

# Sensitive Buildings 2012

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# Plan for Today

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- Observation Assignment: remaining presentations
- ZigBee Addressing
- basic configuration
- math for mesh...maybe
- ZigBee and Arduino
- Readings & Assignments

# Observation Assignment

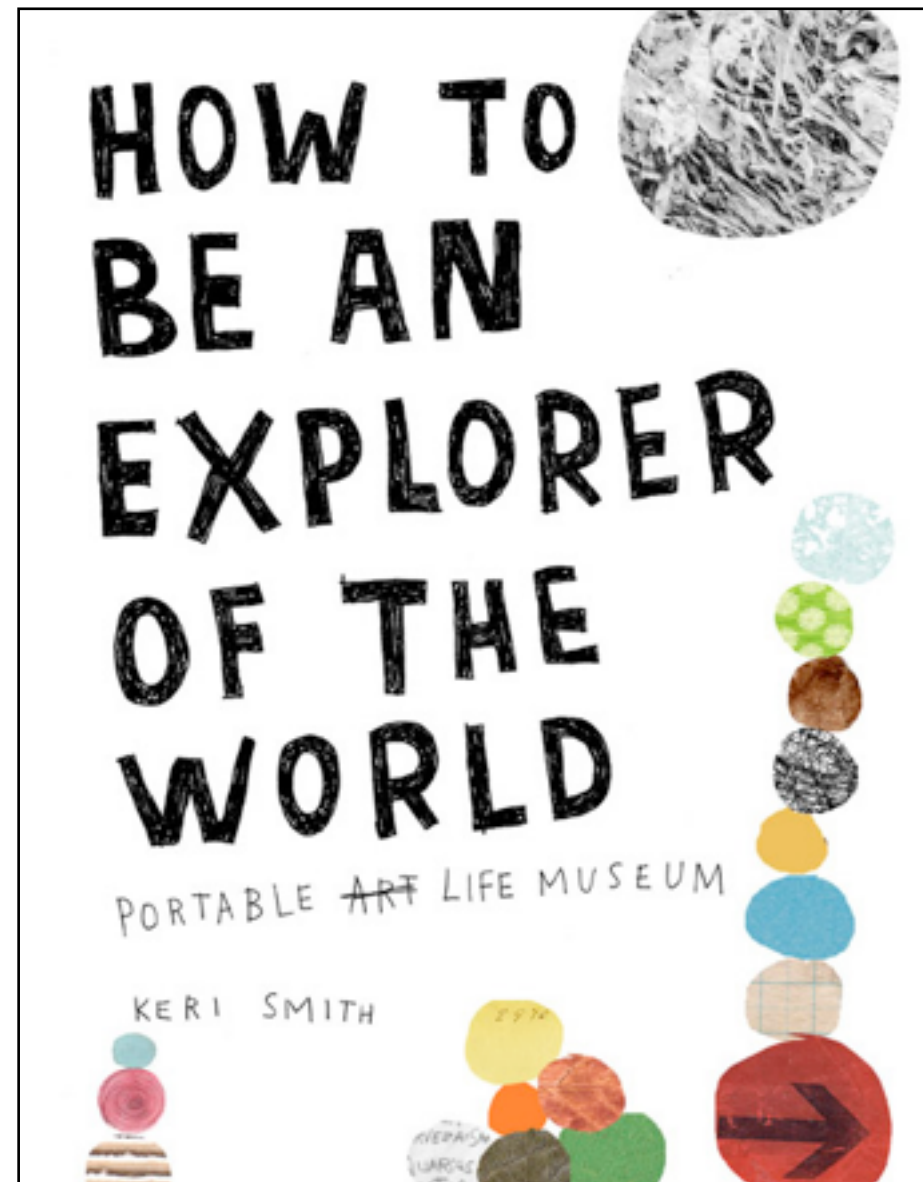
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- remaining presentations

# Explorer Exercises

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- Briefly discuss projects



# ZigBee Addressing

# ZigBee Coordinator

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- Every ZigBee network must have a coordinator
- There can only be one coordinator
- Coordinator selects channel and PAN ID
- End devices and routers can then join the PAN
- Typically mains-powered
- Coordinator's 16-bit address is always 0

# ZigBee Router

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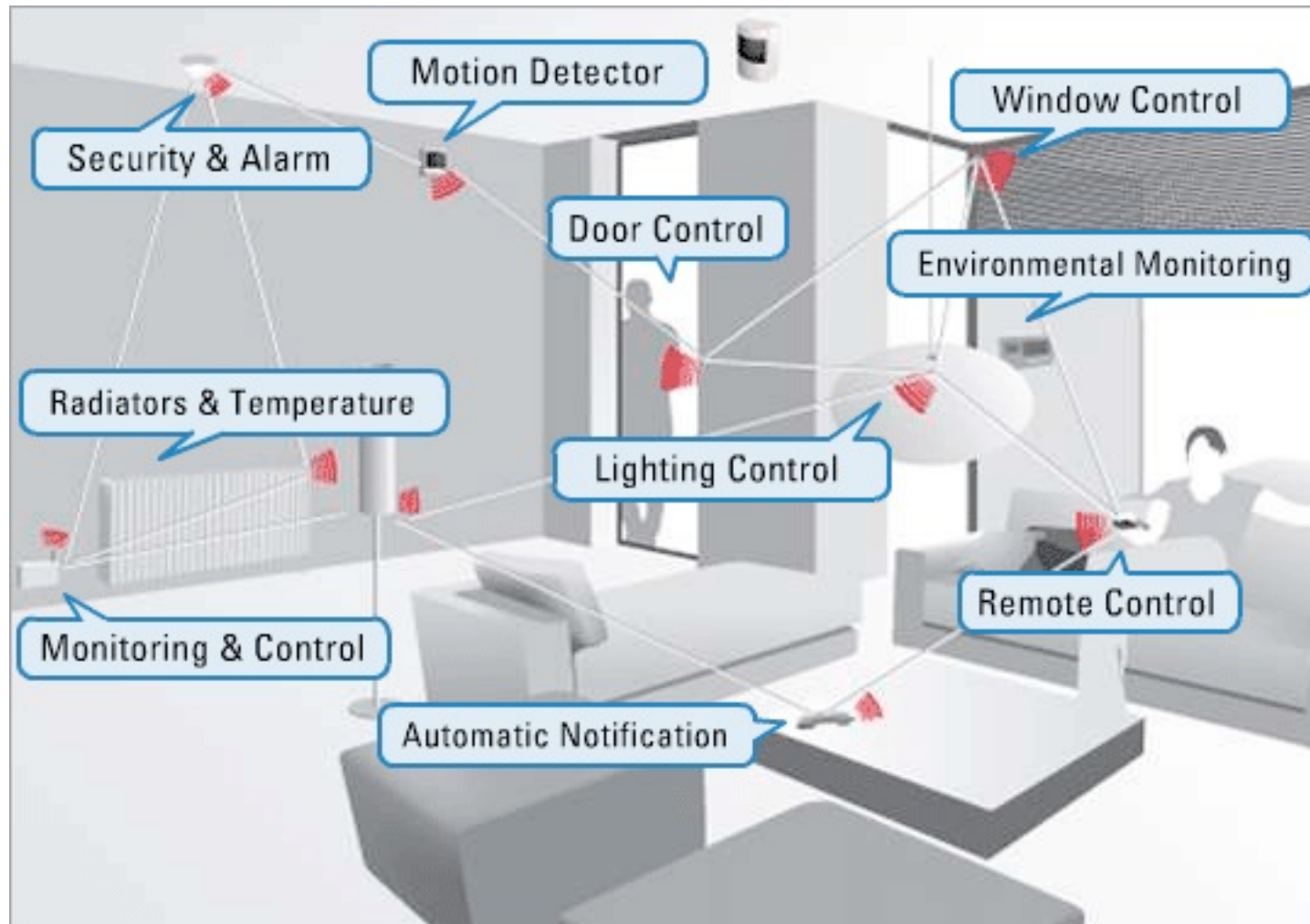
- Non-coordinator routers are optional to ZigBee networks
- Typically mains-powered
- Many can be on each PAN
- Issues a beacon request on startup to locate channel and PAN
- Routers can communicate with any device on the network
- Stores packets for sleeping end devices
- 16-bit address assigned by coordinator

# ZigBee End Device

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- Optional to ZigBee networks
- Typically battery-powered
- Many can be on each PAN
- Issues a beacon request on startup to locate channel and PAN
- End devices can only communicate directly with their parent
- 16-bit address assigned by coordinator

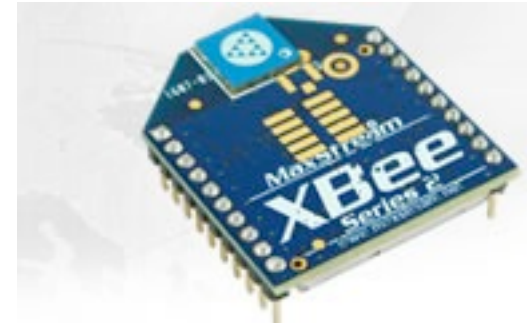




# XBee ZB

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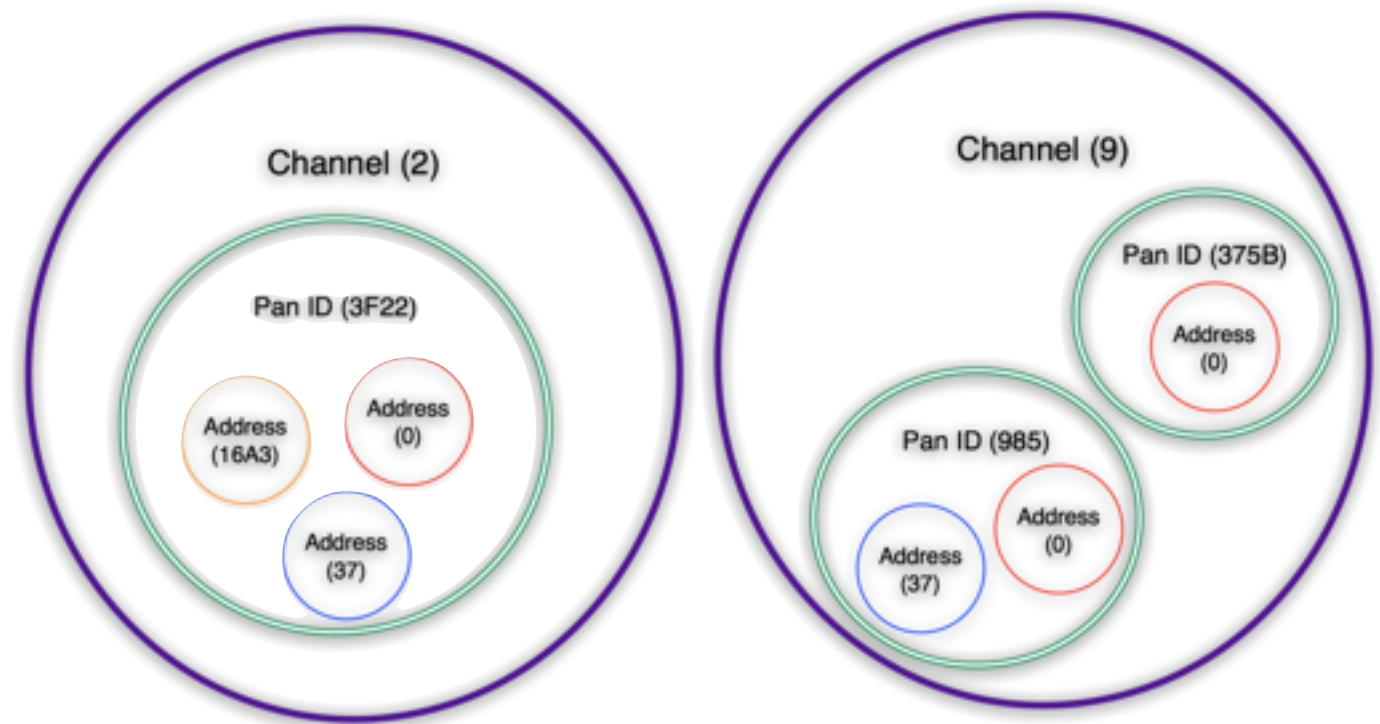
- Coordinator Firmware
  - for AT commands or API
- Router and End Device Firmware
  - for AT commands or API
- ...so 6 different firmware combinations (you'll always use 2 at the same time)
- and two power levels, regular and Pro
- and 4 antennas! whip, chip, U.FL and RPSMA.



# Addressing Basics

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- channels
- PAN ID
- 64 bit addresses, aka serial numbers
- 16 bit addresses
- Node Identifier & Node Discovery
- endpoints & clusters



# Readings and Assignments

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- Readings
  - Building Wireless Sensor Networks, Chapter 2 & 3
- Assignments
  - basic chat exercise
  - doorbell exercises