4/8/2025 | NEXASENSEE Agenda

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DesignReview3_doc
MeetingMinutes

Overview for this meeting
1. Review end-to-end demonstration plan
2. End-to-end demonstration
    a. Sensor Subsystem
        i. Show measurements of light intensity and relative sound intensity, taken at regular intervals.
            1. Record some saying
                a. Help me I've fallen
                b. Alarm beeping sound
        ii. BME680 breakout board is not currently working.
    b. Optical Communications Subsystem
        i. Show the amplified output signal of the receiver photodiode on an oscilloscope, while the transmitter at the required distance of 10 ft. from the receiver.
        ii. Show that sensor data has been accurately received by the receiving microcontroller.
    c. Data Processing and Integration Subsystem
        i. Show successful encoding and decoding of sensor data with (8,4) Hamming codes. Show robustness to artificially introduced bit errors.
        ii. Communication to the central console via Ethernet was working. However, Ethernet ports have stopped working (currently in contact with OIT).
    d. Power Subsystem
        i. Detailed explanation of chosen components, designed schematic, and PCB layout for the different power IC's.
            1. Stock parts on automatic; everything else on the manual
            2. 180x180 screen
            3. Keep the extra capacitor spot
            4. Copper that looks like those three pieces
            5. Separate pours altogether (give them different names)

Progress Updates
- Boards will soon be ordered.

Areas of concern
- Many versions of the ESP32-S2 are or will soon be obsolete.

- ○ Schafer advises to use S3!
  - ■ Idle core
  - ■ We want to use what we developed up
  - ■ We want a forward-thinking design (something that is obsolete is not)
  - ■ Buy a bigger battery if needed
- Waiting for response from OIT on access to Ethernet ports in Stinson 205.
  - ○ Stinson 109 ports
  - ○