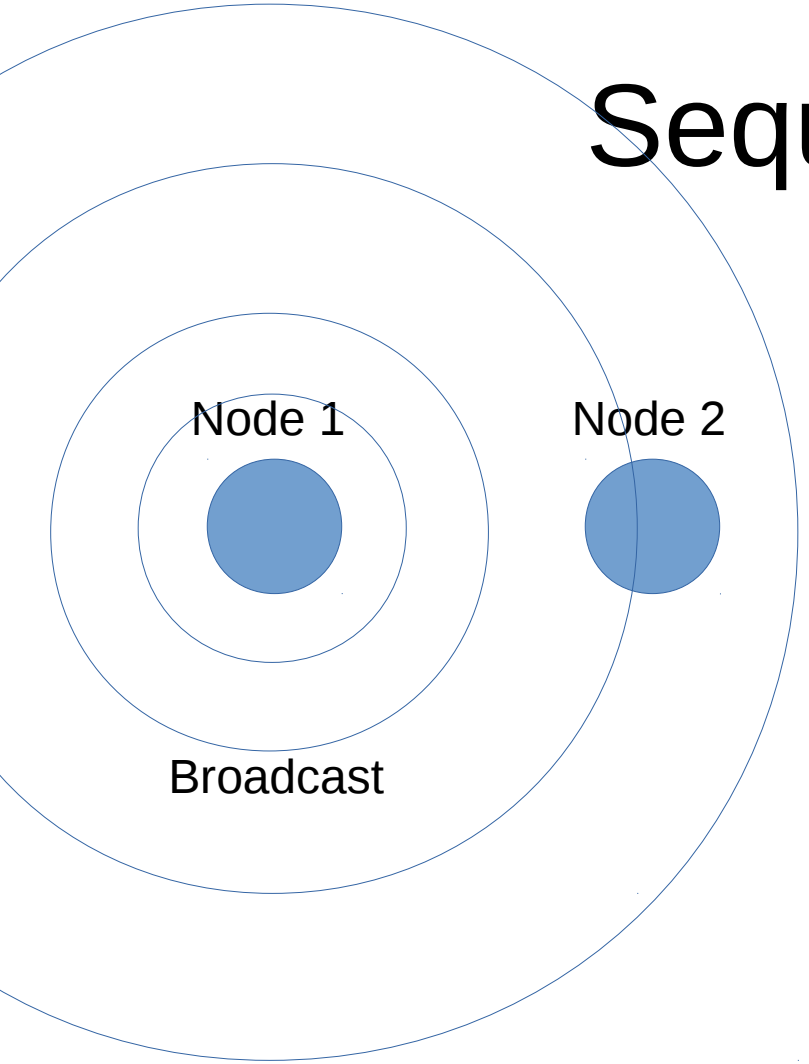
- Big sensor meshes exist
- Collecting data on various positions
- Each node in the network is a sensor connected to the others
- Collect data
- We work with one dimension sequences



Motivation

- We want to bind data measurement data to location
  - Location is referred to as sequence (one dimension)
- Relative position of sensor nodes is important
- Manual position setup is inconvenient
- Sort nodes automatically in a list
  - Especially on large sensor meshes

Sequence detection



- Each node transmits broadcast
- Other nodes measure RSS
- Measurement data processing
- Transmit on several frequencies for precision

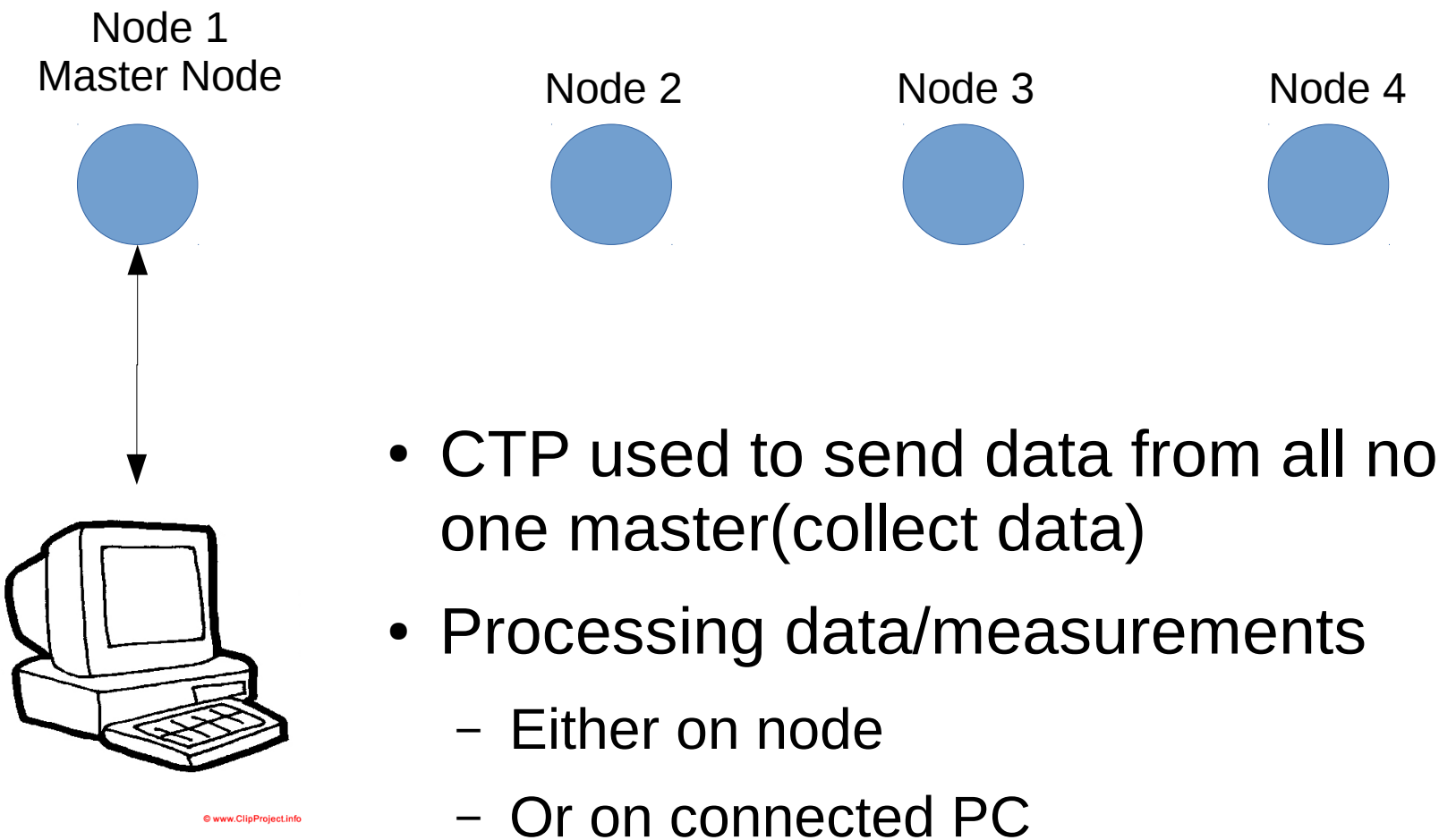
Node communication

- Control Communication
- Data Collection

Dissemination

- Provide information to all nodes in a network
- Robust against disconnection and high packet lost
- Has an implemented interface in tinyOS
- Used for controling the measurments
  - Inform about switching channels
  - Inform about new measurment master/sender
  - ...

CTP/Interface



- CTP used to send data from all nodes to one master(collect data)
- Processing data/measurements
  - Either on node
  - Or on connected PC
- Send results to PC

Testing

- Requirement: Robust to different environments
  - Different behavior of waves
- Test system under various indoor scenarios

Progress

- Communication protocols work
  - CTP
  - Dissemination
  - Serial connection Node/PC
    - Python access for interface

Next Steps

- Sender selection
- Taking measurements at all channels
- Making a timeline