

## Original Objectives

Goals for the 2019-2020 MiniBERT Team:

- . Solve the flash memory bug
- . Move the power from the daughter board to the main board
- . Redesign the board
- . Make a housing for the board

Accomplished Goals:

- . Move the power from the daughter board to the main board
- . Redesign the board
- . Make a housing for the board

Unaccomplished Goals:

- . Solving flash memory bug

## Requirements

Requirements Met:

- Handheld
- User friendly
- Transmit 10Gb/s
- On-board power supply
- Power indicator
- Start / run button
- Reset button
- Display data
- Proper user controls
- Access to diagnostic ports
- Low weight

Requirements not met and why:

- . Boots correctly
  - . Team could not find the problem that caused the flash memory to not boot
- . Doesn't overheat
  - . Board wasn't printed therefore couldn't test
- . Withstand daily use
  - . Board wasn't printed therefore couldn't test
- . Production Ready
  - . Without all components present and ready to put together, we can't have a prototype to show and therefore cannot prove its production ready

## Concepts

The initial prototype board was handed off from the previous team, the 2019-2020 team was to design a third iteration with a case and fix the flash memory bug. The case design evolved with the board design.



## Problem Statement

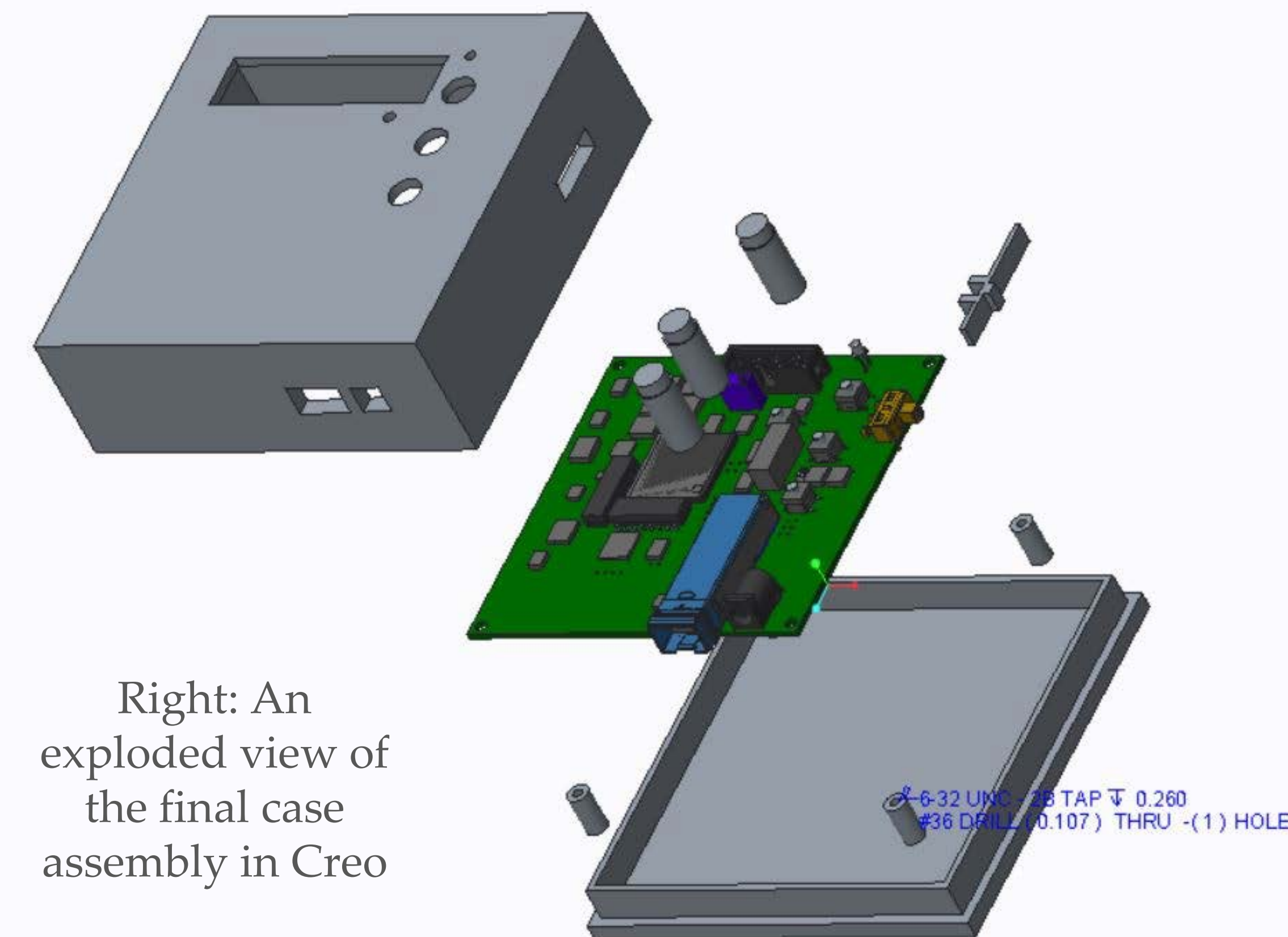
Current bit error rate testers (BERT) are expensive and not suitable for field use. The previous capstone team took a prototype BERT and reduced its size. The current iteration of the mini BERT has a boot from flash error, nonessential components, the power source is on a daughter board, and the board does not have an ergonomic case.

The boot from flash error is an error with the flash memory in which every time you power on the board you must upload the code. The memory is not storing the file correctly.

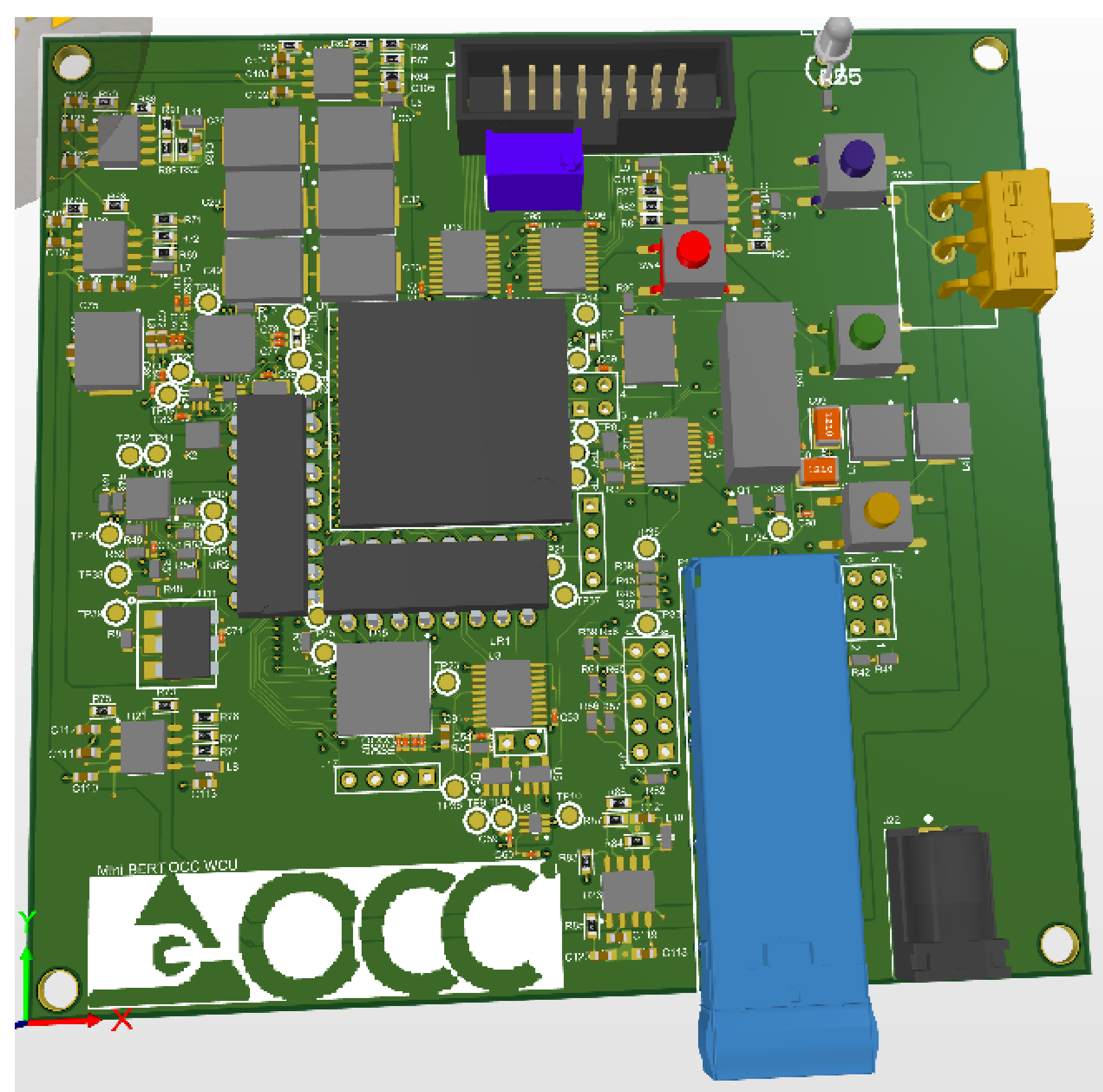
## Final Design/Results \*



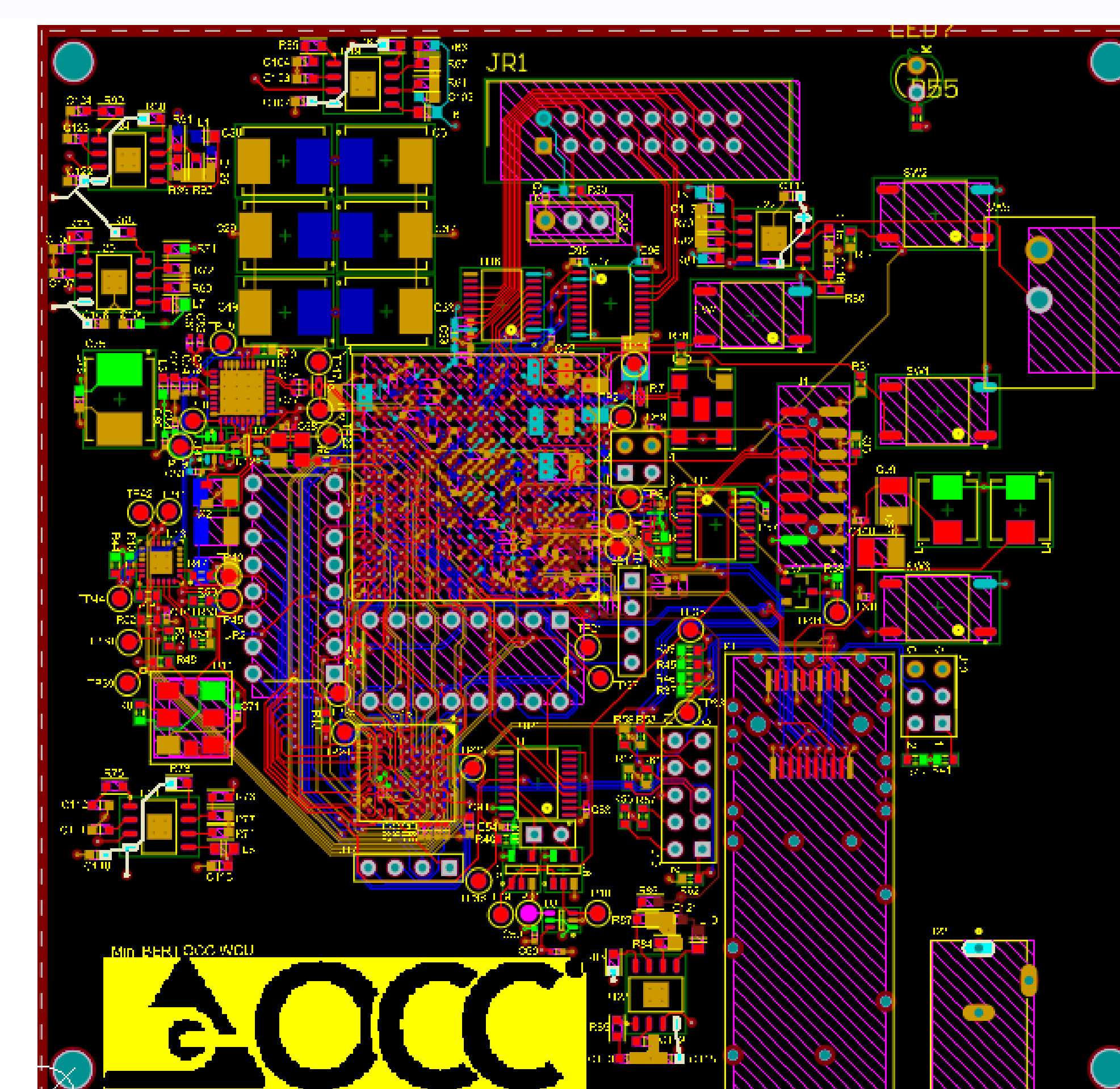
Above: Final case design assembled in Creo with button and slide switch actuators and a 3D model of this year's board



Right: An exploded view of the final case assembly in Creo



Above: 3D view of the final board design in Altium



Above: Schematic view of the final board design in Altium

\* On March 16, 2020 classes and labs were closed to students due to the COVID-19 Pandemic. Without access to fabrication and testing equipment, Objectives and Deliverables were modified accordingly.

## Modified Objectives\*

Things modified due to COVID-19

- . Working to solve the flash memory became almost impossible because the team no longer had access to the board and Vivado
- . Meetings were moved online
- . Shifted focus to documentation on what the team had done before COVID-19 and made suggestions for next year's team

COVID-19's impact on the project:

- . Due to COVID-19 the team could no longer physically work with the board to fix the flash memory
- . Failed to debug flash memory resulting in not being able to fabricate new board
- . A physical case was not able to be presented for a final demonstration

## Summary

The 19-20 MiniBERT team completed many goals that bring OCC closer to having a final product in hand. The team created a case to house the PCB and improved upon the previous year's board. While the team was able to complete most goals, the flash memory bug is still present. Although not completed, the team completed tests to weed out any underlying problems with the flash memory.

## Team & Acknowledgements

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