801 T-USB daughterboard Upwork task

The T-USB daughterboard has two functions

- Supply the system with power
- Support smart future waking/suspend logic
- Provide data signals in the system over two USB-C connectors

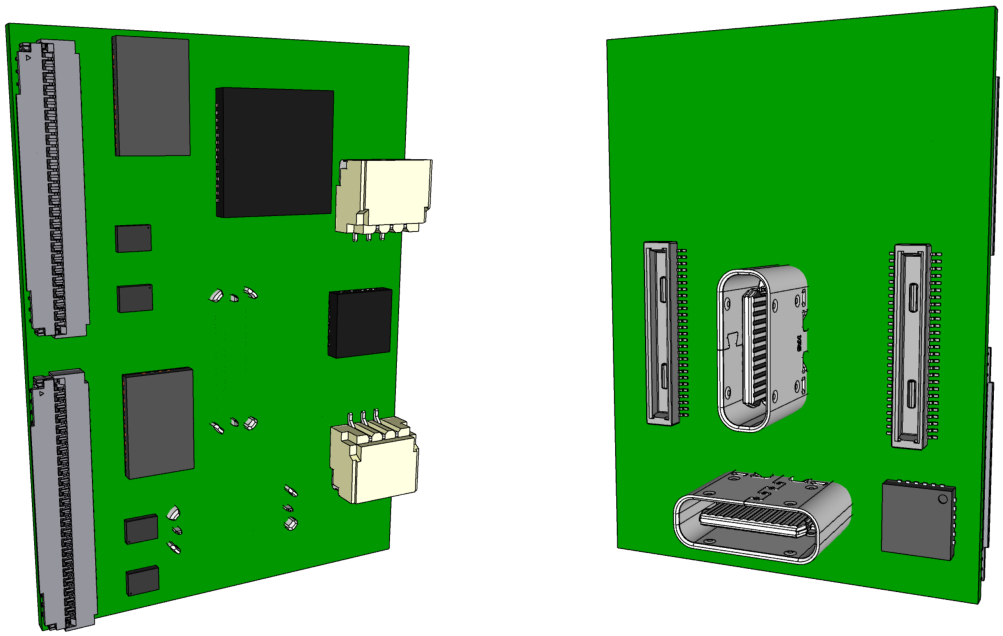
The T-USB board exposes two vertical USB-C sockets and connects to the carrier board through two 50 pin B2B connectors. For future feature development the board also has two FPC breakout connectors.

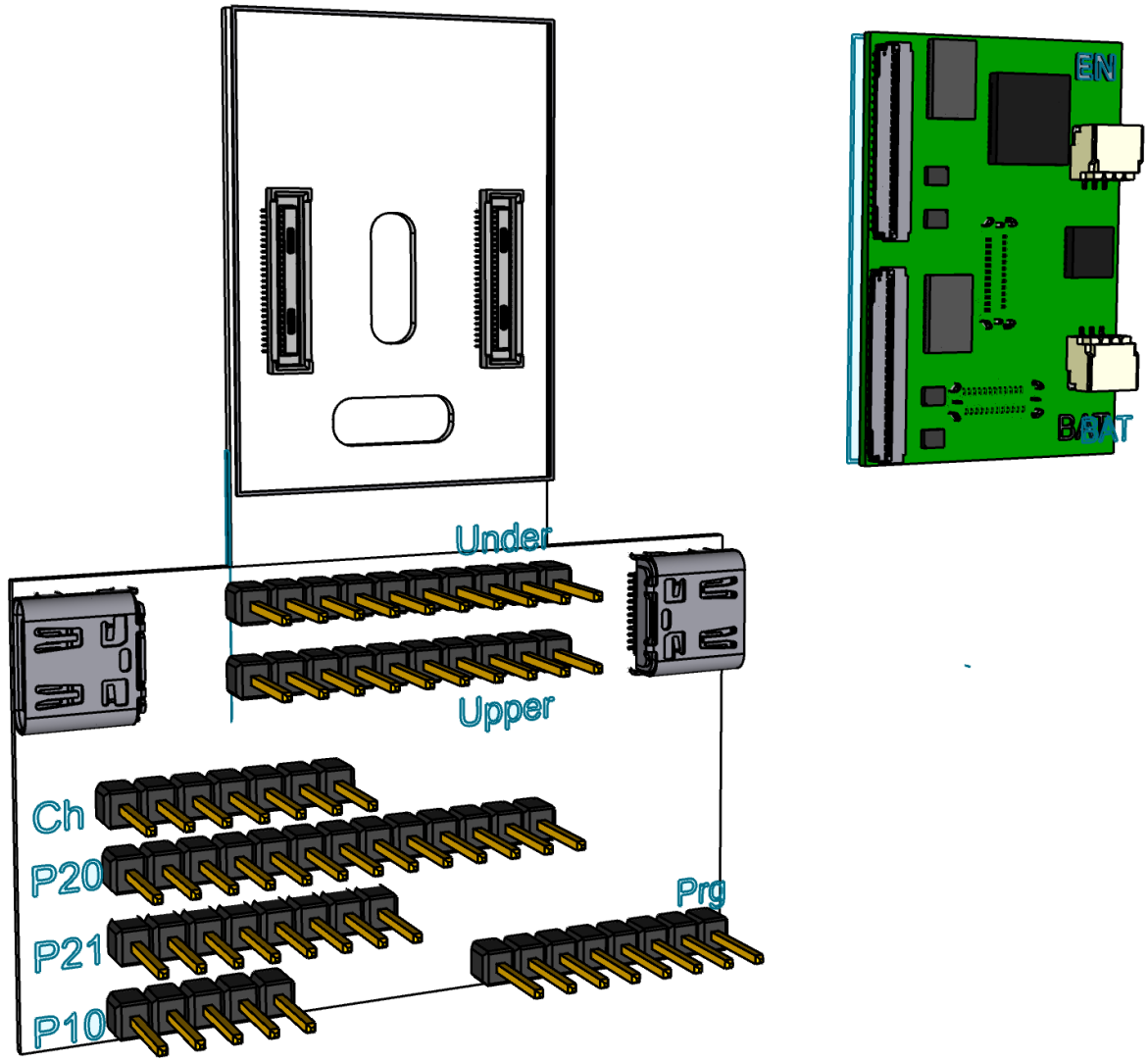
In addition to this board a matching **testing/breakout board must be designed**.

We already have a development board designed so this tasks breaks out part of an existing design (909) on a dedicated baord (801 T-USB).

The provided documentation includes

- Detailed functionality, wiring, connections for T-USB board
- Detailed functionality, wiring, connections for TESTING board
- Functionality Testing cases
- Reference diagram for Compulab development board
- Reference diagram for 909 development board
- Component datasheets





The board takes two USB-C connections with power and data.

- Supports 5V in and out
- USB 2.0/3.0 data support
- Rudimentary Alt. Mode support
- Trickle charging & Fast Charging
- With/Without Battery connected
- Steady power output regardless of charging
- Power output max. 4.5V 2.5A

The essential BOM of the 801 T-USB Bridge Board is,

- 2 * Hirose DF40-50DP-0.4V
- 2 * Hirose USB-C CX80B1-24P
- 1 * TPS65988 Dual Port USB Type-C® and USB PD Controller, Power Switch, and High-Speed Multiplexer.
- 2 * HD3SS460 4 x 6 Channels USB Type-C Alternate Mode MUX. Connected to T-USB Host.
- 1 * PCA9555 I/O Expander

- 4 * TS5USBC410 Dual 2:1 USB 2.0 Mux/DeMux Switch. Mouser
- 1 * BQ24250RGER battery charger
- 1 * 3 pin JST SH socket SM03B-SRSS-TB
- 2 * TE Connectivity 45PIN 0.3MM 571-4-2328724-5 FPC 3-2328724-5

Test board components,

- 2 * Hirose DF40-50DS-0.4V mated height 1.5mm
- 2 * HD3SS3220 10-Gbps USB 3.1 Type-C 2:1 mux with DRP Controller
- 2 * USB-C connectors DX07S024JA1R1300 or DX07S024JJ2R1300
- 3 * Samtec TSW-116-14-T-S Header 16 pin

Milestones:

The project is broken down in milestones to ensure a correct design.

Testing board design $300

Do a design for the testing board and layout with Eagle or Altium

- Precise placement of USB-C socket holes
- Preciese placement of upper and under 50 pin connectors
- Breakout connectors can be arranged differently
- USB breakout connectors should be as suggested
- The breakout part of the board can be enlarged if needed

Once the design is done we will order a few boards for me and yourself for testing.

Initial board designs $800

Do an initial board diagram and layout with Eagle or Altium.

- Confirmation of BoM
- PD Controller working as a power sink(not source)
- Power Regulators
- Power LED, Power and Reset buttons
- 45 pin breakout connectors
- USB-C sockets
- Battery charger
- Design both boards

Deliverables:

- Diagrams(.sch) + Board layout design files
- Gerber files
- Review the choice of component and suggest alternative if needed.
- Confirmation of BoM
- Get production quotes with JLCPCB, PCBWAY etc. for 10pc, 100pcs, 1000pcs (assembled and basic)

Ordering test batch of boards $0

We then do a test batch of 801 T-USB boards

Verification of design and fixes - $400

Receive the test boards and test the acceptance tests. Make sure all tests pass. Correct any issues after reviewing with me.

Deliverables:

- Diagrams(.sch) + Board layout design files
- Gerber files
- Testing report with measurements