

# Sociable Objects

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Class 8

# Readings

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- Startup eyes battery-free wireless sensor nets: <http://eetimes.eu/showArticle.jhtml?articleID=202400294>
- Tinker: A Tool for Designing Data-Centric Sensor Networks, Jeremy Elson, 2006: <http://research.microsoft.com/nec/publications/spot6613-elson.pdf>

# Final Projects

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- Steven: Clock Sync
- Amanda & Vikram: Wind Chimes
- Chris: BLT
- Stella: I Might Like You Bracelets
- Armanda & Seung Ran: Shape Shift Skirts
- Eddie: Mouse Seek
- Sofia: Networked Musical Controllers
- Dave: Cold War the game

# Direct, Indirect, Subtext

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- What data can we sense directly?
- How about inferences that we can make from the data?
- What's the subtext of the data? What can we infer from the inference?

# I/O Intro

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- For simple input and/or output
- Eight digital input/outputs
- One additional digital output
- Seven analog inputs
- Two analog outputs
- But not all at once! Pins are shared.

# I/O Why

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- Why:

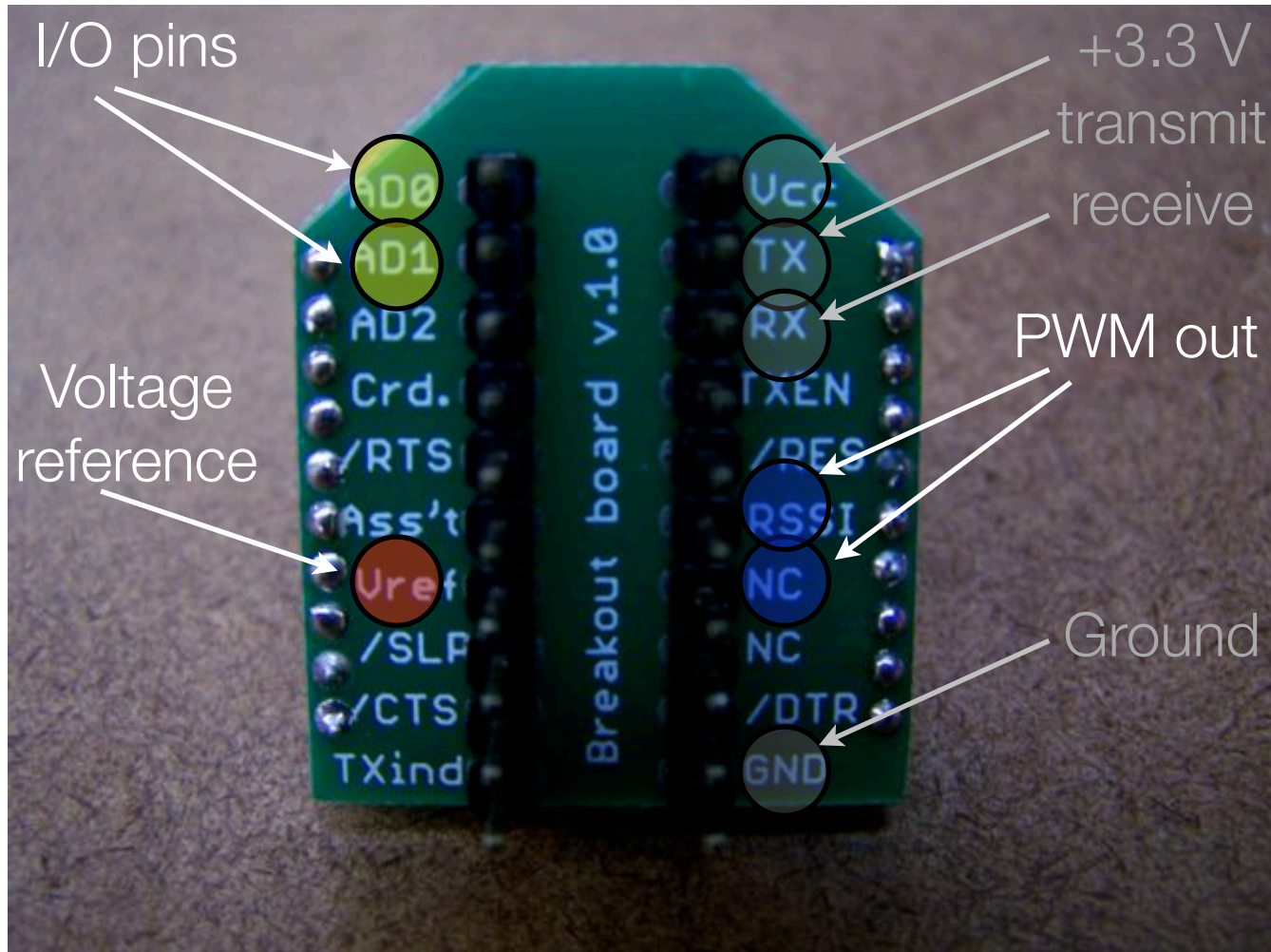
- Save space, save power, save weight and save money
- Reduce complications

- Why not:

- Limited inputs/outputs
- No access to logic
- Each radio must be manually configured

# Input/Output Wiring

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# I/O AT Commands

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- ATD0...D8 -> configure pins for I/O
- ATIR -> sample rate
- ATIT -> samples before transmit
- ATP0...P1 -> PWM configuration
- ATIU -> I/O output enable (UART)
- ATIA -> I/O input address



# Example Configuration

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- ATID3456 (PAN ID)  
ATMY1 my address 1  
ATDL2 destination address 2  
ATD02 pin 0 in analog in mode  
ATD13 pin 1 in digital in mode  
ATIR14 sample rate 20 milliseconds (hex 14)  
ATIT5 samples before transmit 5
- ATID3456 (PAN ID)  
ATMY2 my address 2  
ATDL1 destination address 1  
ATP02 PWM 0 in PWM mode  
ATD15 pin 1 in digital out high mode  
ATIU1 I/O output enabled  
ATIA1 I/O input from address 1

# I/O Workshop

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- Set up input and output radios with sensors
- Transmit values without any external microcontroller

# Readings and Assignments

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- Readings
  - None this week
- Assignment
  - System diagrams for Final Project & progress reports