MonSense

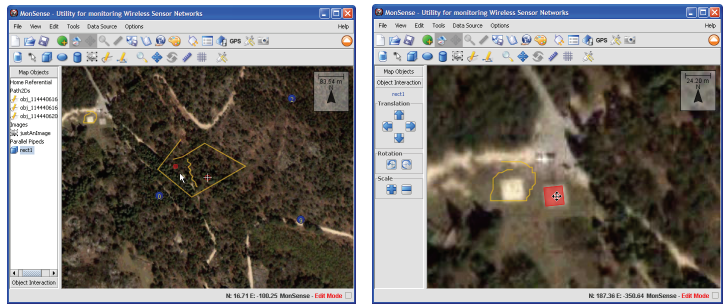
Planning, Deploying, Monitor and Control WSNs

Background

Wireless Sensor Networks are the basis of three of our current projects: wildfire prevention, distributed noise measuring and a distributed weather station.

MonSense is being developed iteratively to fulfil the requirements posed by each deployment.

We use common TinyOS components to develop the applications that run in our TMOTE Sky devices.



Using MonSense to edit environmental maps and plan sensor locations

Features / Requirements

MonSense supports the WSN lifecycle:

Planning

- Definition of environmental maps
- Sensor calibration procedures

Deploying

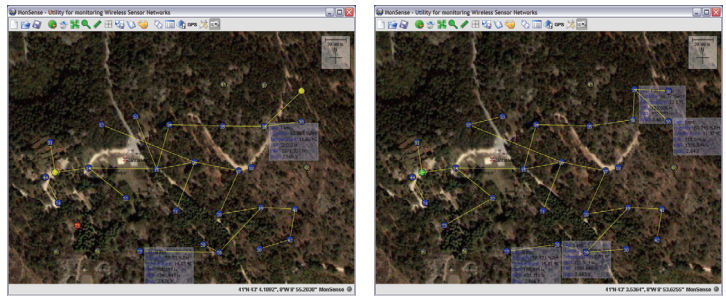
- Rapid network state visualization
- Node state representation
- Support to deployment teams
- Easy mapping between virtual and real world sensor locations

Monitoring

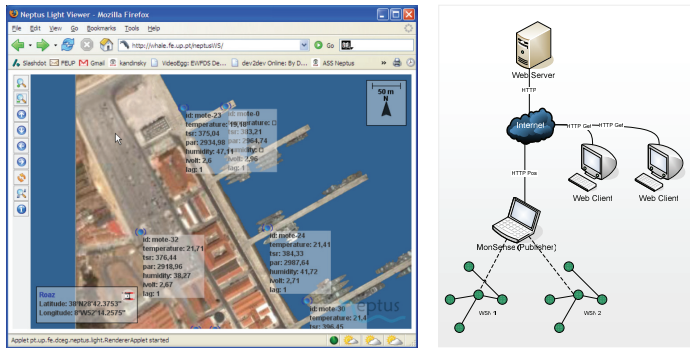
- Easy data visualization
- Publish data to different formats and the Web
- Single-node monitoring
- Data fusion across multiple sensor networks

Controlling

- Alert configuration
- Start / Stop the network
- Network reprogramming



Wireless Sensor Network visualization during the deployment phase



Web publishing architecture, allowing access through a simple Web Browser

Conclusions & Future Work

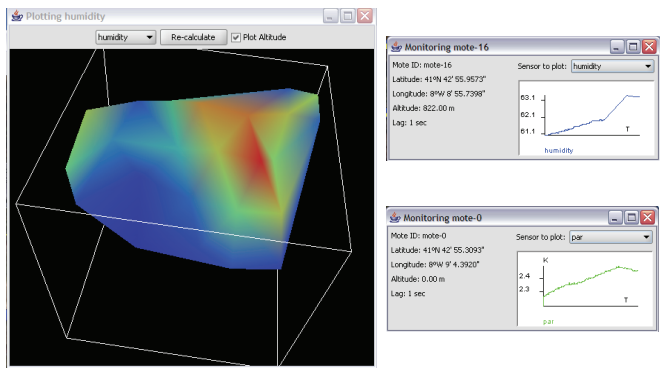
MonSense facilitates planning, control and deployment of WSNs in field applications by operators with no previous experience with WSNs.

MonSense is very modular, being easy to extend it and adapt it to new WSN applications.

MonSense has already been used for various successful WSN deployments and is currently publishing (to the Web) real time data from two different WSNs.

We are using MonSense in medium-scale WSNs (30 nodes) but the system scales very well to any number of nodes.

In the future we plan to simplify the addition of alerts, add 3D map visualizations and export data to more formats like KML, SVG or PDF.



Plug-and-play data visualisations

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