Reflections
FROM STARLINGWATCH.COM 2019

Steam Board v3 Statement of Work (SOW)

Frank Cohen DBA Starling Watch Company (Starling) in July 2018 contracted and paid in advance $3,500 USD with Shenzhen AFU Smart Internet Technology Co., Ltd. (AFU) to develop a new logic board (Steam) for a wrist watch project (Reflections). AFU put a great amount off effort and resources into meeting Starling's needs. Starling seeks to compensate AFU for the extra effort and contract additional changes to the board.

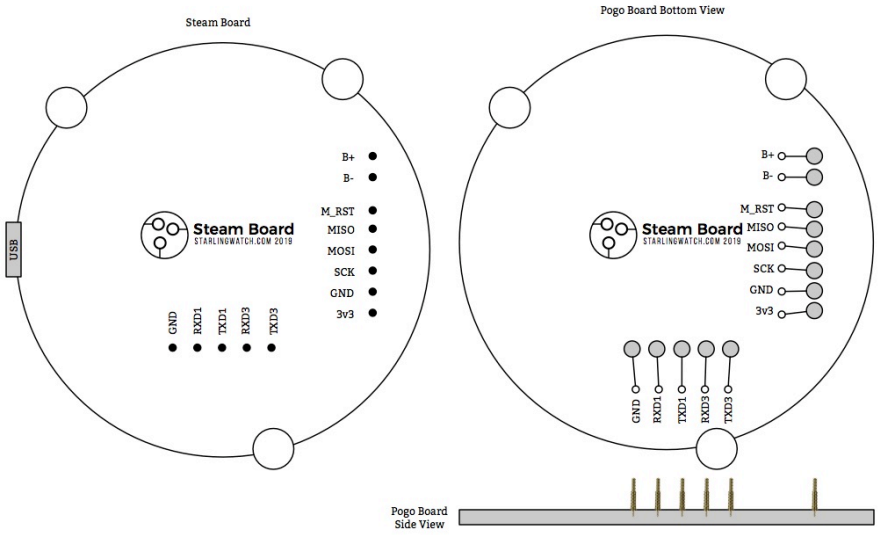
Needs and Goals

1. Make the changes to the Power_Hold circuit final.
2. Remove these components from the v1 board: sw1, sw2, 3-way switch, USB micro connector, heart sensor board connector (header 4), and header 3. Add connection pads to the back of the board for these connections:

USB	VCC	GND	D-	D+	SE	
Mesa Projection Unit	GND	3v3	LED_DAT	ADCO		
Input Buttons	Switch Left	Switch Center	Switch Right			
Reset switches	SW1 + (MCU)	SW1 - (MCU)	SW2 + (BLE)	SW2 - (BLE)		
MCU Programmer	MCU_Reset	MISO	MOSI	SCK	MCU_3v3	MCU_GND
BLE Programmer	Target Voltage Sense	GND	Reset	DEBUG_DATA P2_1	DEBUG_CLOCK P2_2	
BLE	TXD1	RXD1	TXD3	RXD3		
Reset switches	MCU Reset	BLE Reset				
Battery	B+	B-				
GPS	Antenna +	Antenna -				
Microphone	Microphone +	Microphone -				
Speaker	Speaker +	Speaker -				
Vibrator	Vibrator +	Vibrator -				
Heart Sensor	Heart +	Heart -				

3. All pads exposed on the bottom side for connection with the Programming Fixture Pogo-Pin Board.
4. Add Reflections Logo to board silk.
5. Relocate RTC battery to top of board, and use a CR1216 battery.
6. Provide schematic, silk board trace, Gerber, Cadence OrCAD files to Starling.

7. Programming Fixture Pogo-Pin Board Requirements
    a. Make a second PC board that Starling engineers will use as a programming fixture.
    b. Starling will make a programming fixture box. The box removes the need for connectors on the Steam board. The Steam board fits into the fixture box and connects to a power supply, peripherals, and via USB to a PC running Arduino IDE.
    c. Pogo board is 45 mm round and 1.57 mm thick.
    d. Includes three 4 mm notches in the Pogo board for mounting in the correct direction into a box
    e. Use 0908-4-15-20-75-14-11-0 pogo pins or similar, for example http://bit.ly/2u8cpY3
    f. Pogo board has through-the-hole connectors to each pogo pin.



Note: Not all connection pads and pogo connectors shown in above illustration.

8. Provide Starling with MCU Bootloader Source Code
    a. Builds in Arduino IDE 1.8.5 using avr-gcc 4.9.2 compile command
    b. Compiles to .hex file format
    c. Arduino IDE boards.txt configuration for Steam board.
    d. Implements STK500v2 protocol over a USB serial connection from the BLE cc2540 chip running at 32700 baud (8bits-1stop bit)

9. Provide Starling with BLE Program/Firmware Source Code
    a. Compiles to .hex file format
    b. Compatible with Texas Instruments CC-Debugger to update the BLE program.

Acceptance Criteria

1. Connect the board to the Pogo board
2. Connect the Pogo board to a Windows 10 laptop over USB cable
3. Connect through the Pogo board to cc 2540 debug programmer
4. Connect through the Pogo board to Mega 2560 MCU programmer

5. Connect through the Pogo board GPS antenna, microphone, speaker, Mesa projector, switch left, center, and right, battery, vibrator motor, heart rate sensor
6. Update boards.txt
7. Program the BLE unit
8. Program the MCU unit
9. Open Arduino IDE, open test program/sketch, compile and upload the test program to the board, open the serial monitor, and be able to run the test program functions

Schedule

Anfuyou sign-off on the specification in this document, April 22, 2019

Software delivered to Starling, April 24, 2019

Board changes completed, April 29, 2019

Pogo board completed, May 3, 2019

All deliverables delivered to Frank Cohen, May 6, 2019

Acceptance criteria success, May 7, 2019

Anfuyou sends 10 Steam boards and 5 Pogo boards to Frank Cohen, May 8, 2019

All dates are China Standard Time (CST).

Terms

- Frank Cohen to pay Anfuyou $1,000 USD on Anfuyou sign-off of this SOW document and delivery of the MCU and BLE source code. Payment by cash.
- Frank Cohen to pay Anfuyou $1,500 USD on delivery of the board changes (Provide schematic, silk board trace, Gerber, Cadence OrCAD files to Starling). Proposed for April 29, 2019.
- Full and final payment of $1,500 USD on Frank Cohen's successful completion of the acceptance criteria. Payment by international bank wire to Anfuyou's bank.
- Anfuyou to pay shipping costs, unless pre-approved by Frank Cohen.
- Anfuyou agrees to provide a perpetual, worldwide, non-revocable, fully paid, transferable license to use and distribute the software and hardware developed under this agreement.

Agreement

Starling Watch Company	Anfuyou Intelligent Internet Technology Co.
_____	_____
signature	signature
_____	_____
title	title
_____	_____
date	date