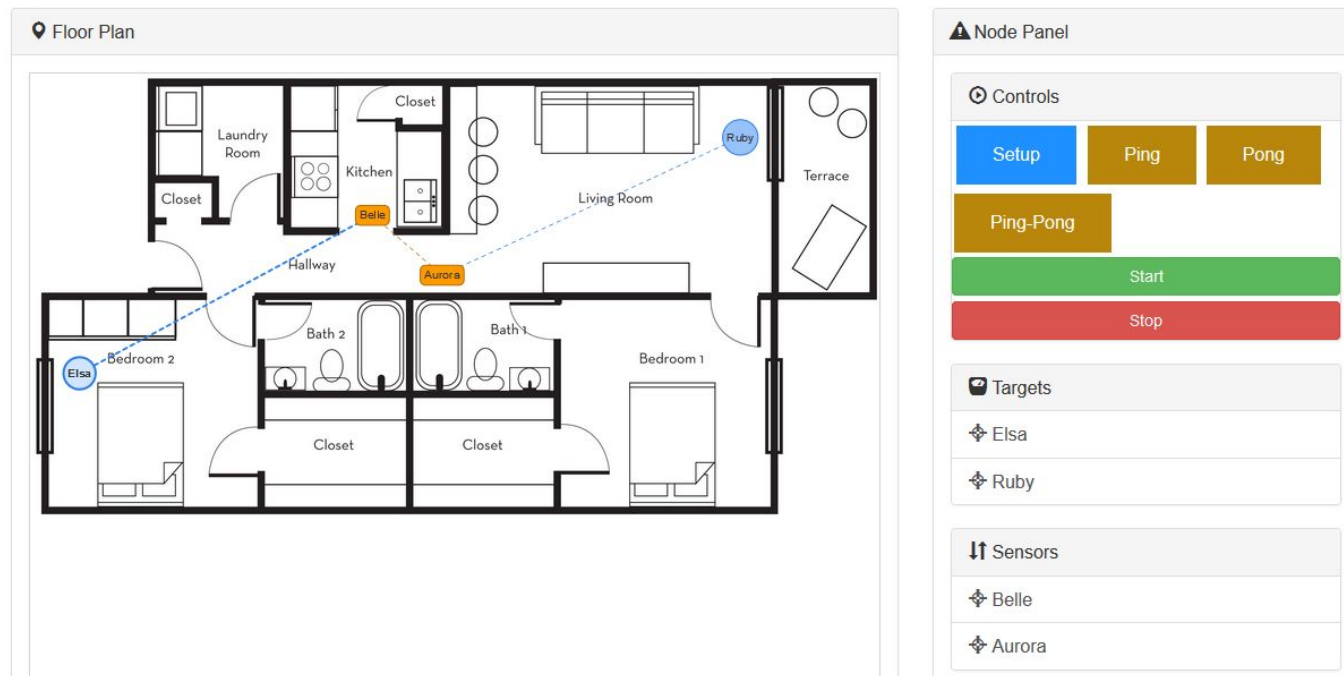


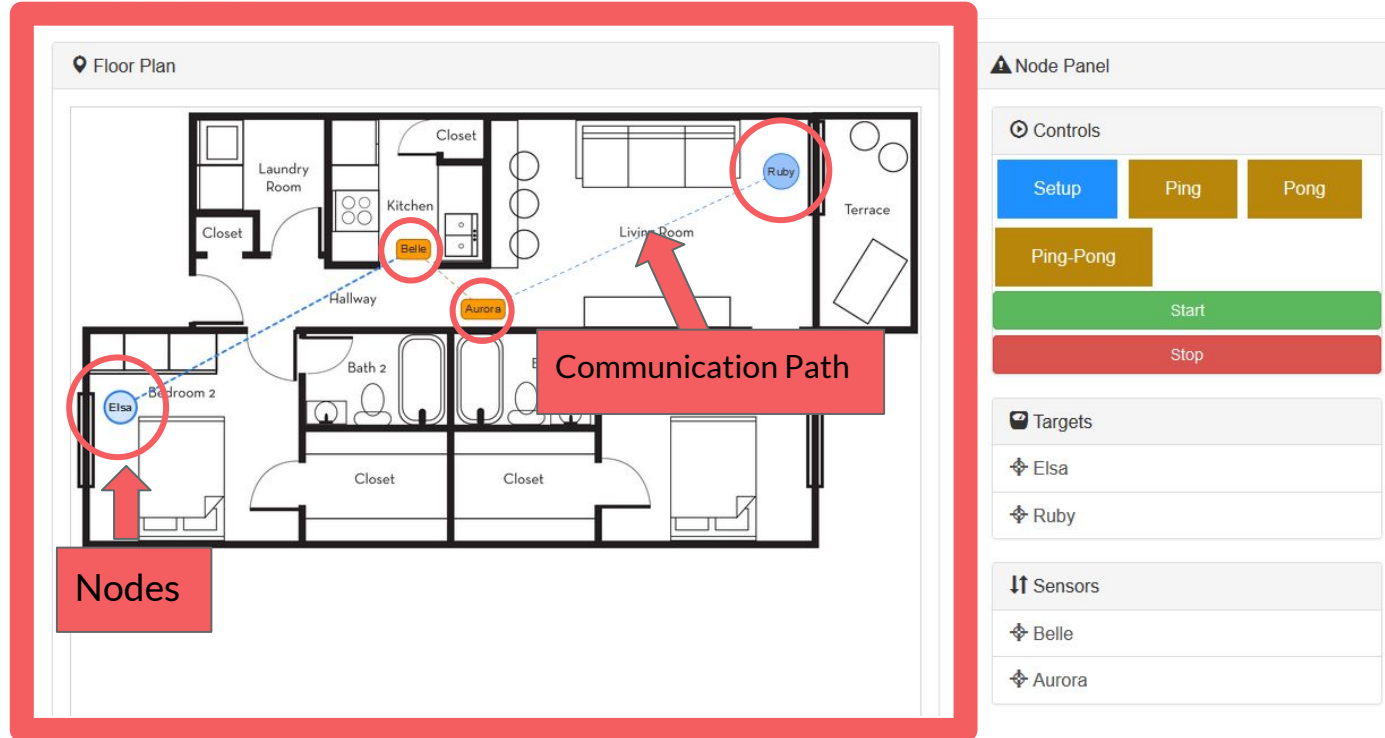
“Operation Zombie” Project 5

**M. Chauhan, C. Gill, M. Laroza,
K. McLean, P. Savill, L. Small**

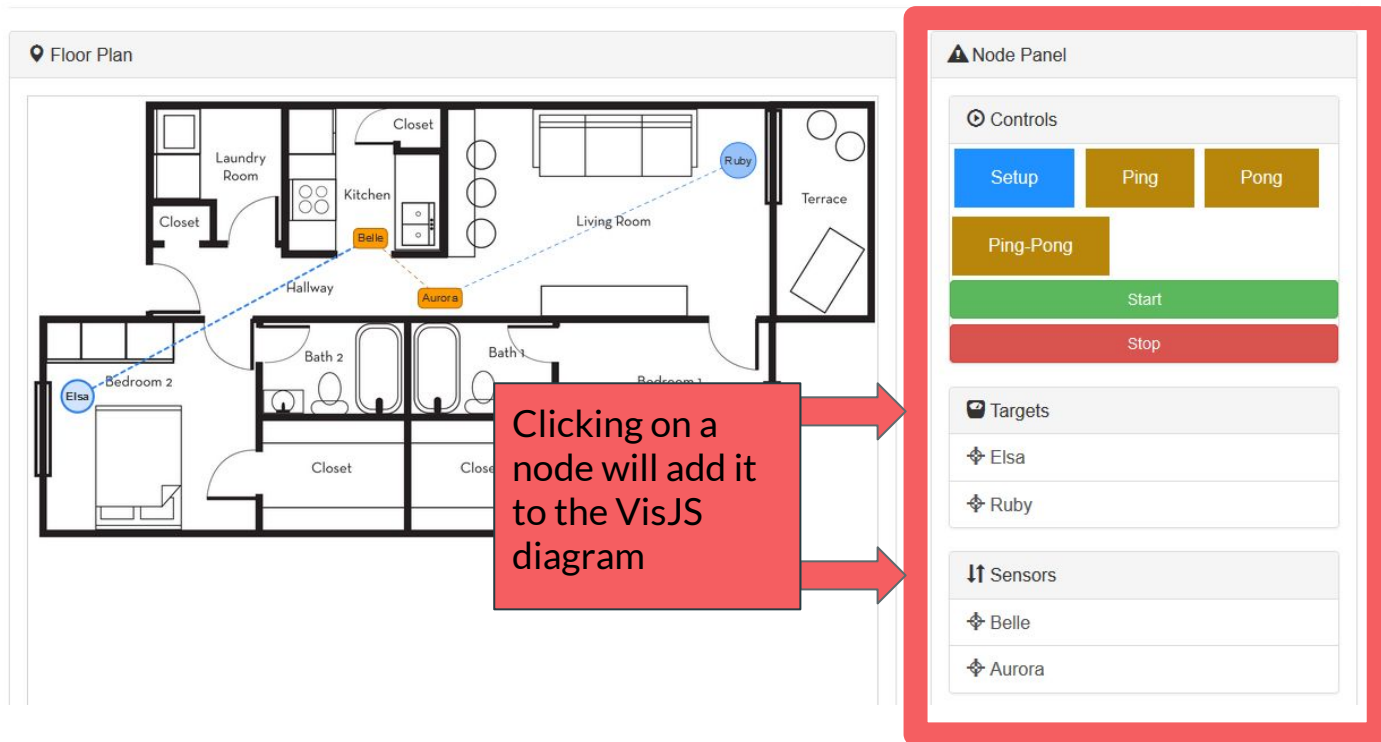
Dashboard



Dashboard



Dashboard



Overall System

Main Software components:

Docker -> Host PC -> External devices

- Docker
- Web Server
- Database
- Port Forwarding



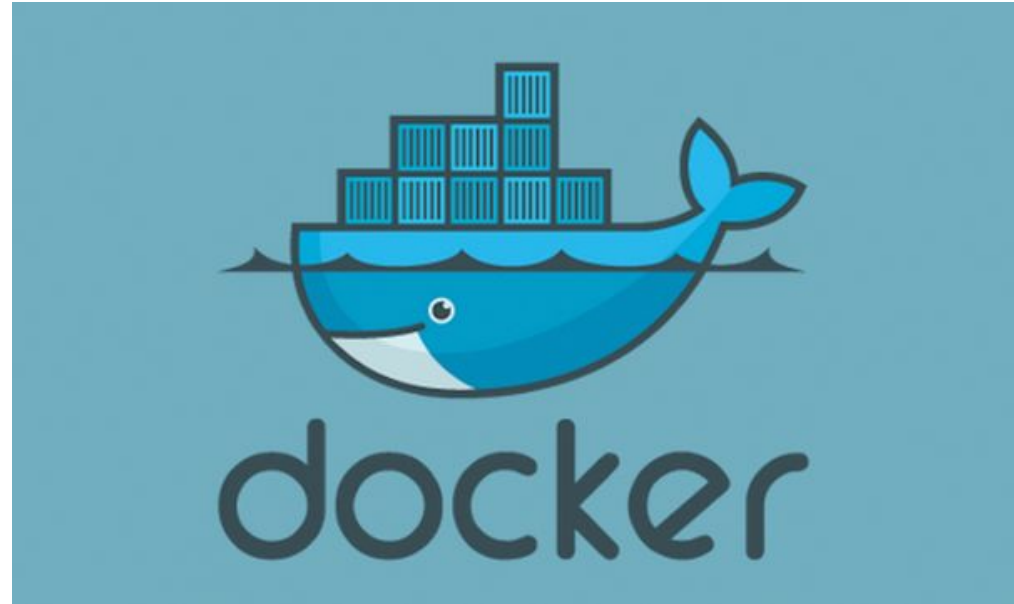
Docker

Pros:

- Consistent Environment
- Deploy on any system
- Easy set up

Cons:

- Complicates passing of information to and from server.



Web Server

Server

- Apache
- Flask
- Python



Database

- SQLAlchemy

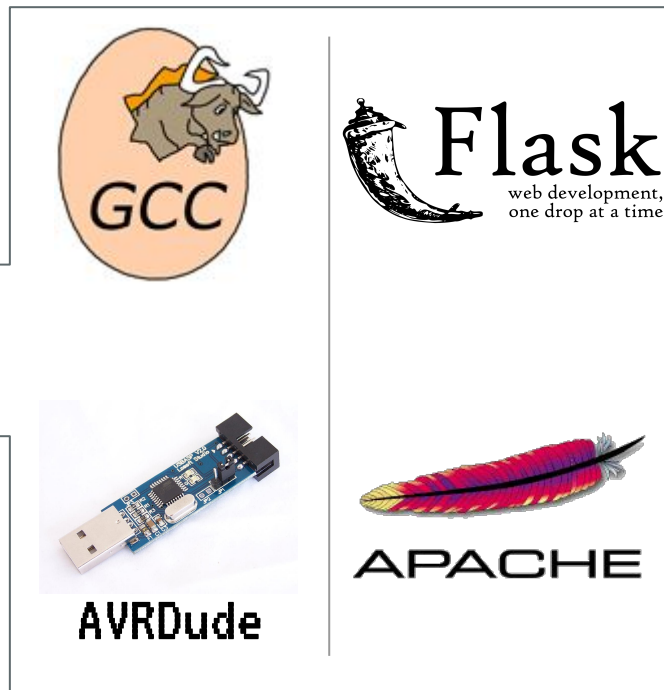


Infrastructure

Layne



operationzombie/controlserver



Embedded Code and Hardware Interface ^{Layne}

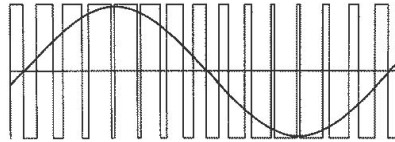
Networking Support

- UART
- Arduino fork



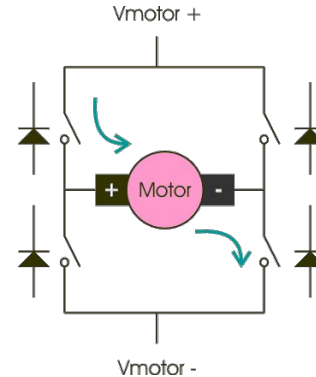
Hardware Control

- PWM generation
- Timer calibration
- Bridge switching



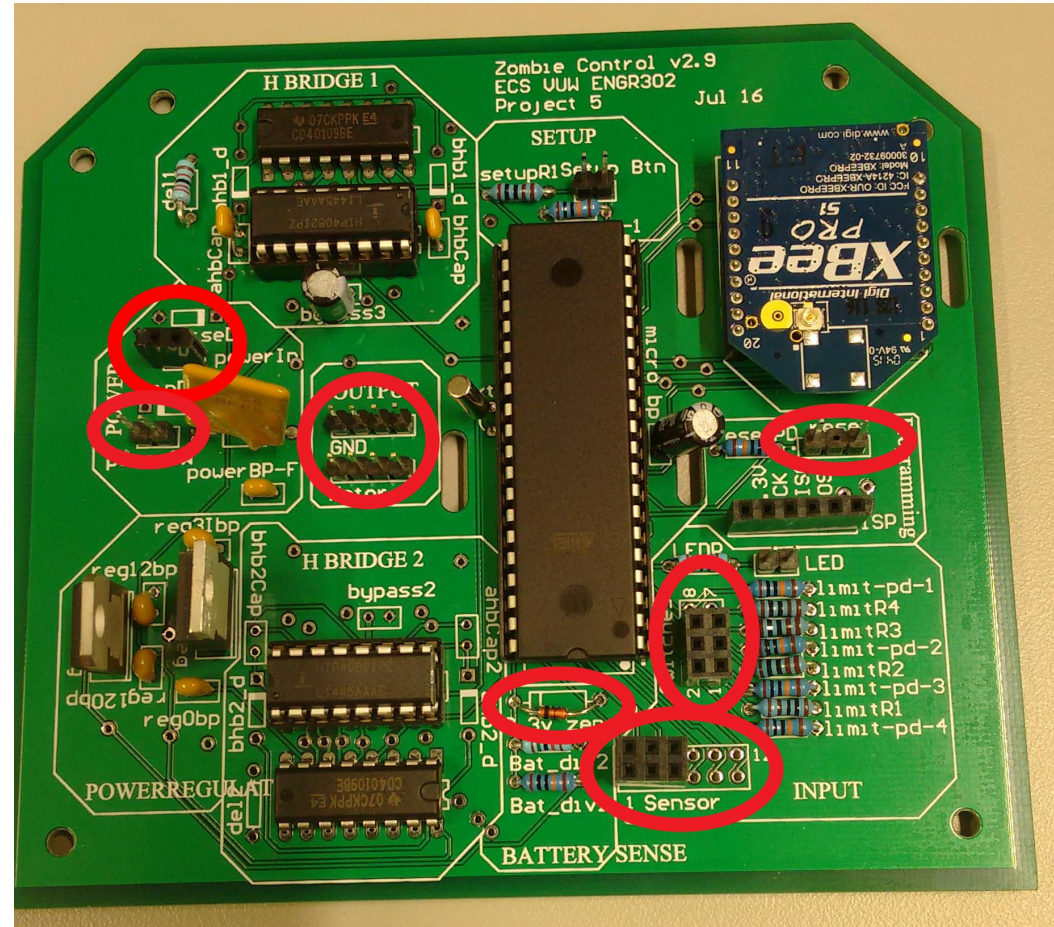
H-Bridge Revision

- From discrete to monolithic
- More robust
- Smaller build



Incorrect footprints

Planned re-design over break



PCB Re-Design

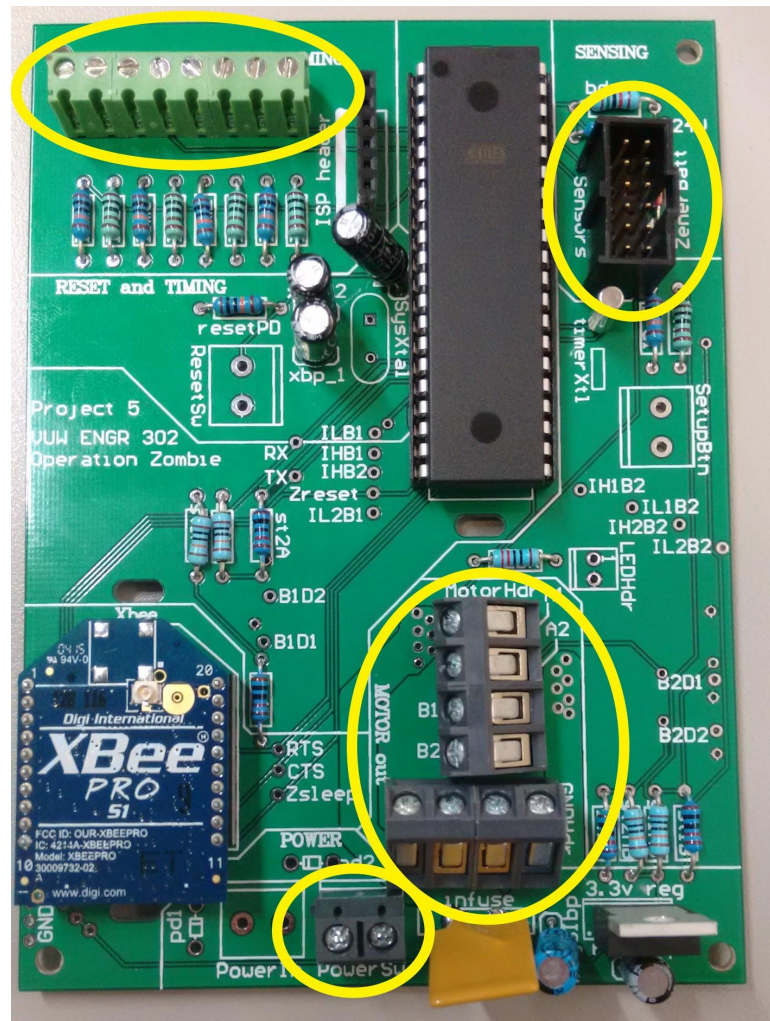
New footprints

Altered layout

Greater spacing between parts

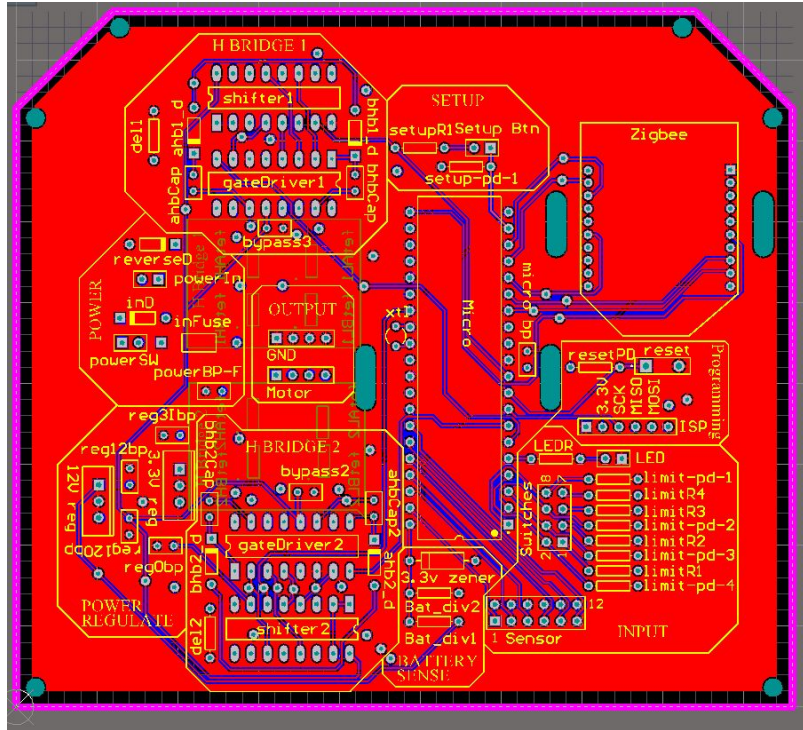
Reduced component count

Increased budget



PCB Old v. New

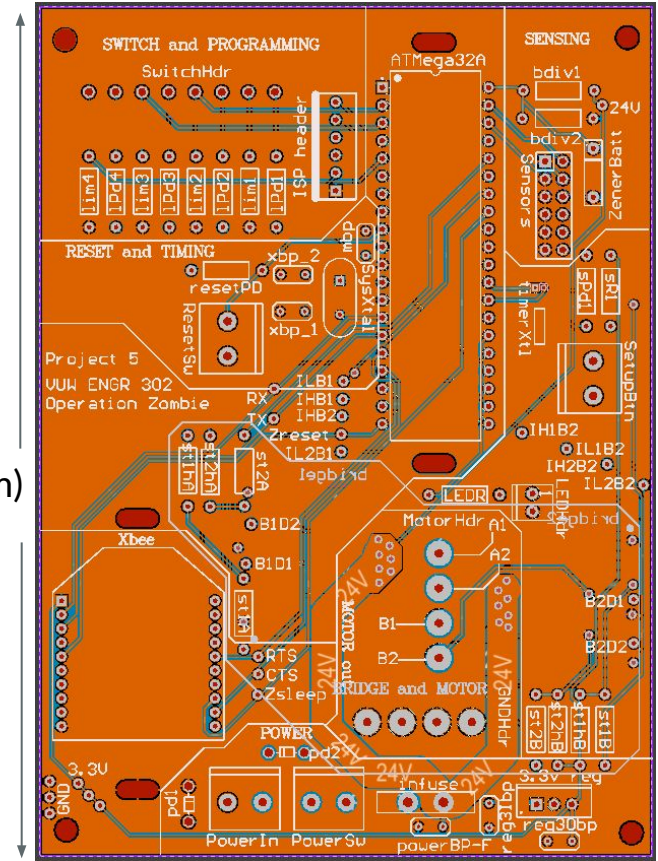
115 (mm)



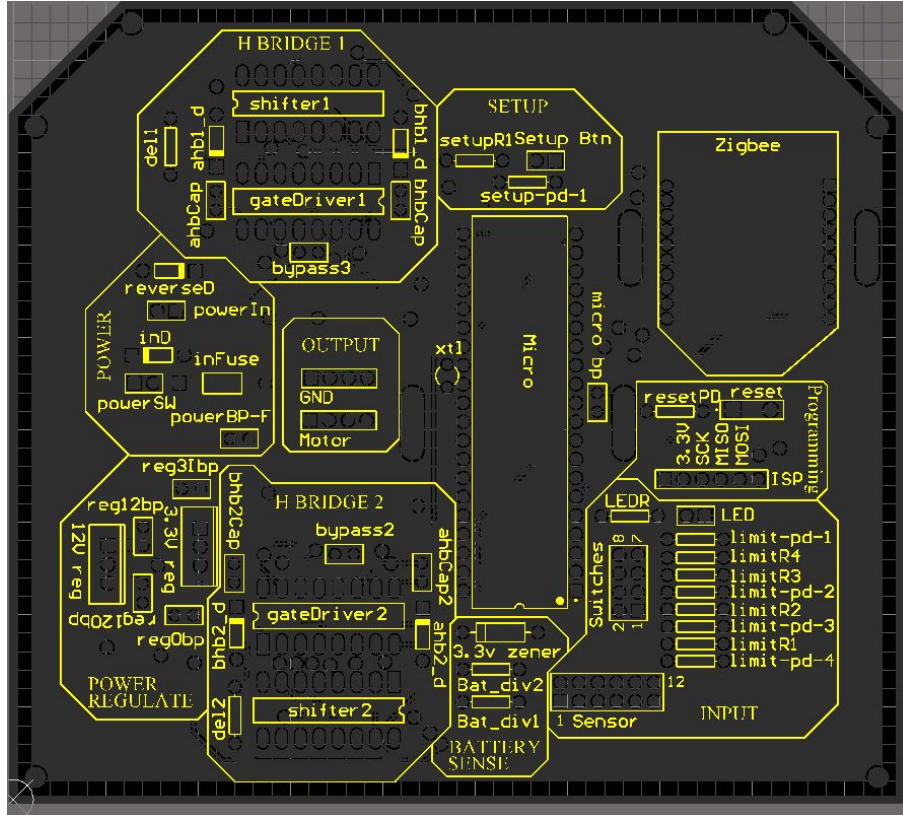
102.5 (mm)

121.5 (mm)

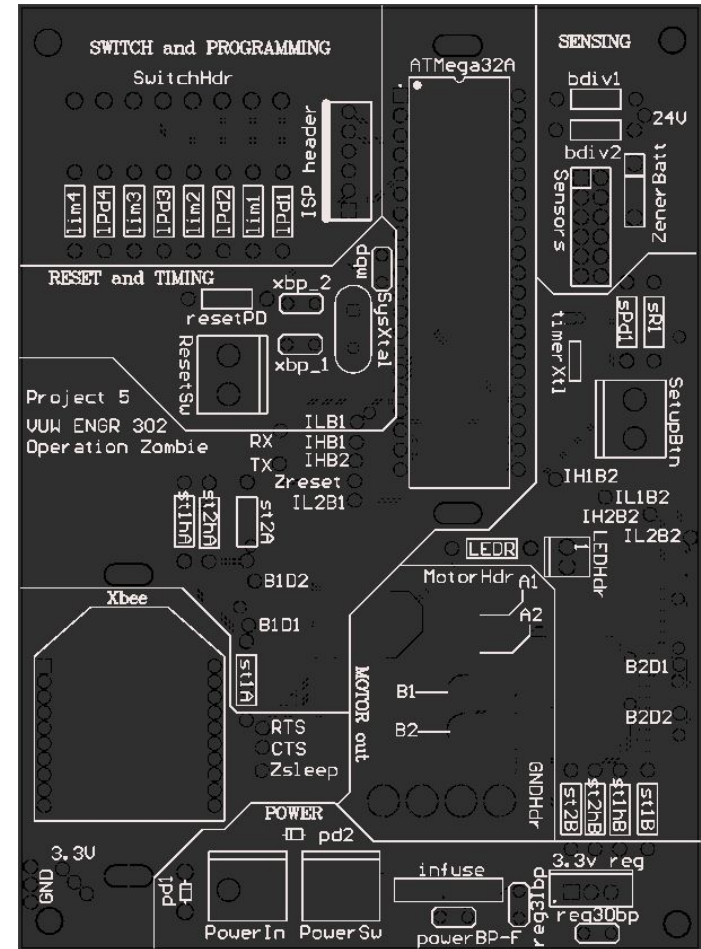
Patrick
87 (mm)



PCB Old v. New



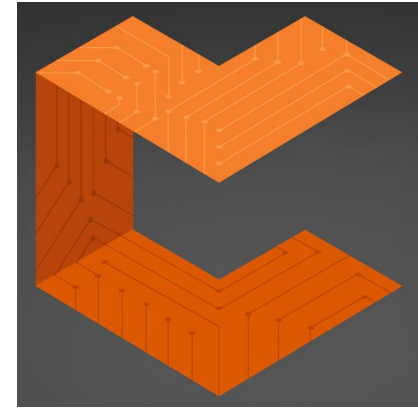
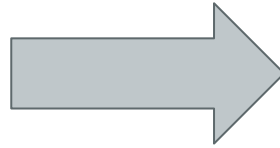
Patrick



PCB Software

Patrick

Altium
Designer®

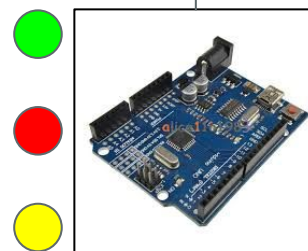
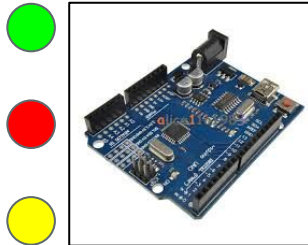
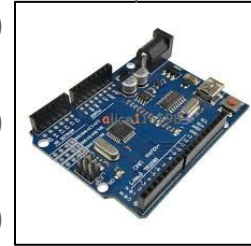
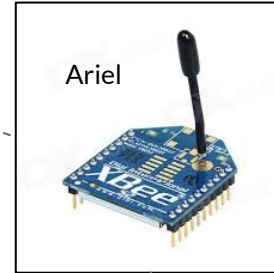
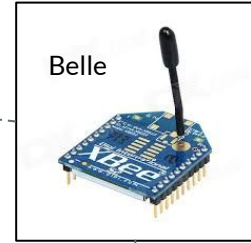


- Licensed
- Professional
- Complete toolset
- Subscription based cloud storage and source control

- Free
- Hobbyist
- Comprehensive toolset
- Free cloud based source control

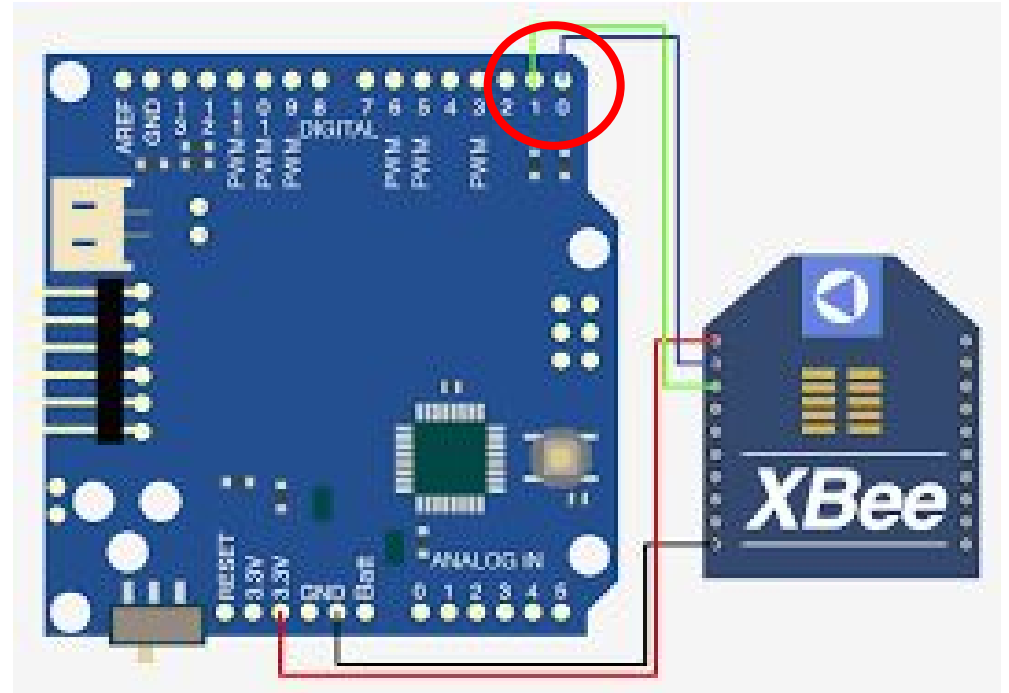
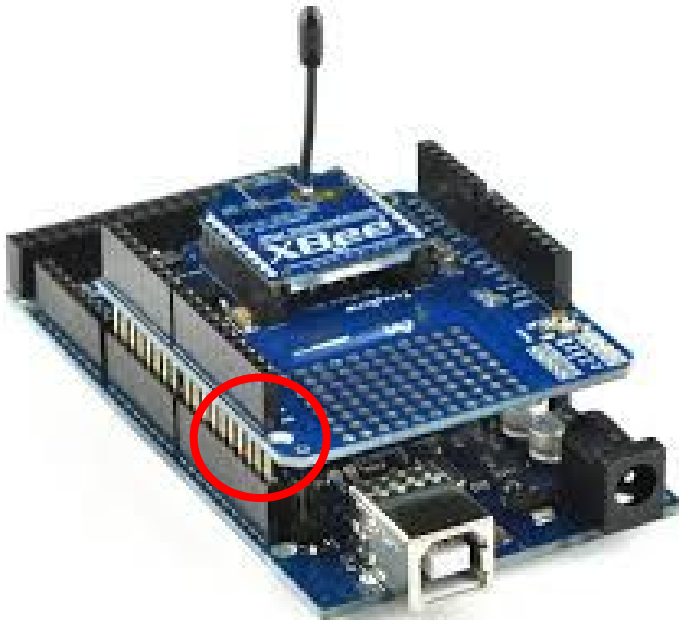
What The Network Looks Like:

Kandice



...and it works!

XBEE Test Rig Hardware



<http://www.tinyosshop.com/index>

Integration With Hardware

- Cannot send RAW data (such as 0x00)
- Timing issues
- Nothing gets to microprocessor



AT Mode

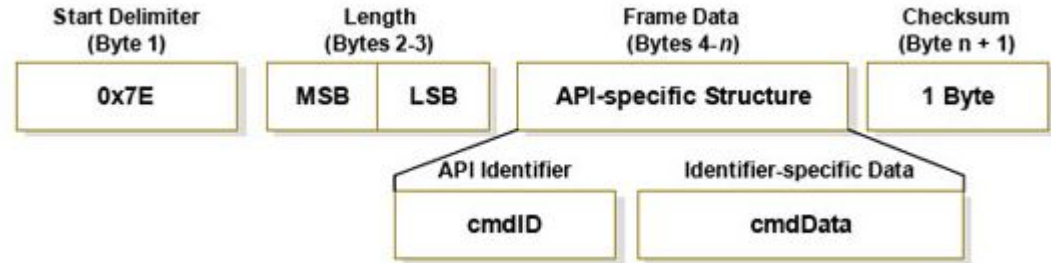
Changing to AT Mode may have some negative effects....



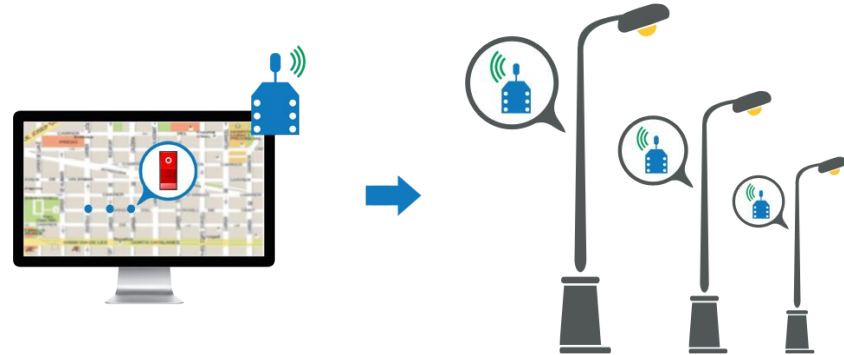
...but will allow us to deliver the product on time!

Network Software

- API Mode
 - General Idea
 - Frame Structure



- Software Aspects
 - Parser
 - Name of Nodes
 - Opcodes



Network and Software Integration

