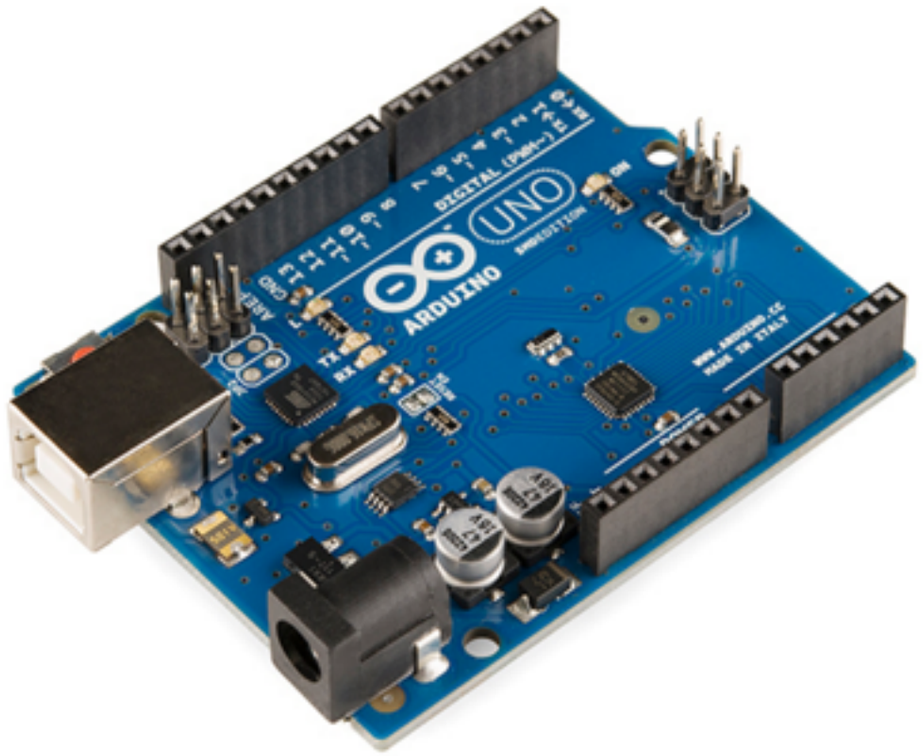
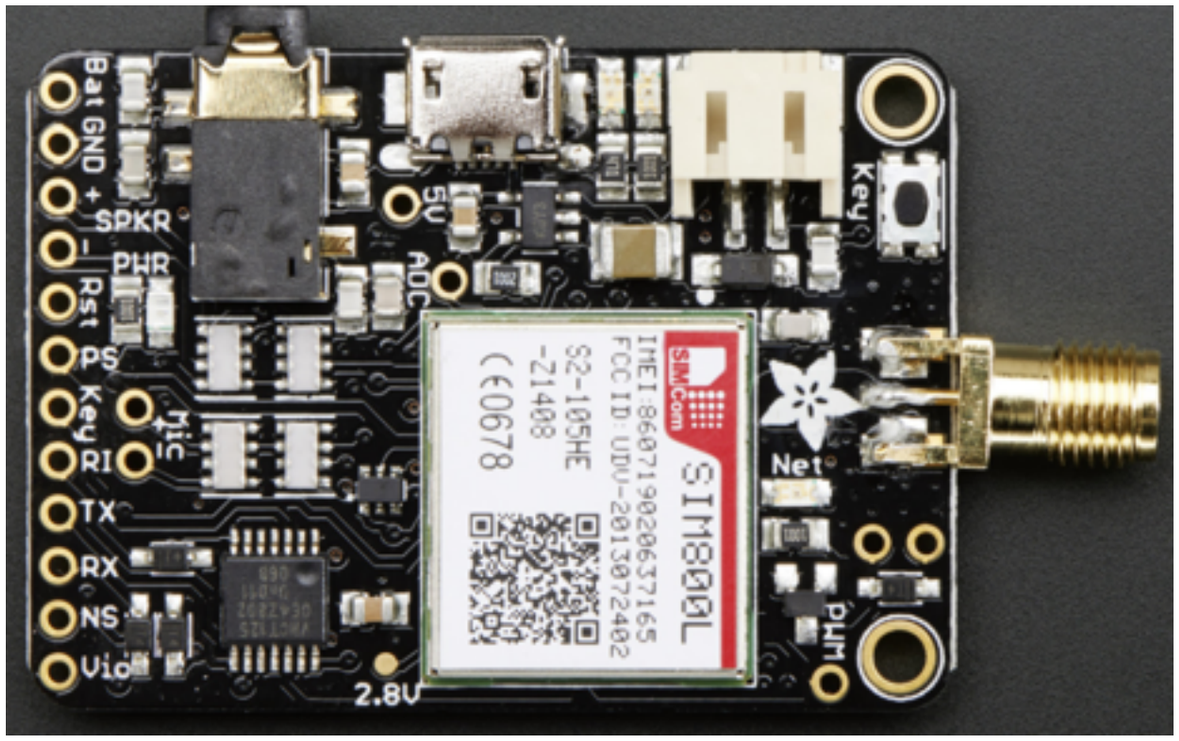




Arduino Bootcamp : Learning Through Projects

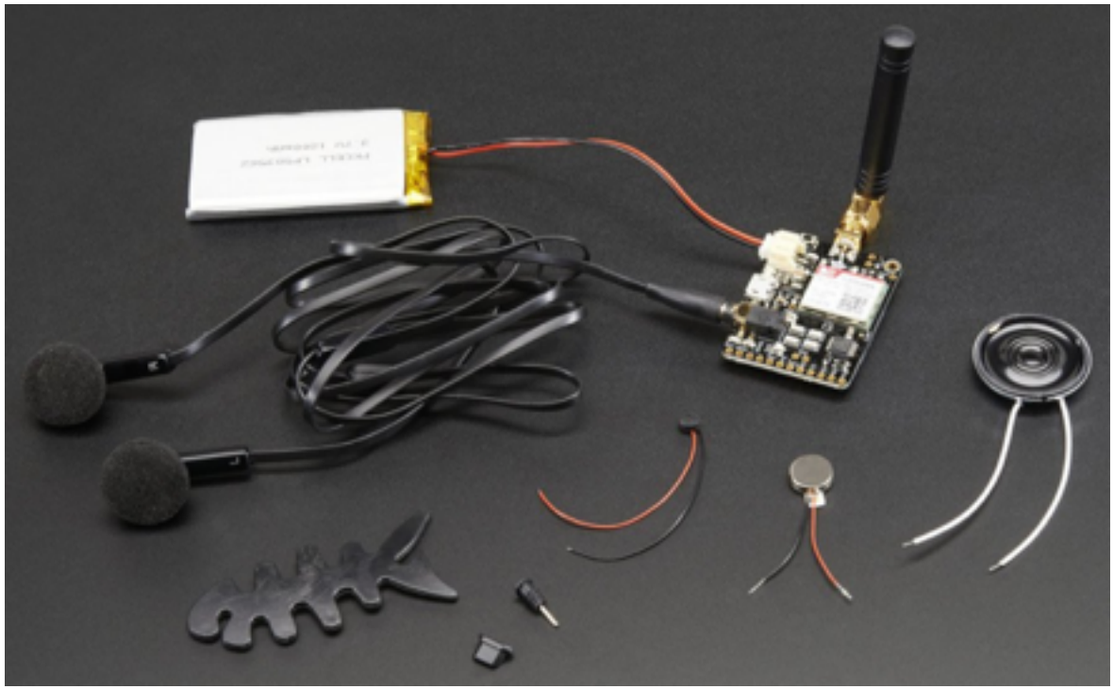
Open Source Phone - Understanding the components - Part 1

Project Objectives

- In this project you will learn:
  - The components needed to make your open source phone
  - How they are connected together

Parts

- Arduino Uno
- USB A-B cable
- Adafruit FONA 800 Breakout Board (MiniGSM) or the Adafruit FONA 800 Shield
- 1x Right-angle Mini GSM/Cellular Quad-Band Antenna - 2dBi SMA Plug
- 1x Lithium Ion Polymer Battery - 3.7v 1200mAh
- 1x Cell-phone TRRS Headset - Earbud Headphones w/ Microphone
- 2G Sim Card (USA can use Ting from T-Mobile)
- Connecting wires



Extras to enhance project

- 1x Mini Metal Speaker w/ Wires - 8 ohm 0.5W
- 1x Vibrating Mini Motor Disc
- 1x Wired Miniature Electret Microphone

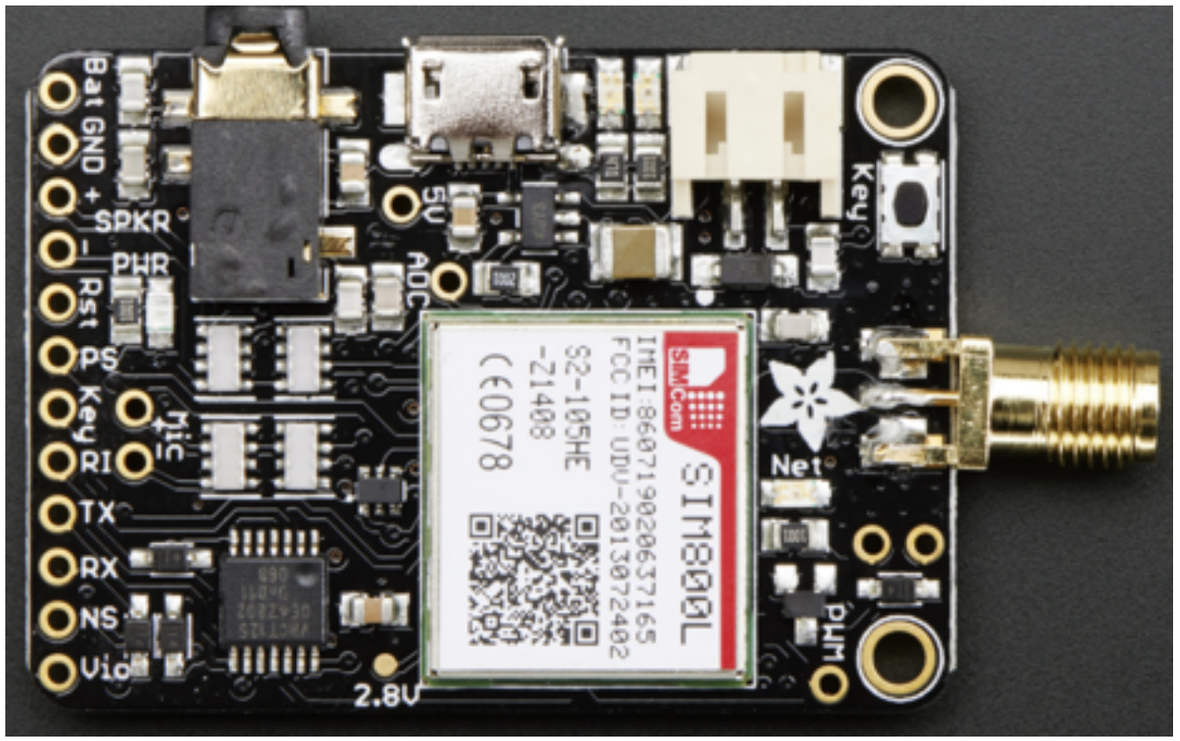
Phone Features

- Can connect to any global GSM Network with any 2G SIM
- Can make and receive calls
- Send and receive SMS messages
- Send and receive GPRS data (TCP/IP, HTTP etc)
- Can scan and receive FM broadcasts
- AT command interface with "auto baud" detection
- PWM/Buzzer vibrational motor control
- Onboard LiPoly battery charging circuitry to recharge your LiPo

FONA MiniGSM Pinouts and Connections

Connectors

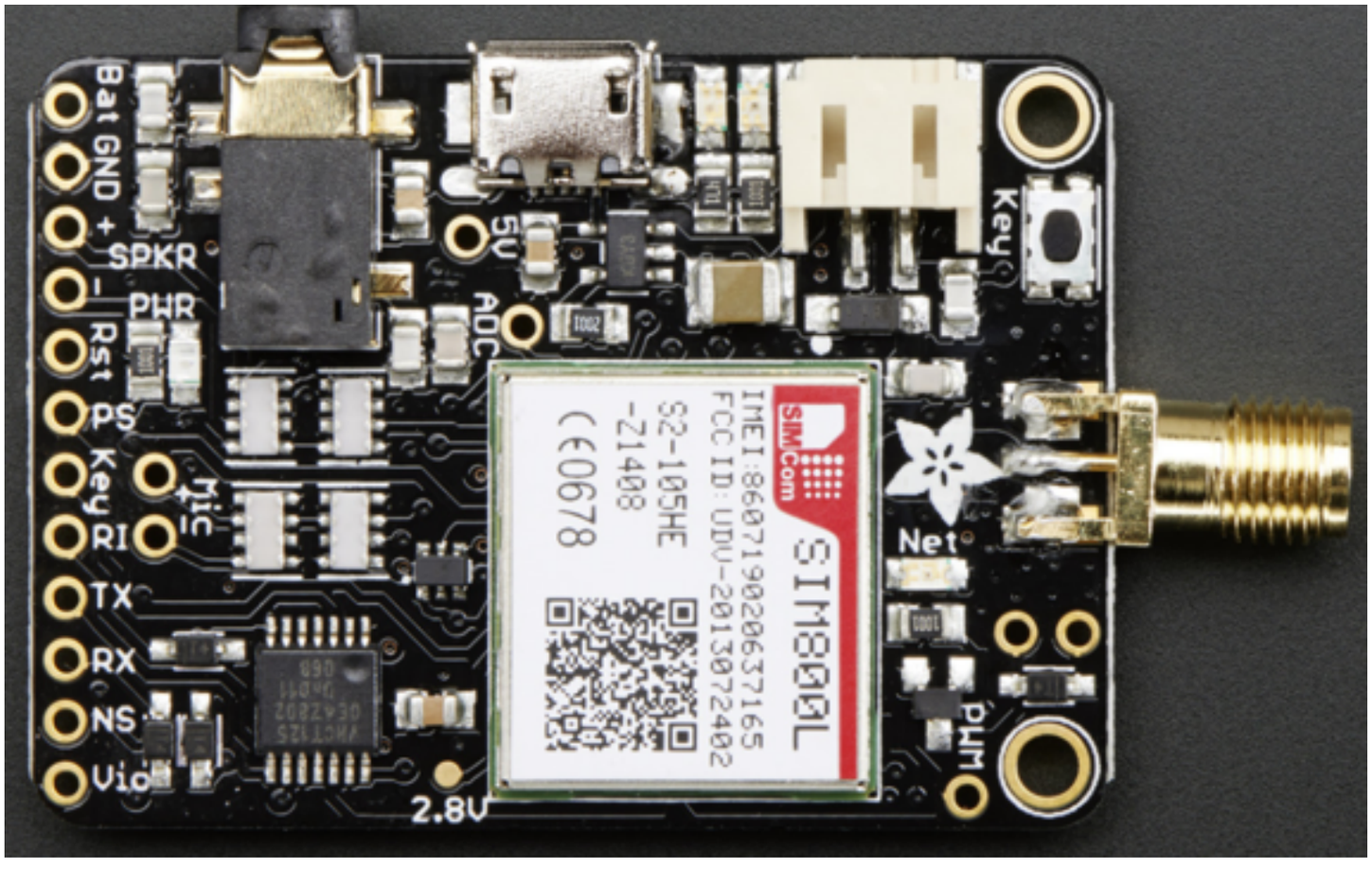
Connector	Purpose
JST 2-pin	Battery input
Micro USB	LiPoly/LiIon charging port
Headset Jack	TRRS 3.5mm phone headset
Antenna Port	Quad band GSM/GPRS
Sim connector (back)	2G Sim Card



FONA MiniGSM Pinouts and Connections

Board Pinouts

Board Pin	Purpose	Arduino Connection
Vio	Power	5V
VBAT	Same pins as 2-pin JST	
GND	Same pins as 2-pin JST	GND
Key	Power On/Off indicator	GND
PS	Power Status Pin	
NS	Network Status Pin	
RST	Module Hard reset	4
RX	UART	2
TX	UART	3
RI	Ring Indicator	
SPKR + -	For connecting external speaker	
Mic + -	For connecting external microphone	



Obtaining a SIM

- In US
    - 2G Mini SIM is required (not MicroSIM)
        - AT &T shutting down their 2G SIM network support
        - T-Mobile sells and still supports 2G technology
        - TING recommended
- Outside the US
    - You will need to look for a 2G SIM with a local carrier for a GSM network
- 3G model of this phone available but it is new and software is not yet mature

Assembly

- Header strip will need to be attached (soldered) onto the breakout board
- Attach antenna and battery
- Insert the SIM card
- Make the appropriate Arduino connections

Summary

- In this project you learnt:
  - The components needed to make your open source phone
  - How to assemble and wire up the FONA 800 GSM breakout board