



# Bio-Sensor Wearable Development Board

Carl Demolder

Date 6/14/2020

# Outline

- Schedule
  - Gantt Chart update
- Progress update
  - Current progress
  - Path forward

# SCHEDULE

# Schedule Gantt chart

Task	6/3-6/7	6/7-6/14	6/14-6/21	6/21-6/28	6/28-7/5	7/5-7/12	7/19-7/26	7/26-7/31
ELECTRONICS DEVELOPMENT								
-SCHEMATIC GENERATION	✕	✕						
-PCB LAYOUT AND ROUTING			✕	●				
-HARDWARE DEBUGGING								
FIRMWARE DEVELOPMENT								
-PROJECT STACK ORGANIZATION								
-SENSOR DRIVERS								
-RTT AND SERIAL DATA LOGGING								
-FIRMWARE DEBUGGING								

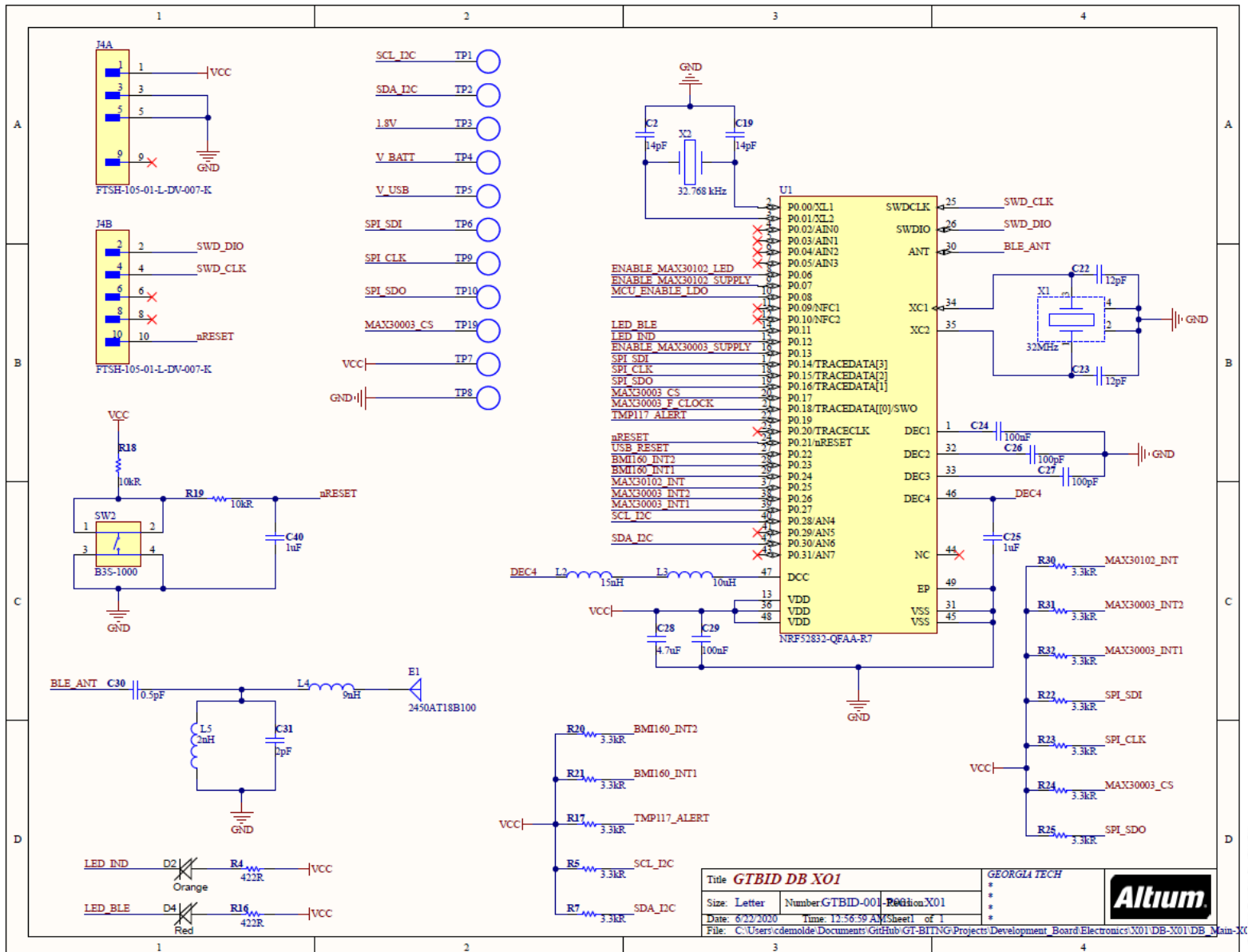
# PROGRESS TO DATE

# Electronics development: schematic

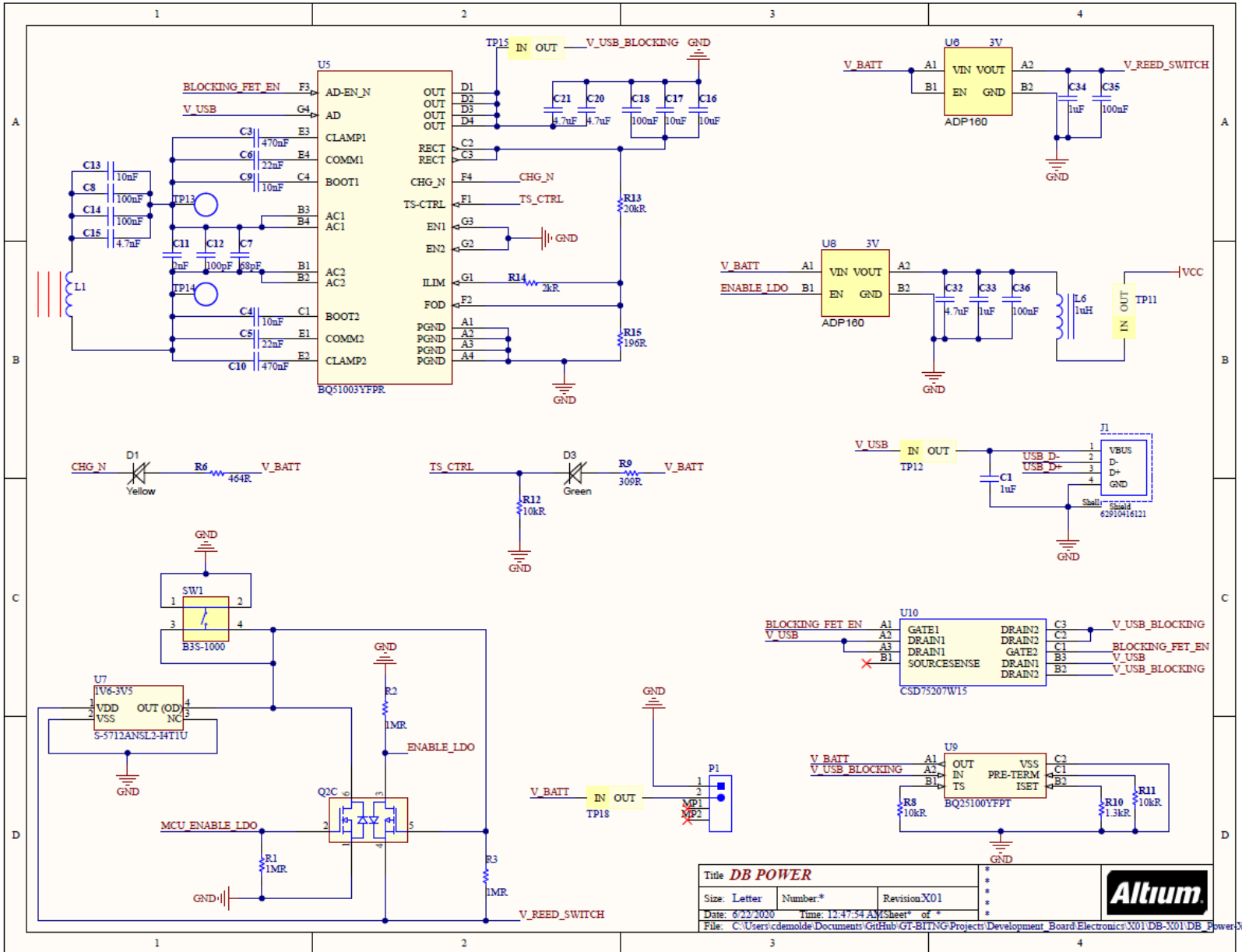
- Schematic generation
  - ~~nRF52 with supporting circuitry (2 hours)~~
  - ~~BLE antenna and impedance matching circuit (2 hours)~~
  - ~~Wireless charging (5 hours)~~
  - ~~Lithium battery charging (2 hours)~~
  - ~~UI interaction (1 hour)~~
  - ~~USB charging (2 hours)~~
  - ~~Biosensors: temperature, IMU, ECG (4 hours)~~
  - ~~Test points, connectors, jumpers (2 hours)~~
- Estimated time: 20 hours
- Actual time spent: 22 hours

\*Not in scope for current phase of development.

# Progress to date: 6/21/2020

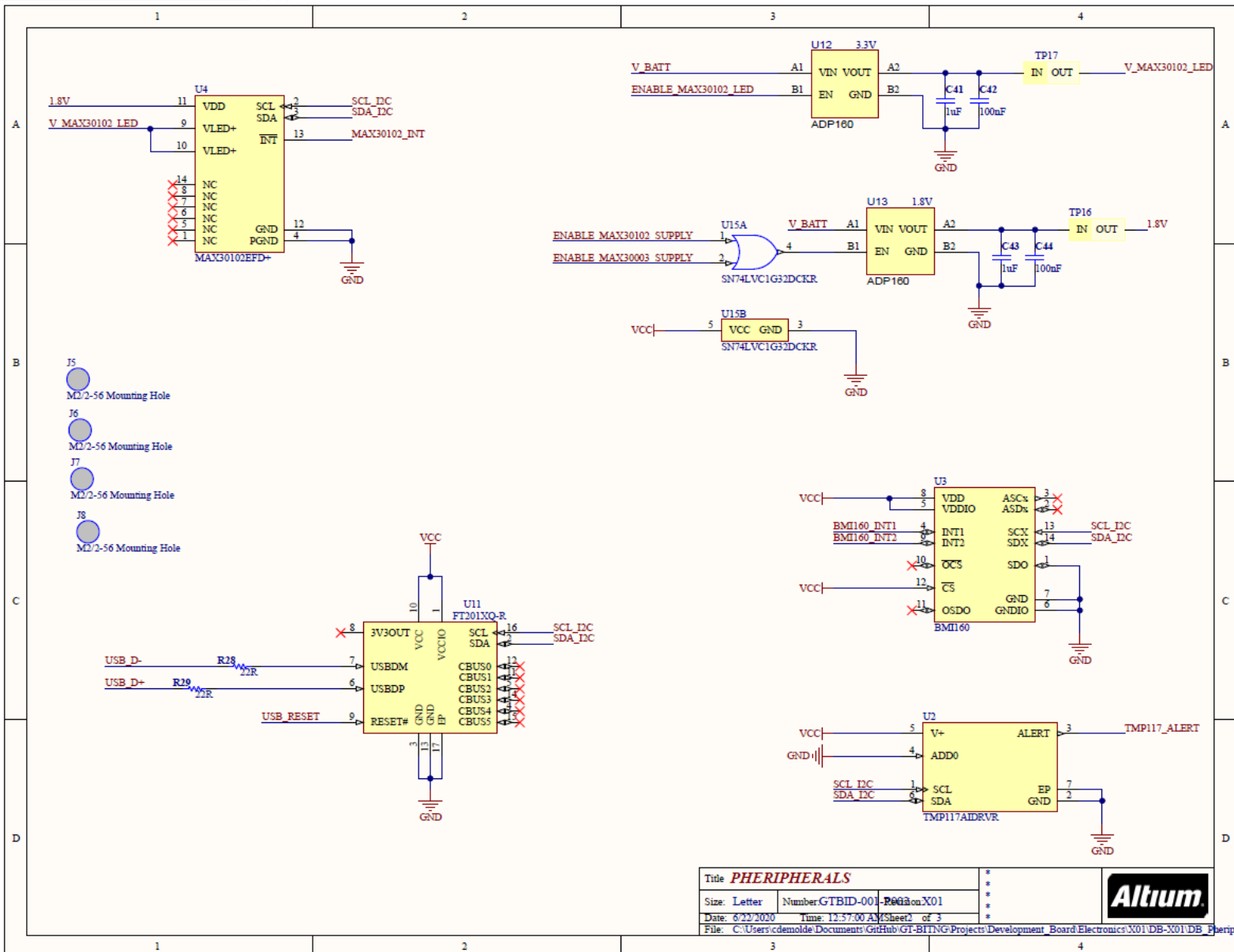


# Progress to date: 6/21/2020

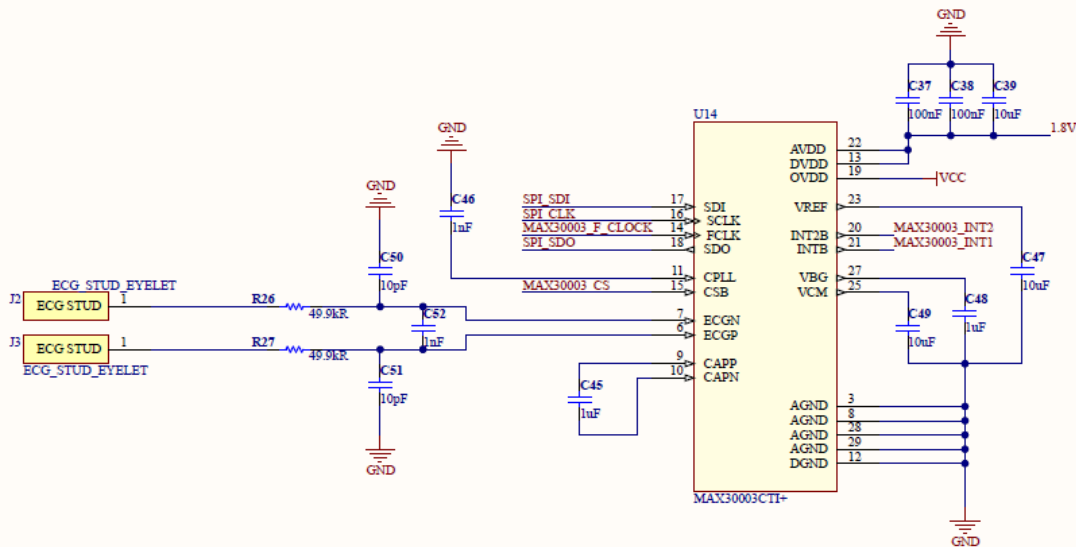




# Progress to date: 6/21/2020



# Progress to date: 6/21/2020



# Electronics development: PCB design

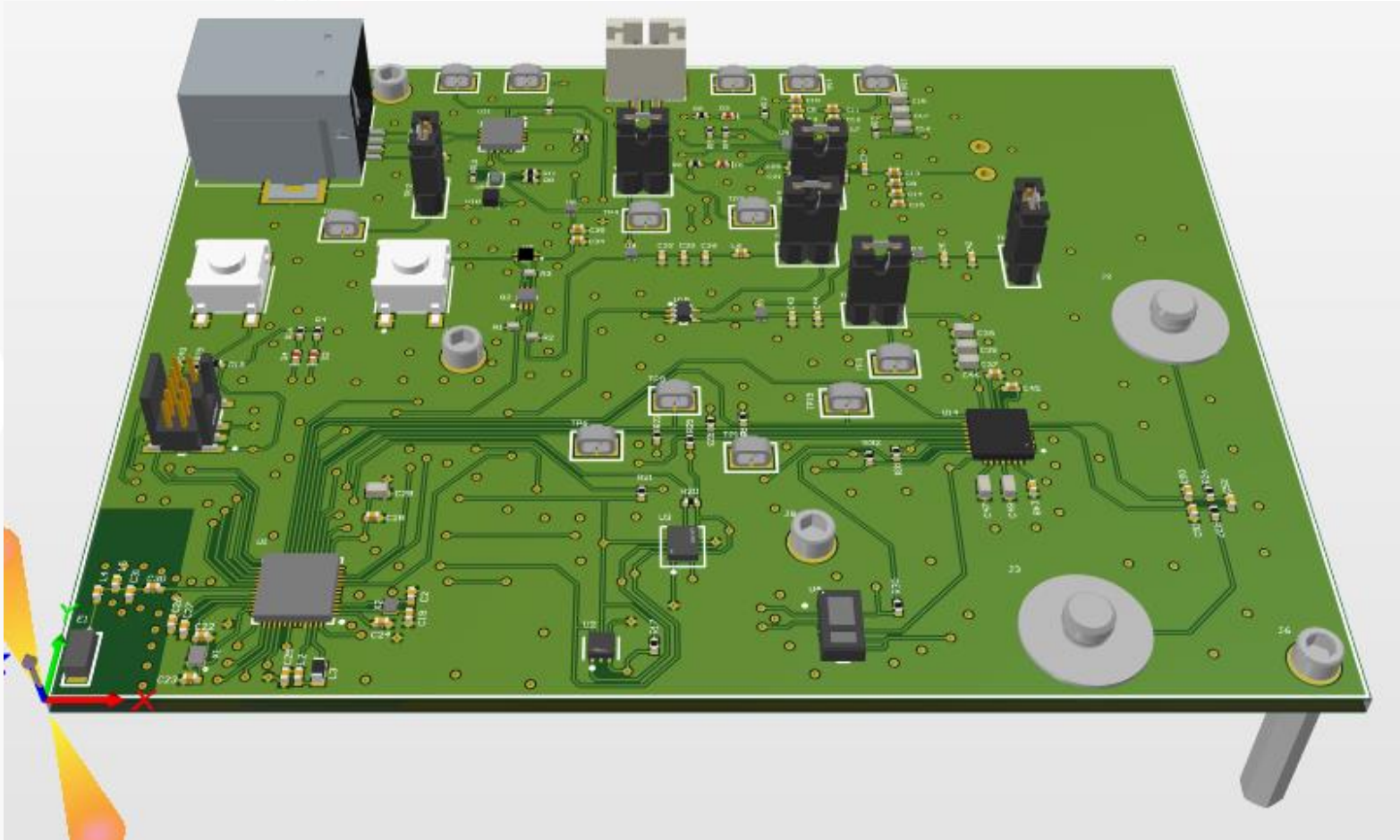
- PCB design
  - ~~Major component layout (2 hours)~~
  - BLE antenna and impedance matching circuit (3 hours)
  - ~~Wireless charging (2 hours)~~
  - ~~Lithium battery charging (1 hours)~~
  - ~~Overall board construction(1 hour)~~
  - ~~USB charging (2 hours)~~
  - ~~Biosensors: temperature, IMU, ECG (3 hours)~~
  - ~~Test points, connectors, jumpers (1 hours)~~
  - Gerber file generation (2 hours)
  - BOM generation (2 hours)







# Progress to date: 6/21/2020



# PCB manufacturing specifications

- Dimensions: 99.568 x 76.454 mm
- Layers: 2
- Minimum trace/space: 5 mil
- Minimum hole size: 6 mil
- Thickness: 1.6mm
- Solder mask: Green
- Surface finish: HASL with lead
- Copper weight: 1 oz
- Material type: FR4

# PCA quote

- PCB Manufacturing:
  - Price: \$269
  - Manufacturer: PCBMinions
  - Lead time: 5 days
- BOM:
  - Price: ~\$86
  - Supplier: Digikey/Mouser
    - (possibly sourced by PCBMinions)
  - Lead time: 1-5 days
- PCA Assembly:
  - Price: TBD (Quote pending)
  - Manufacturer: PCBMinions
  - Lead time: 5-day turn



# PATH FORWARD

# Path forward (6/21/20 – 6/28/20)

- Layout the PCB and produce manufacturing files
  - Bluetooth filter and antenna circuitry
  - Gerber file generation
  - BOM generation
- Summit to YSK and Dr. Yeo for review: 6/28/20