

# WCTE mPMT Schedule

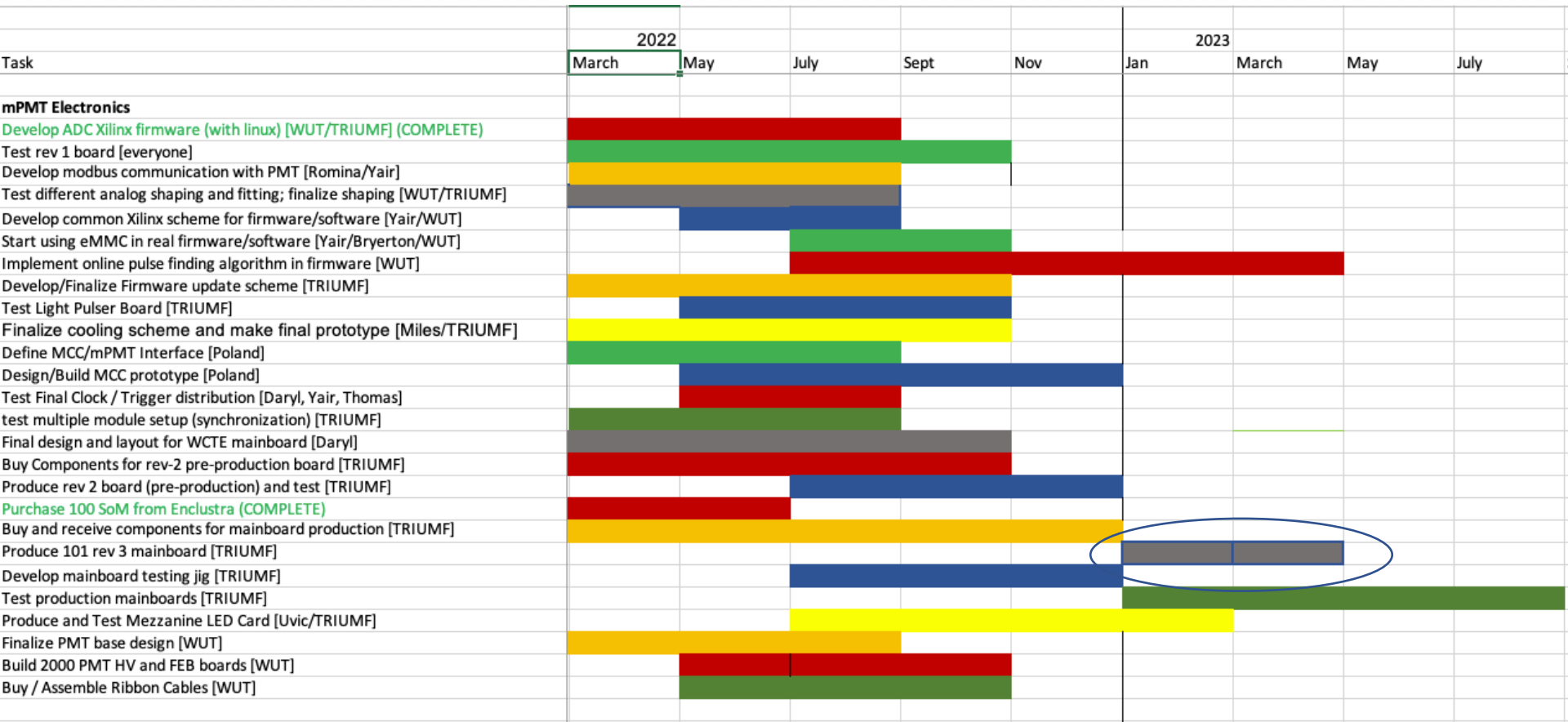
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T. Lindner



- A. 600 PMTs delivered; need to order another 1400 soon
- B. Discussing with Alan about getting 12 acrylic sheets as soon as good quality is confirmed (12 sheets => 144 domes)
- C. Assuming we will 3D print PMT cups and support pillars; probably at external company.
- D. 1300 HV boards already at WUT, rest coming soon.
- E. Making final prototype of FE boards now (WUT); start mass production as soon as prototype finished.
- F. Ribbon cables & connectors ordered (WUT), delivery in next 2 months.
- G. Will not have scintillator plate+SiPM for most of the WCTE mPMTs, but might install for small number of mPMTs.
- H. Deciding on the connectors for network cables now.
- I. 2km of water-tight cable being ordered now (WUT)
- J. 100 FPGAs already received.

- Current analysis suggests that critical path item is the production of mainboards
- Purchasing all mainboard items started in Oct 2021
  - still many components not arrived
- Produce x4 pre-production mainboards in Nov 2022
- Produce x102 production mainboards in Jan 2023
- Quick board production and testing, ready for mPMT production in March 2023



1. Need to finalize the design of the mainboard by Nov; key remaining items: Analog shaping circuit, light pulser scheme, Firmware backup scheme, MCC-mPMT Interfaces.
2. Need to finalize feedthrough design very soon. Need to decide on manufacturing process and produce test feedthrough
3. Need to finalize mPMT mechanical design by Nov-Dec, so that we have 2-3 months to do the cylinder, backplate, clamp ring production.
  - **Finalizing backplate requires a finalized feedthrough design**
4. Need to prototype, test and finalize the cooling scheme.
5. Wacker optical gel has long lead times; which other materials?
6. Finish/test calibration LED system design (particularly mechanical mounting)
7. Need to develop and prototype mass production of PMT support matrix
  - assume thermoform+machine, but need test!

- We need to develop all the mPMT testing and Quality Control procedures to use during mass production
  - Will develop these standards this fall.
  - We have started developing WCTE mPMT construction database at TRIUMF.
- WUT group will come to TRIUMF this fall (Nov?) for hands-on discussion about mPMT assembly, testing and QC.
- Assume that the main part of the production will happen May-August 2023; need to produce 50 mPMTs at TRIUMF and WUT in that time.
  - Means producing ~3 mPMTs per week per site. Should be achievable, but will need to prove this.



