CC3501 weekly report example

**Group number:** 2 **Team members:** Hunter Kruger-Ilingworth, Thomas Mehes, Quentin Bouet   
**Week number:** 9

**Progress this week:**

|  |  |  |  |  |
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| **Task** | **Who did it?** | **What were the outcomes?** | **Who did the peer review?** | **What did you learn?** |
| Work on Schematic | Quentin Thomas | Connect pins to RP2040 (debug, DAC, flash, SDI-12/tranceiver, dew point generator (DPG)). Add layout notes. Add decoupling capacitors. Fix errors. Clean up schematic. Add JLCPCB part numbers and verify some components. Move RP2040 power supply from USB to barrel jack. | Hunter | Redundant capacitors were removed. Zener diodes were added to protect the RP2040 analogue inputs. |
| Work on PCB | Thomas  Quentin | drew tracks, resized board, defined layers. Design rule check | Hunter | Layout adjustments were required, such as reducing distance of decoupling capacitors for the USB flash. Power tracks were thickened. SD card routing optimised |
| Submit board | Quentin | Uploaded the output files and BOM to Altium and verified the IC orientations | Thomas, Terence | No errors were present |
| Implement SD card library | Hunter | Followed the documentation provided by [this repository](https://github.com/carlk3/no-OS-FatFS-SD-SPI-RPi-Pico/tree/196016f525e5b9c161f2b965ddd3045a4ef87649) to get reading and writing to a micro sd card to work on the microSD card breakout board (using the Fatfs api). It was wired up using the SPI protocol. | Quentin Laurance | Gave insight as to the plan for the software whilst the board is being fabricated (get a rudimentary i2c driver for the DAC working, even if we do not yet have something to prototype with) |
| Analyse the characteristics of the scale | Hunter | Discovered a significant deadzone in the client's scale apparatus when cross-referencing objects' mass using a scale. Accounting for this deadzone (red line) improved the accuracy of output voltage predictions, as confirmed by preliminary plotting. | Hunter Laurance | Persistent vibrations in the apparatus due to its non-rigid construction. A software solution to average past data points was suggested to cancel out oscillations, rather than a hardware or digital low pass filter |

**Overall project tracking:**

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| --- | --- |
| **Week number** | **Milestones** |
| 4 | Confirm project topic |
| 5 | Begin Overview and planning |
| 6 | Hardware design: Microcontroller, DAC, SD card, flash and usb interface |
| 7 | Hardware design: Voltage regulators, loadcell circuit layout and testing, SDI-12 testing and interfacing and Informal check with Laurance |
| 8 | Hardware design: write working SDI-12 code, start PCB layout  Finalise draft schematic for Laurance to review. |
| 9 | Finish PCB layout and review to make sure all design rules pass. Implement fixes to the PCB. Final PCB design submitted on Friday to Terence |
| LR | Software: Begin development that doesn’t require hardware testing  Report: begin report writing |
| 10 | Hardware: Solder components to PCB and begin interfacing  Software: Coding to receive data from I^2C DAC and optimise more SDI-12 sensor code |
| 11 | Software: data logging applications including averaging, variable sampling periods and clean exported data. |
| 12 | Verify all hardware functionality, perform testing of existing software on the physical board. Polish the software. |
| 13 | Implement final bug fixes.  Write the report.  Demo day during Friday lab. |