Power

- Is the schematic right?
 - Need vias so can get heat from top to the bottom (for regulator?) (based on datasheet layout)
 - Replace external switches/buttons with pads
 - Order specific capacitors, inductor, resistor, and schottky diode for regulator.
 - Double check all basic component footprints (e.g., ensure that resistors are right size; don't want to accidentally order board with smaller footprints)
- Is it ok to just cut off power when turning the device off or do we need to use low power mode?
 - Can just turn it off

Auto-programming circuit?

- CP2102(?) part for programming over the serial line
- Either connect USB D+/D- to the appropriate pins on the microcontroller or have somewhere on the board to connect to program it by serial
- Probably worth our time to connect it to the USB so that don't have to put it in boot mode every time
- Can have header pins to TX and RX and program that way but then have to be able to get into boot mode
- Reset and boot connect to white connector on the left of the board schafer gave lindsey
- There are specific pins on microcontroller that are D+/D- and need to be routed as a differential pair, can program it fine with those (connect to cdc like we did with c6 last semester, there might be some weird things to have to tell it in the code to run serially – cdc on boot for arduino to map where print goes)
- Wtf was the point of that???!!!!!
- So basically he said all that when all we need to do is connect two pins
- That we already have connected??
- Wait lowkey maybe those aren't connected to the esp32

SD card

- microSD cards run at 3.3 V max
- Processor already runs at 3.3, no need for regulator
- Go to sparkfun or adafruit and look at breakout boards, which have schematics
- No need for 5 V anywhere
- The module we got needs 4.5-5.5V input but then shifts it down, when tried from 3.3V the voltage wasn't enough for the dropout voltage
- Check the footprint vs the spec sheet to make sure have specific correct footprint
- Write (right?) protect is a switch that is open or closed based on where the slide thing is when you put the card in, affects one of the signals
- Spring-loaded (push-push) is probably a bad idea, can easily pop out

• He has seen sd cards with pull up resistors and without on the signals

Strapping pins

• 10k pull up for GPIO0 (because of weak existing pull up)

External clock (crystal oscillator)

• Already have it on the S3

- Also a flash memory chip already on the esp32 s3
- Probably a 40 mHz crystal

GPS

• API that triangulates location

Problem with just using the Wifi access point for location

Potentiometer flash

- Need to make it an actual flash not just a light MOSFET
- 3W light

Heat dissipation on the DC-DC

Could do packets for spi to get the display working at startup, gfx not optimized for fast

Things to do before meeting:

Add decoupling capacitors for ESP32 Second battery monitor Add strapping pins SD card socket layout Decide a screen for sure On button wifi/bluetooth switch DC converter stuff Mosfet for potentiometer Add footprints Reset and boot buttons Edit button sizes Laser pad? Make PCB Mounting holes and fiducial Add resistors to switches (not debouncing, just for correct hardware?)