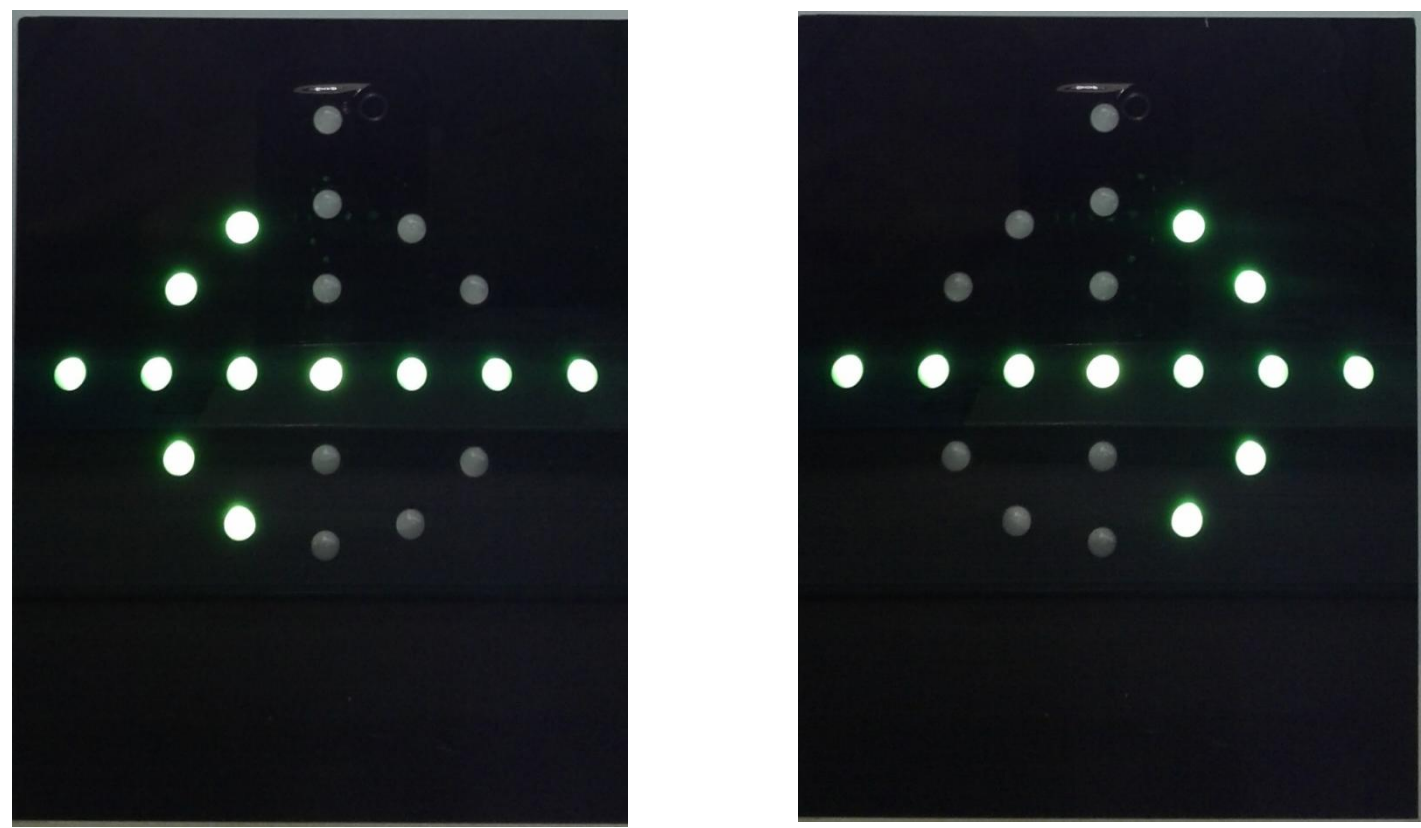


On-the-Fly Deployment of Wireless Sensor Networks for Indoor Assisted Guidance

Motivation

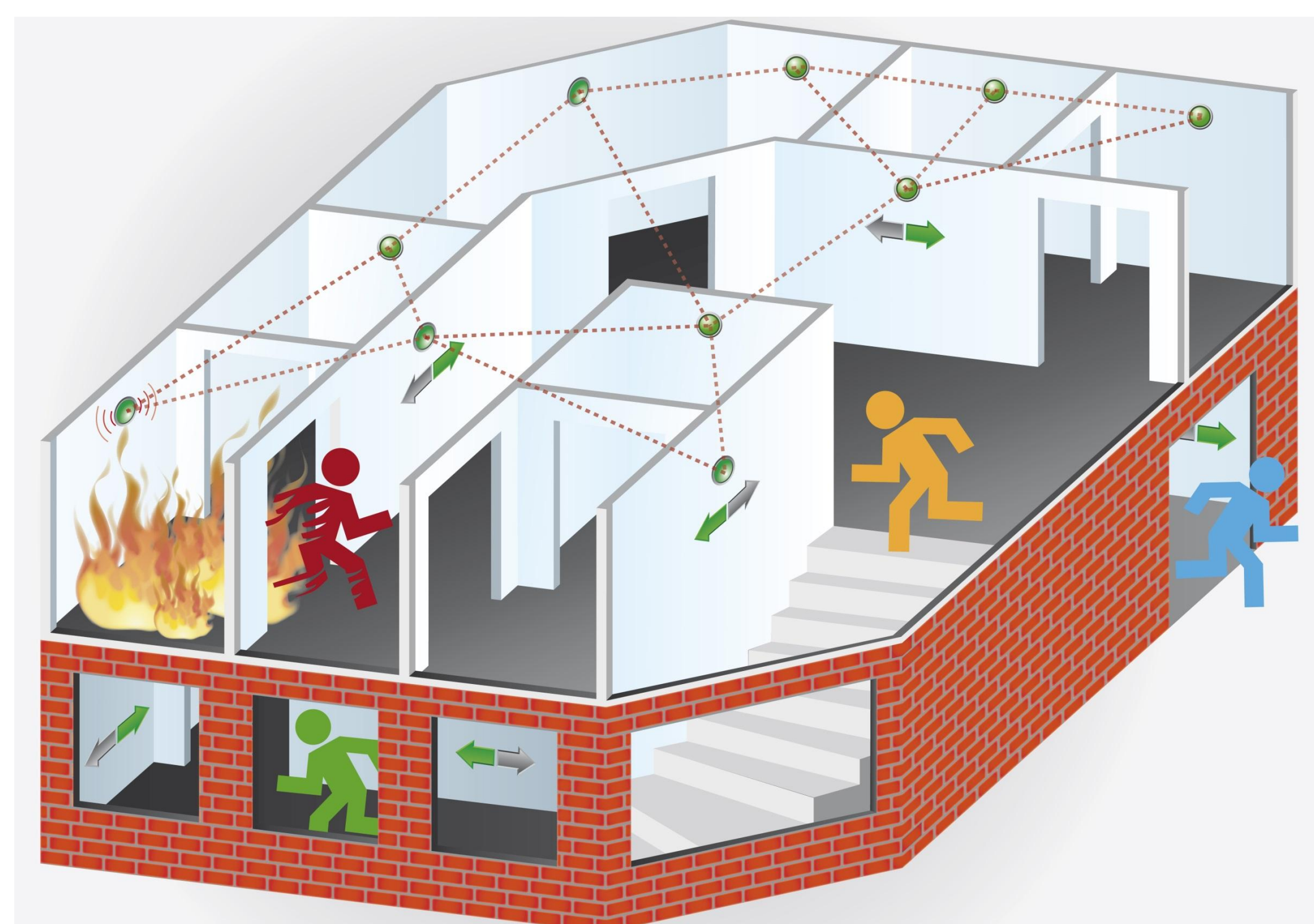
Context

- Assisted Guidance (AG) systems guide people within a building.
- AG systems can be implemented using Wireless Sensor Networks (WSN).
- Motes are equipped with directional signage.



Challenges

- Where are the best locations to place motes?
- How does AG system know where rooms and corridors are?



Current Solutions

- Floor plans are often unavailable.
- It is hard to predict the radio connectivity.
- Deploying motes in planned positions is prone to errors.

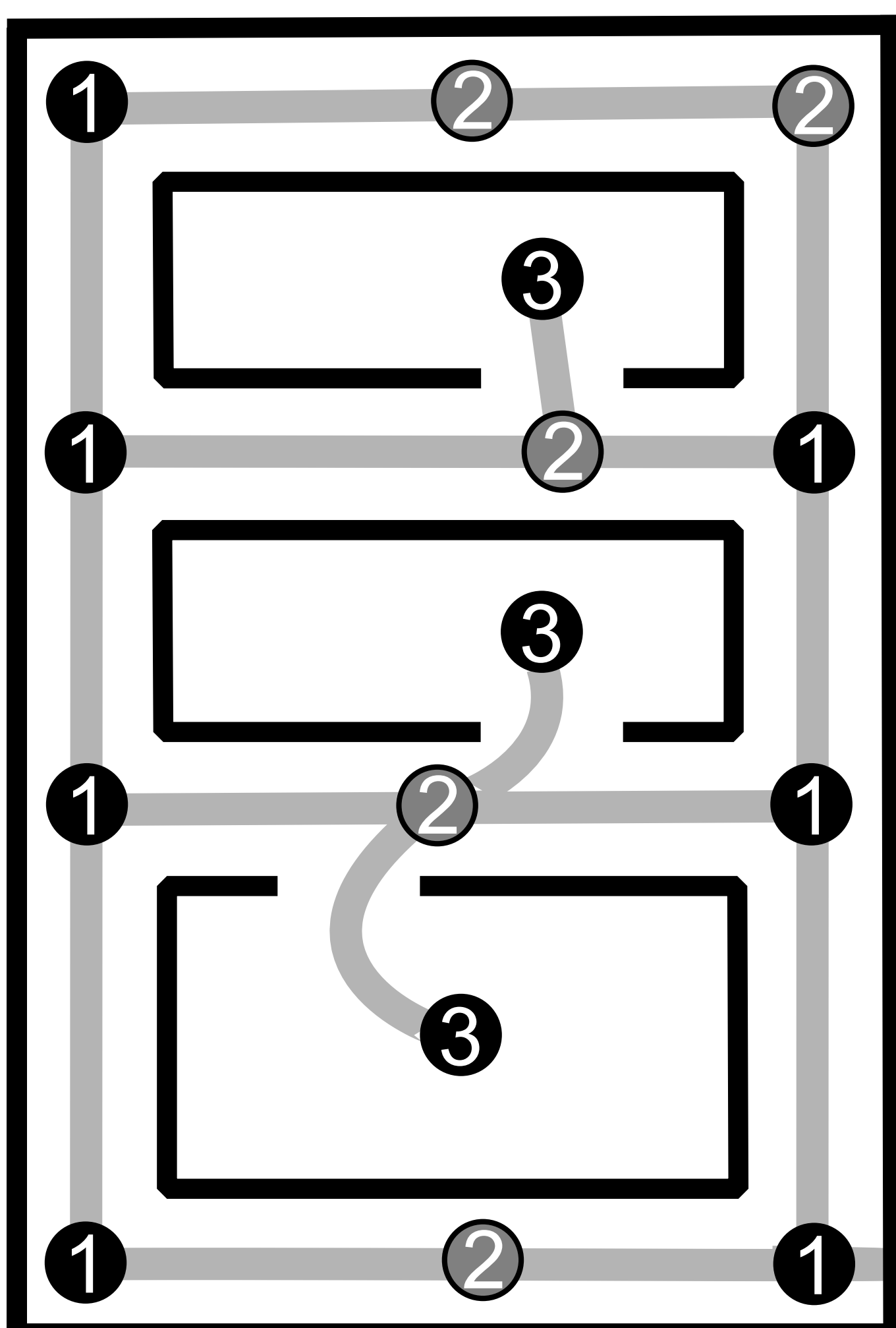
Description

- We propose a new deployment scheme called On-the-Fly Deployment (OFD).
- OFD is composed of two tools to deploy a WSN in a building and transfer the building topology to the system

Proposed Scheme

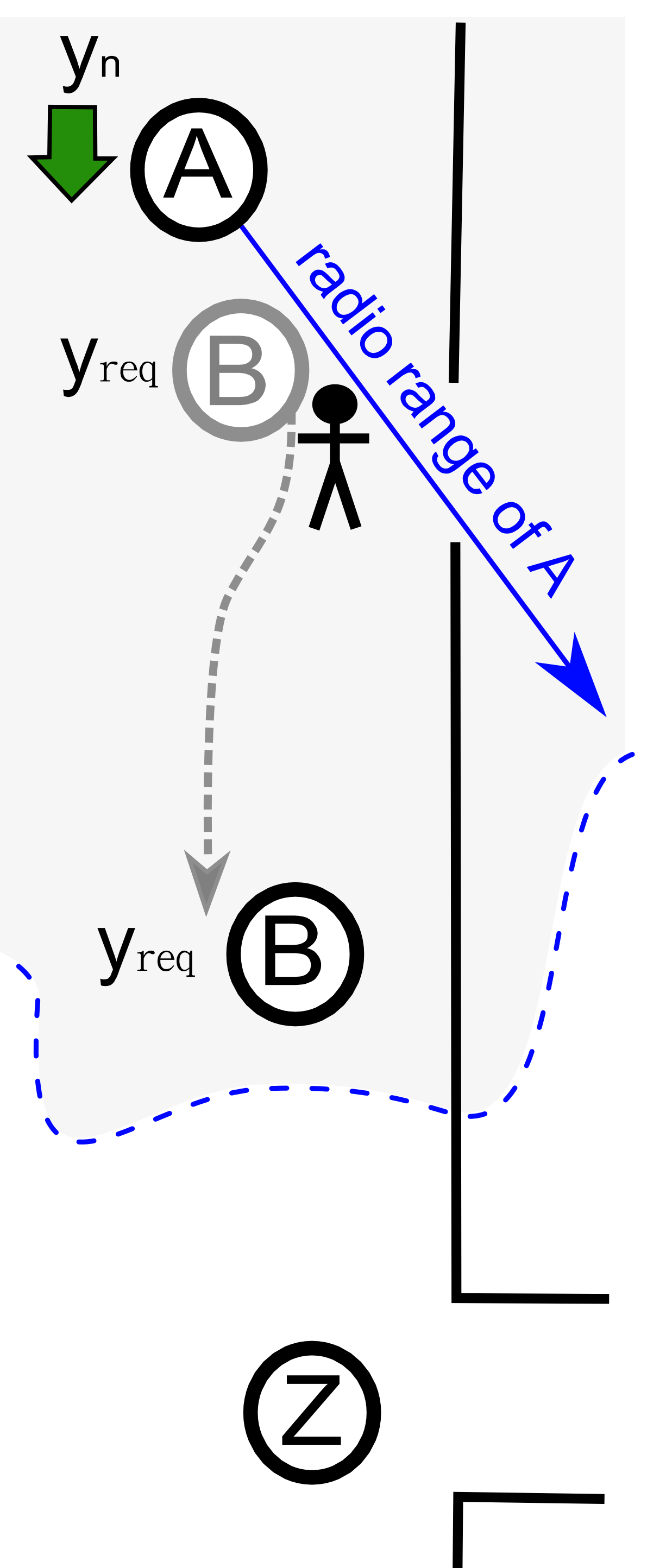
A. Node Placement Rules

- A mote is deployed at each intersection of corridors.
- Starting at one of the extremities of each corridor, motes are successively deployed.
- A mote is deployed at each room



B. Protocol to establish links

- Press X_{req} at mote A
- Move along the corridor with mote B
- Mote B is within the radio range of mote A
- Press X_{ok} at mote B



Advantages

- Requires no floor plan of the building.
- Can be applied to any building layout.
- Is self-contained.
- Visual feedback about the radio connectivity between nodes.