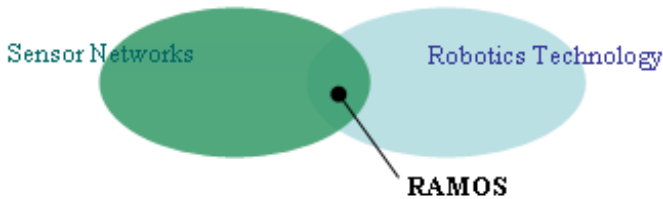


## 1. Introduction to RAMOS

- Intersection of Sensor Networks and Robotics Technology
- Target application: collaborative work of multiple robots in a disaster area (i.e. after an earthquake)
- On-demand and hop-by-hop routing protocol
- Location-based communication
- Two urgent levels of data



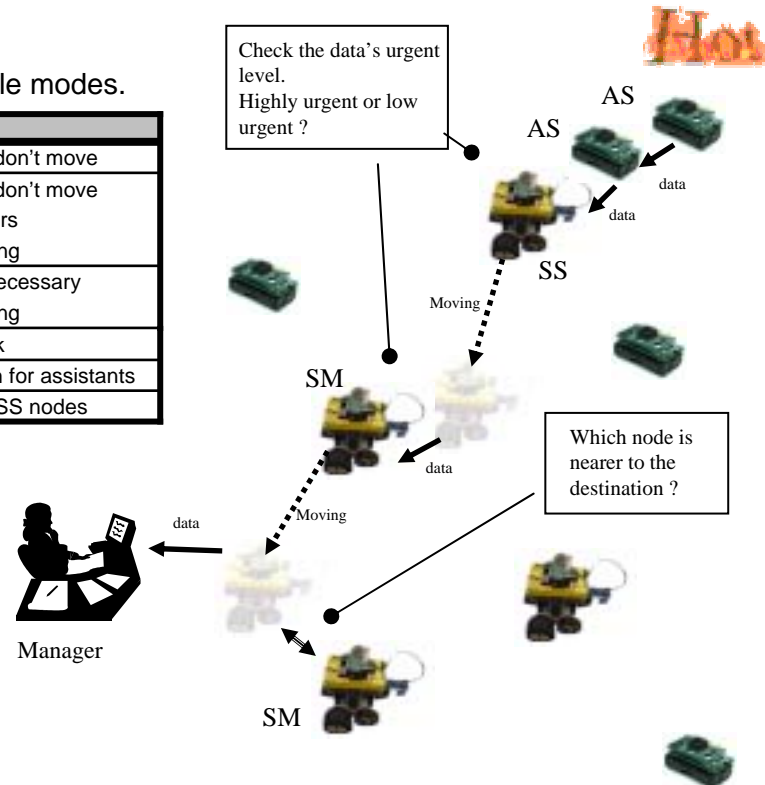
### RAMOS Significant aspects

- **Classify nodes into multiple modes**
  - > It can deal with various situations
- **Allow nodes to instruct other nodes**
  - > There is no centralized infrastructure
  - > It is available in a disaster area
- **Change mode of nodes autonomously**

## 2. Classification of Modes

Node movement in RAMOS depends on multiple modes.

Mode	Behavior
Absolutely Static ( <b>AS</b> )	<ul style="list-style-type: none"> <li>• stay at their original positions and don't move</li> </ul>
Semi-Static ( <b>SS</b> )	<ul style="list-style-type: none"> <li>• stay at their original positions and don't move</li> <li>• move only when urgent event occurs</li> <li>• return it original position after moving</li> </ul>
Dynamic Node ( <b>DN</b> )	<ul style="list-style-type: none"> <li>• freely move anywhere whenever necessary</li> <li>• return it original position after moving</li> </ul>
Spontaneously moving ( <b>SM</b> )	<ul style="list-style-type: none"> <li>• randomly move around the network</li> </ul>
Limited Search ( <b>LS</b> )	<ul style="list-style-type: none"> <li>• move within limited areas to search for assistants</li> </ul>
Round Patrol ( <b>RP</b> )	<ul style="list-style-type: none"> <li>• serves as an assistant for AS and SS nodes</li> </ul>



## 3. Discussion and Future work

- Accommodation of heterogeneous nodes
- QoS control
- End-to-End reliability
- Consideration of transaction

## 4. Prototype

- Consisting of AS and SS-like nodes.
- 4 nodes in our testbed.
  - Two Mica Motes
  - Two Lego Mindstorms (RCX2) with Mica Motes
- All nodes have its own location information
- There are some constraints in using Mind Storms
  - They move only in two orthogonal directions.

