
Updates:
Electronics Reception Test Stand
Rack Infrastructure

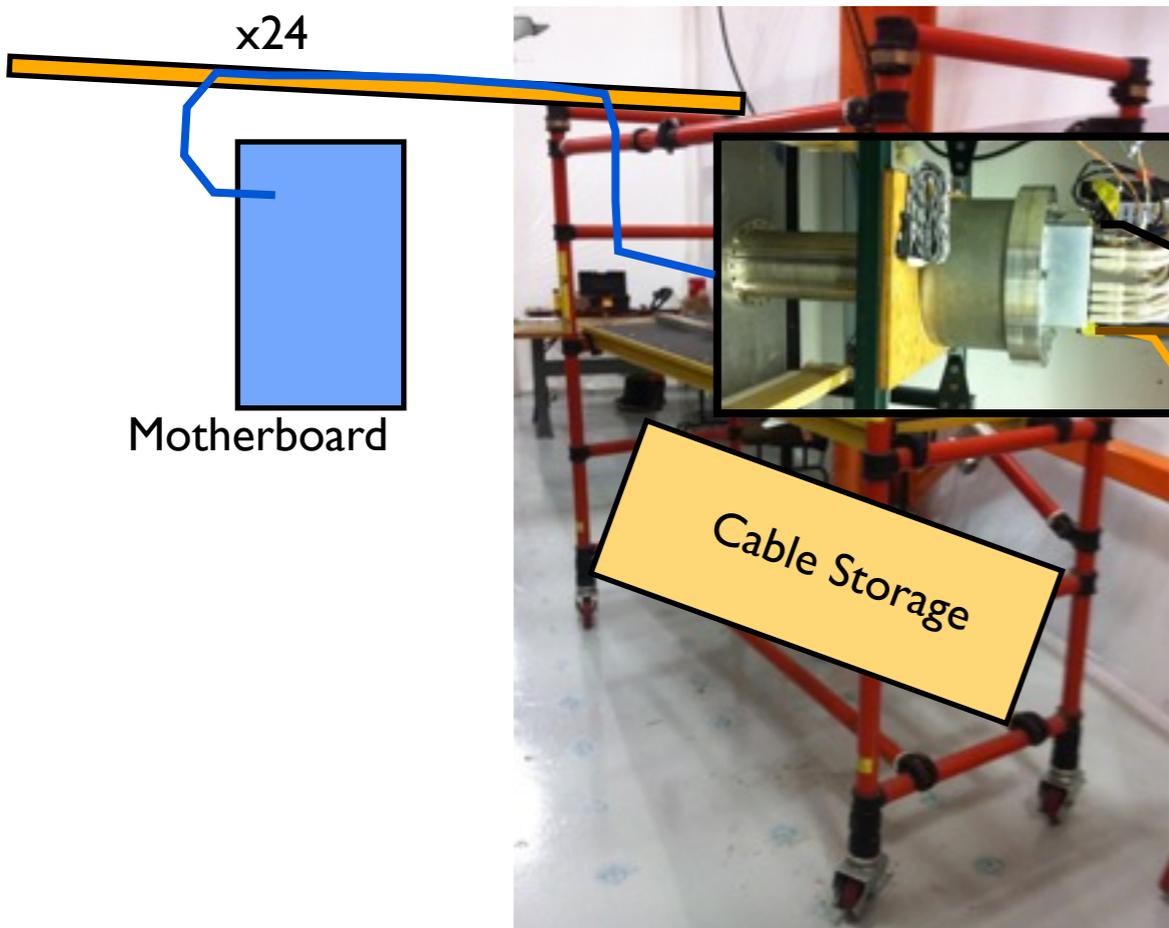
Bryce Littlejohn
University of Cincinnati

- When electronics arrive, we need to separately test every piece in electronics chain:
 - Motherboards
 - Feedthrough electronics: controls and intermediate amplifiers
 - Cold and warm cables
- Have designed a 3-step test that will do this:

Step	Production Components	Previously-Tested Components
1	Motherboards	Flange and electronics Cold, warm cables
2	Motherboards, Cold cables	Flange and electronics, warm cables
3	Motherboards, cold cables, feedthroughs and electronics	Warm cables

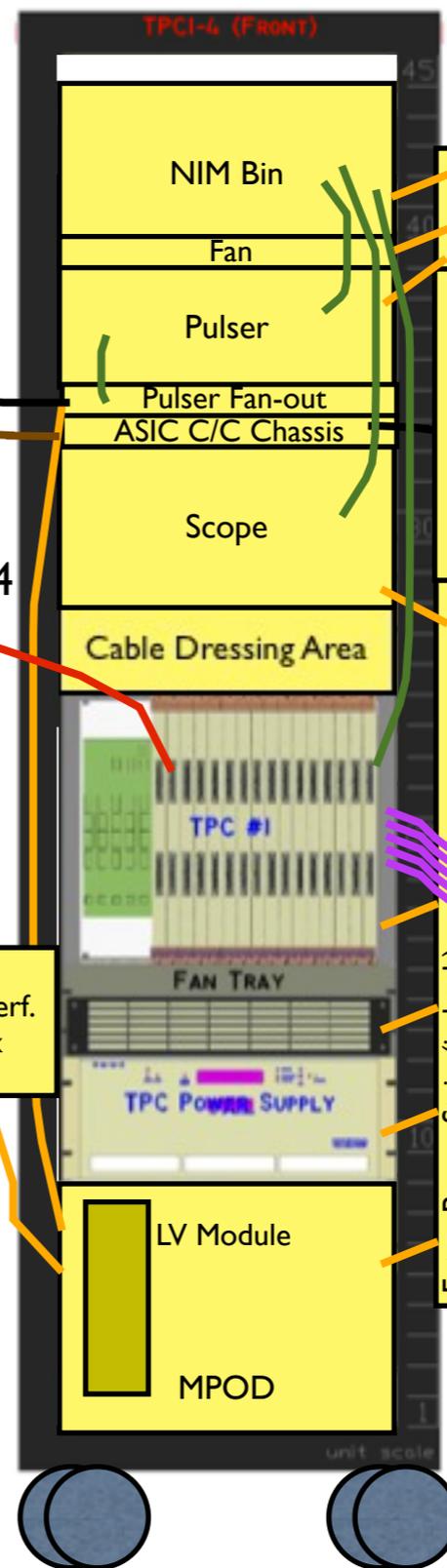
Step I

- Power Cable
- Lemo cable
- HDMI Cable: 20'
- USB Cable: 20'
- Fiber - Multimode 62.5 mm: 200'
- 'Test' Warm Cable: 10m
- 'Test' Cold Cable

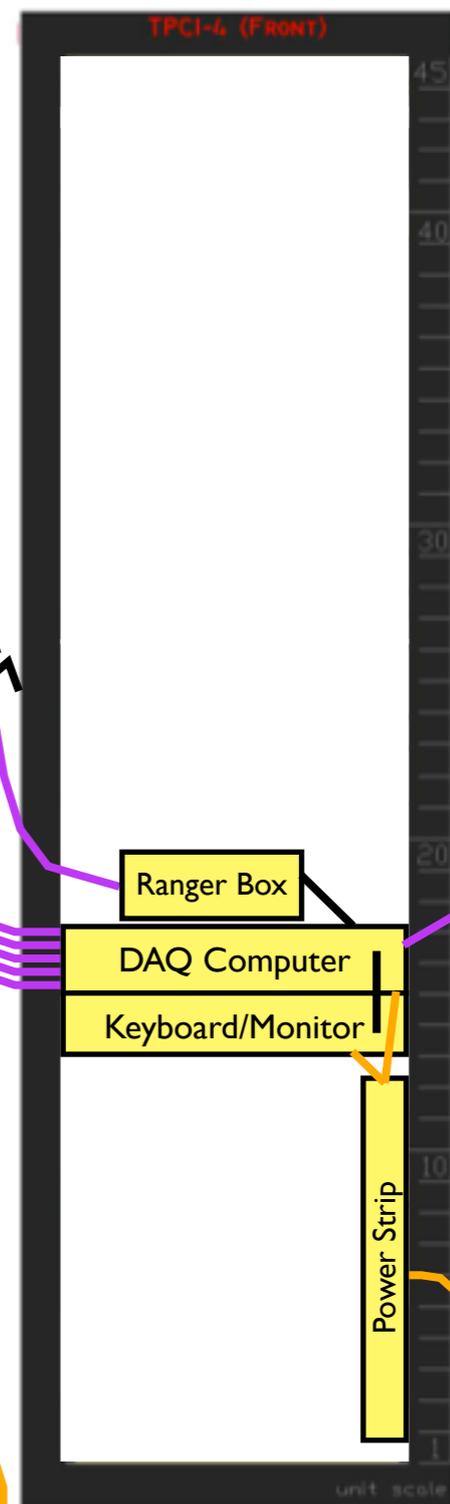


Rolling Scaffolding and Flange

Rolling Electronics Rack



DAQ Rack: In HV Cage



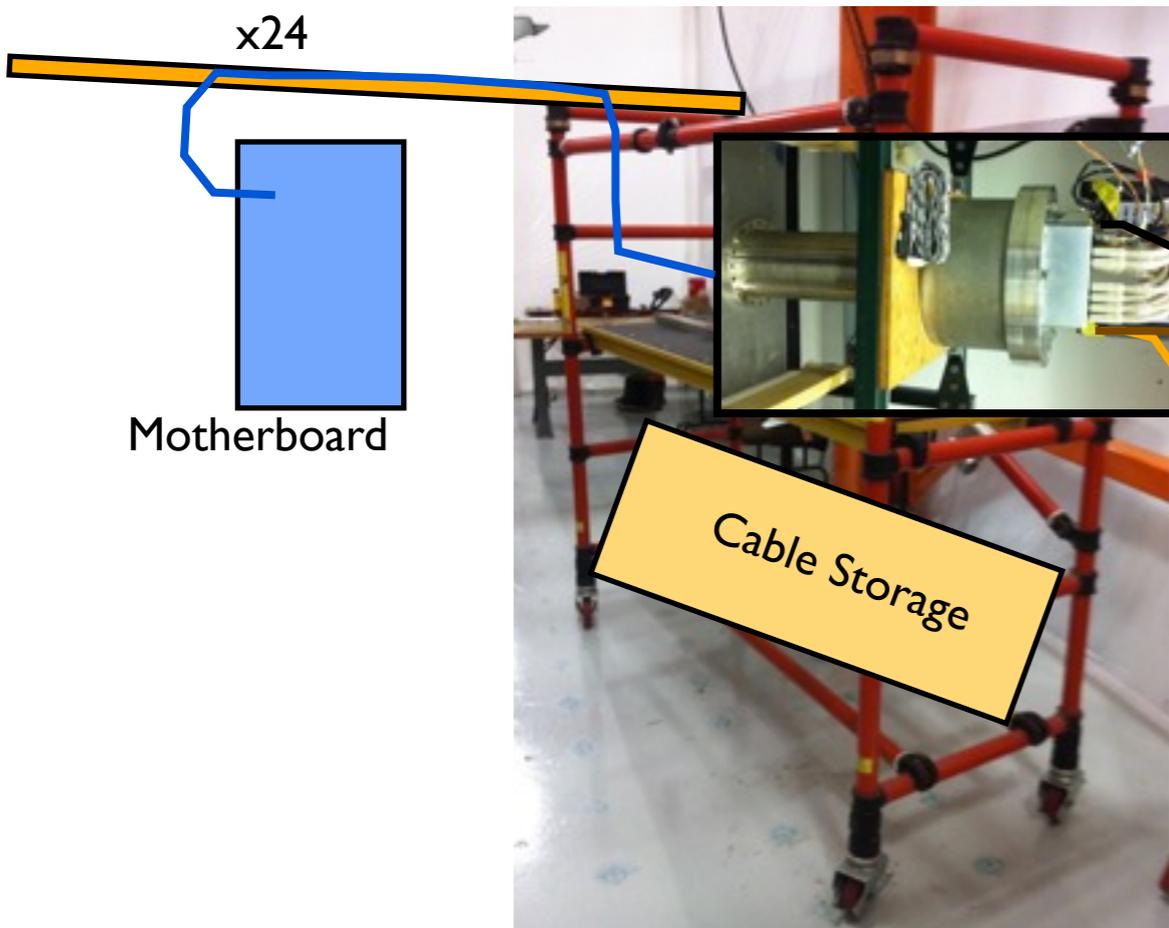
To Network

To 120V AC

To 208 3-phase AC

Step 2

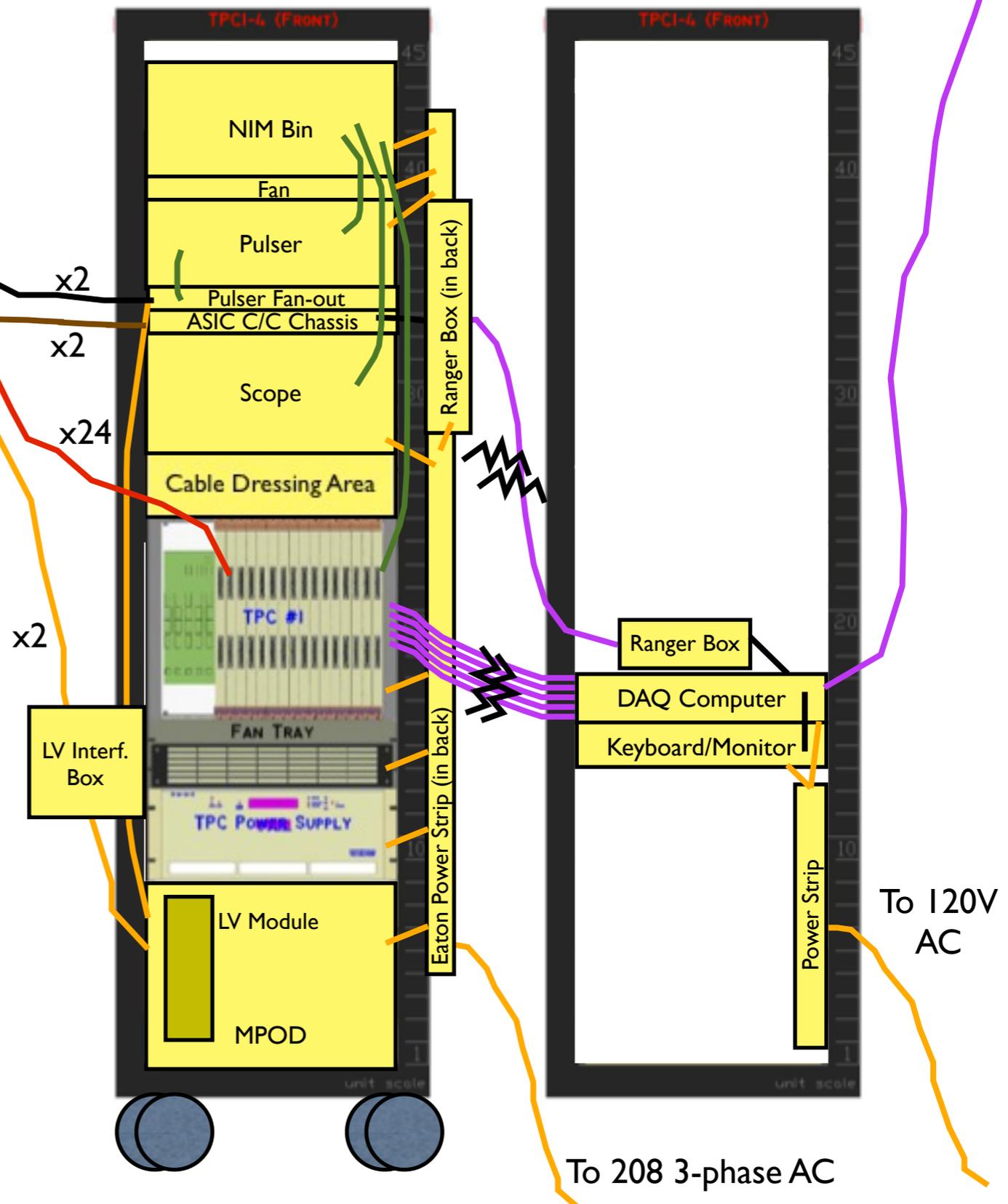
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- Production Cold Cable



Rolling Scaffolding and Flange

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DAQ Rack: In HV Cage

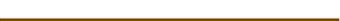


To 208 3-phase AC

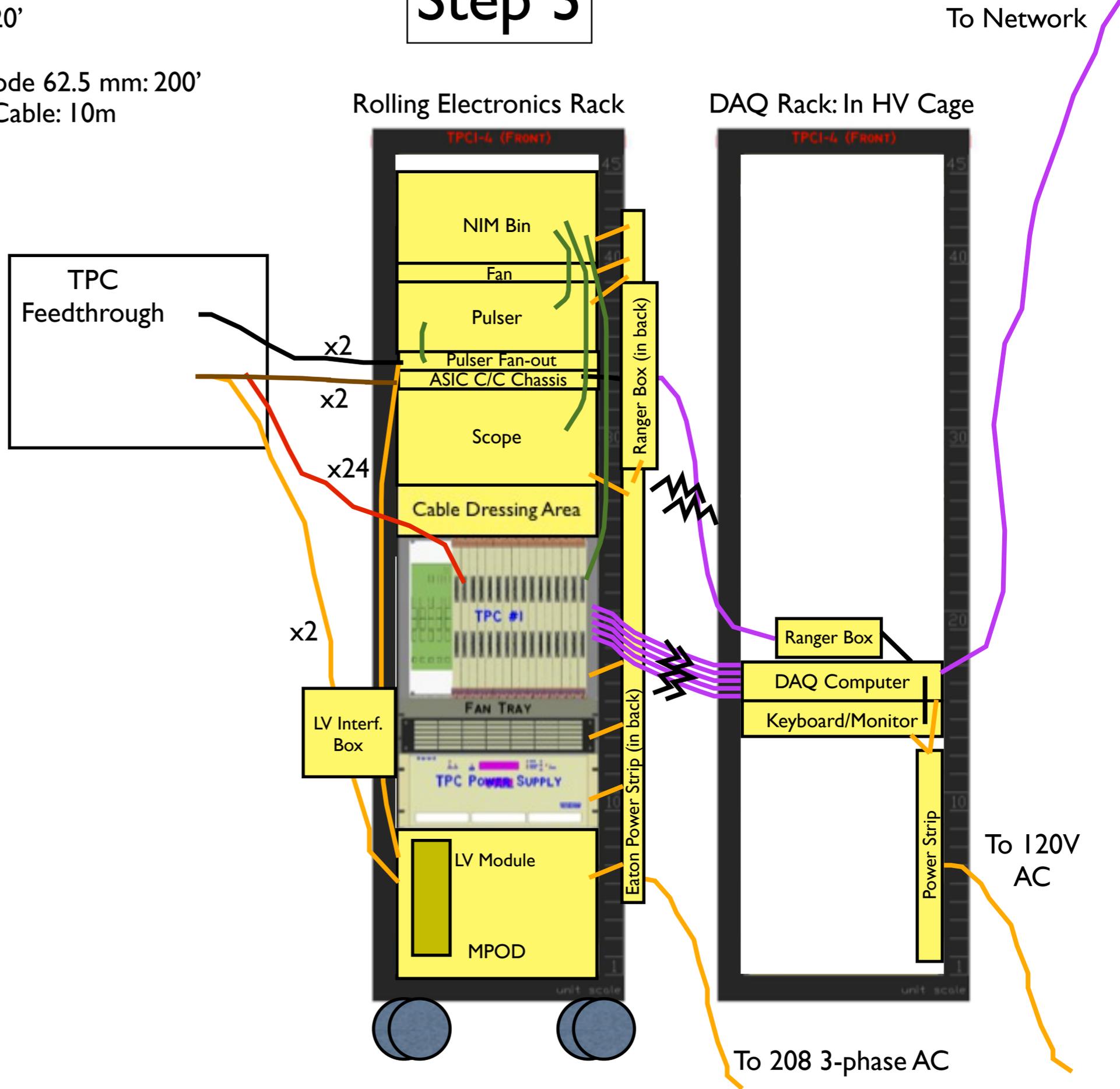
To 120V AC

To Network

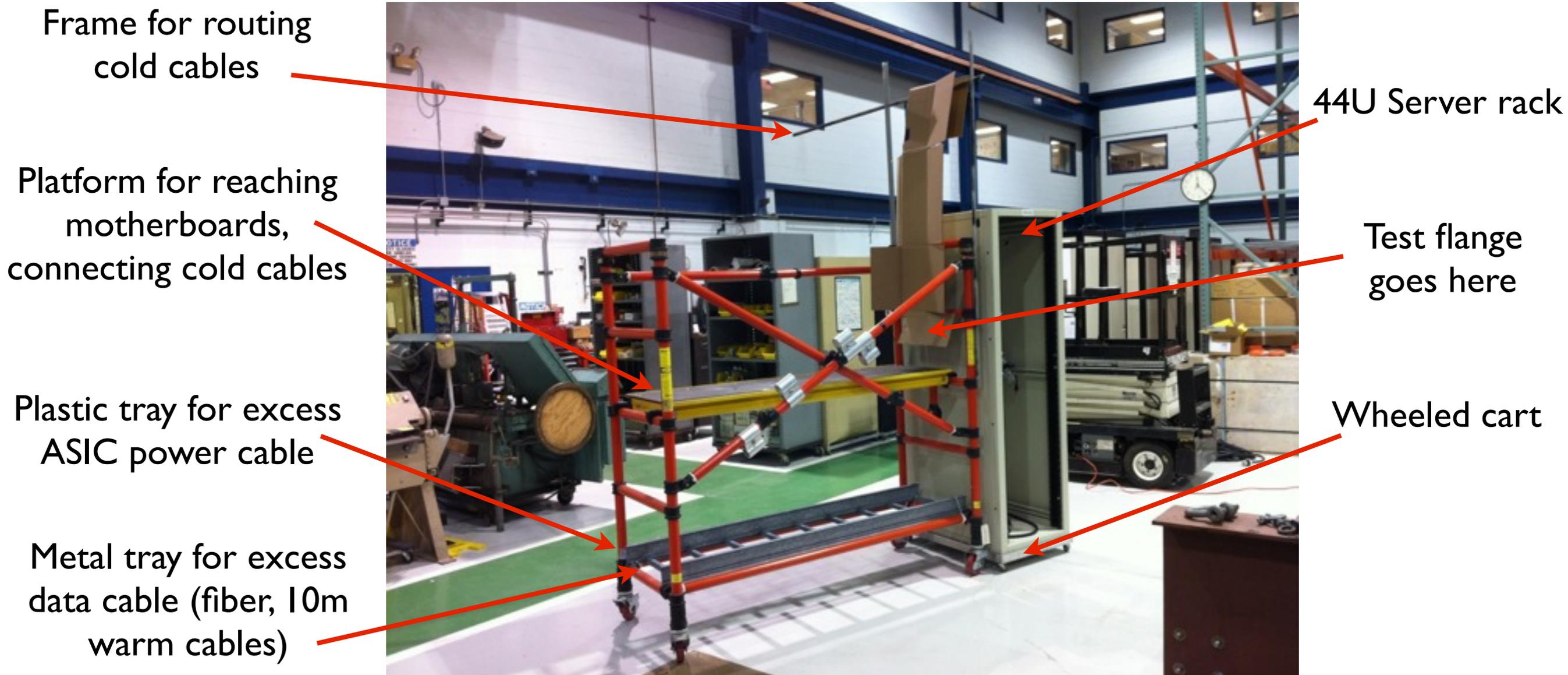
Step 3

-  Power Cable
-  Lemo cable
-  HDMI Cable: 20'
-  USB Cable: 20'
-  Fiber - Multimode 62.5 mm: 200'
-  'Test' Warm Cable: 10m

Rolling Man Lift



- Status: infrastructure mostly collected and set up
 - Few more cable routing needs
 - Plan for cable storage on step 3 (on man-lift) still needed



- DONE: DAQ has been installed in HV crate
- DONE: Rolling server rack next to HV crate for build-up
- March 11-15: Get 208 3-phase power to rolling rack by HV crate
- March 11-15: Wiener PS load test
- March ~18: Readout crate, FEM+ADC, trigger module, PCIe arrive
- March 18-29: Install Wiener PS, Readout crate, DC fusing
- March 11-29: Construct TPC readout crate fan
- April 1-5: Install and test FEM/ADC/Trigger/PCIe
- April - Mid May:
 - BNL parts arrive: Motherboards, cold/warm cables, test flange, etc -- Jonathan is talking to Chen for exact dates
 - Load-test MPOD and LV power supplies
 - Design/build LV ASIC and pulser power cords and MPOD LV interconnect
 - Long fiber arrives, is routed to TPC tent
 - Install into rack: pulser, pulser fan-out, ASIC config/control chassis

- Reception test status photos



Rolling rack in its build-up position by HV

TPC fan, partly-assembled



HV Rack with Reception Test DAQ



Load Test Stand

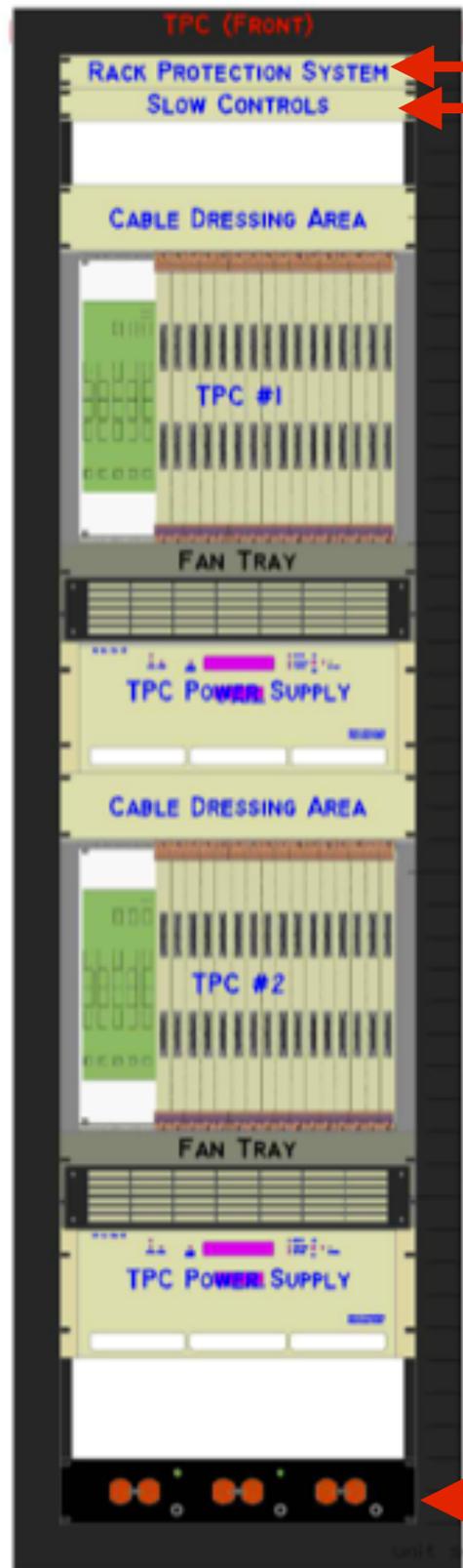


Pulsar Fan-out Chassis



Rack Infrastructure

- **Want to wait on rack build-up until summer help arrives:**
 - TPC readout fan construction
 - AC distribution boxes
 - DC fusing
 - Rack protection chassis
 - Cable tray routing
 - Actual build-up
 - Lots of hands-on work screwing, soldering, routing -- many hands are better than just my hands...
- **In meantime:**
 - Instructions and procedures are written/being written by Dave H, Linda, etc.
 - Testing, designing, prototyping many rack components



- Rails and shelves procured
- Rack Protection System:
 - Smoke detectors wired up
 - RPS chassis: prototype tested, running in DAQ test stand
 - AC Interlock and Distribution: prototype built, installed in DAQ test stand
- Fans: Dave H constructing prototype for reception test stand and writing assembly procedure
- Slow Controls: see monitoring talk later today

Wired Smoke Detectors



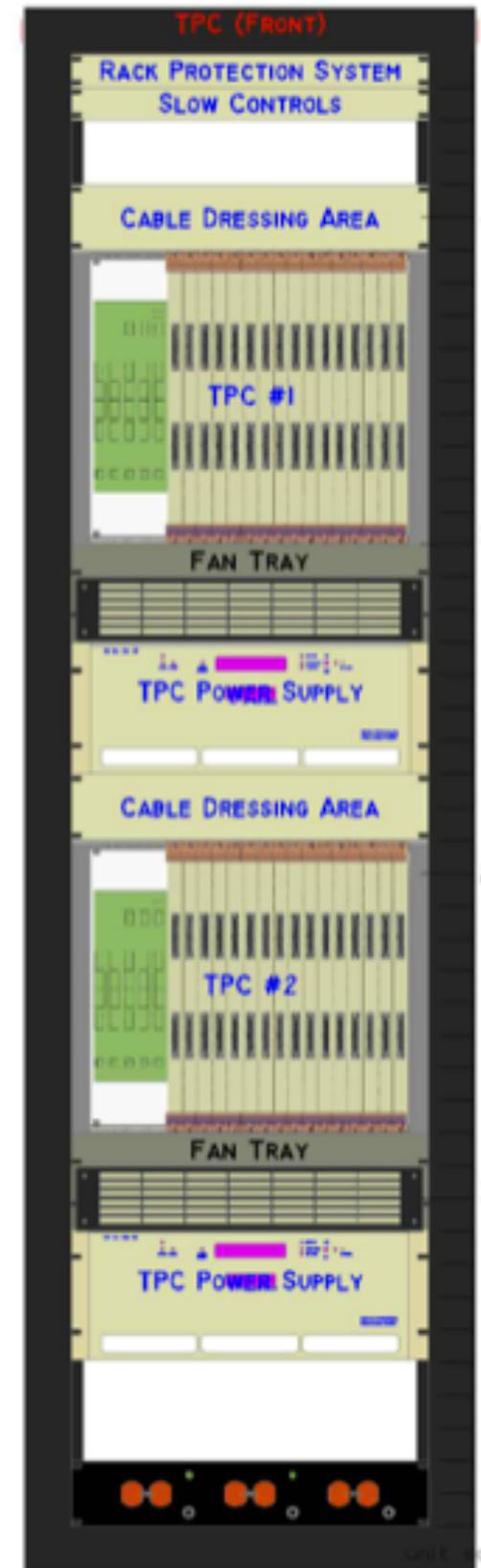
Prototype Rack Protection Interlock Box



AC Distribution Box

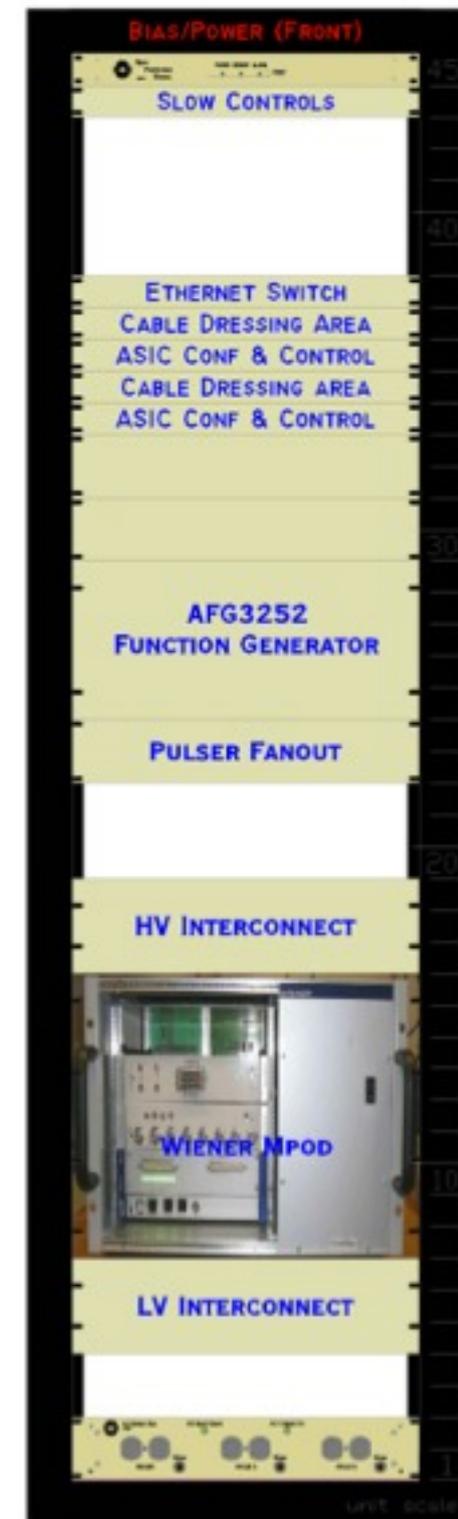


- TPC RO Crates: Delivery soon (?)
- Dressing area designed, parts available
- 10 Wiener PS in this week or next
 - Load-tested over next few weeks
- Will build up 1 entire TPC RO rack before summer to demonstrate design of all rack infrastructure components
 - Rest will be constructed this summer
 - Many components already built up for DAQ test stand



TPC Rack outline

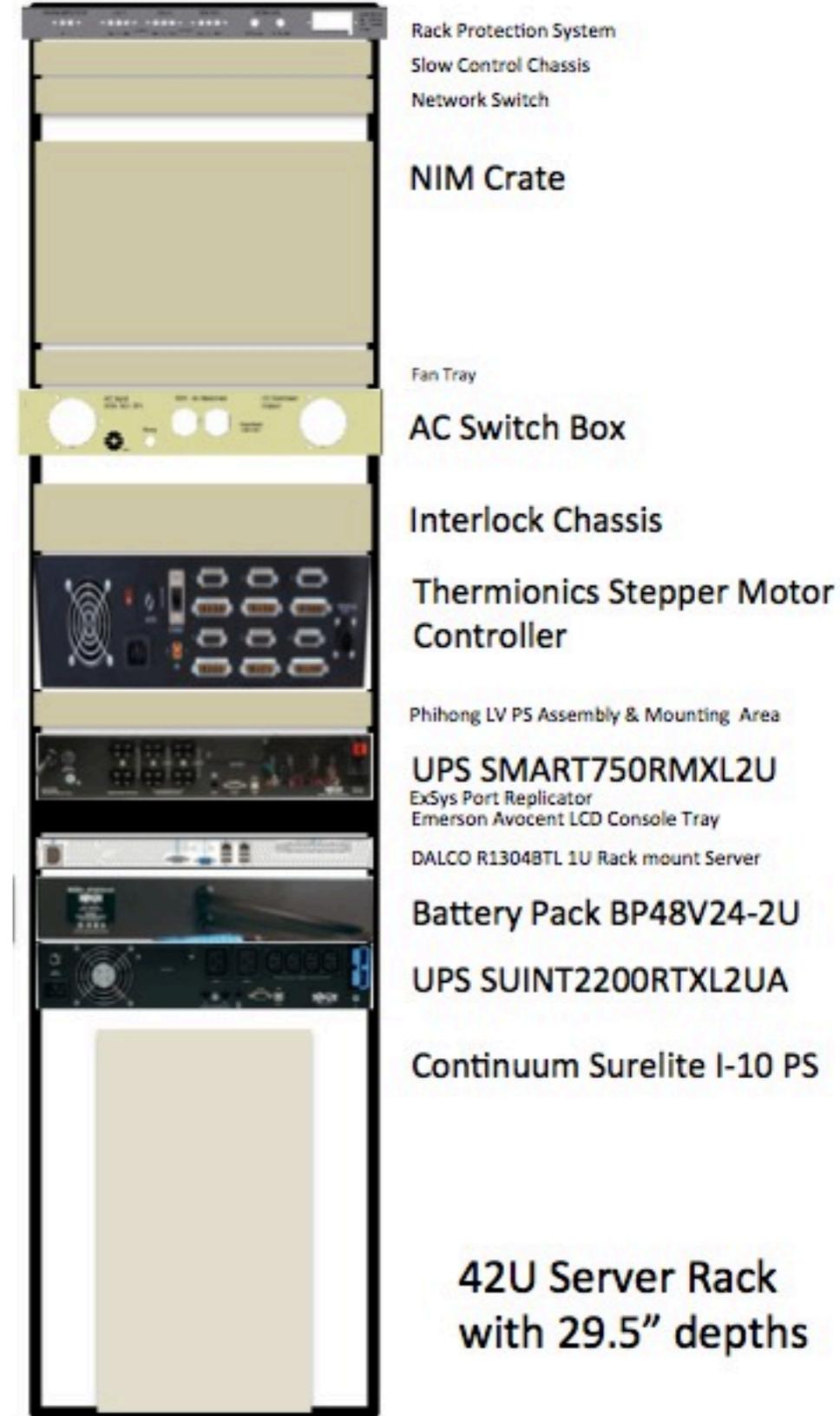
- MPOD, LV modules in around March 18
 - Bias voltage modules in around mid-May
- LV interconnect must be designed, built
 - Converts voltage module outputs to component inputs
 - Bryce working on design; needed in mid-May for reception tests
- HV interconnect must be designed, built
 - Less urgent than LV interconnect
- ASIC config/control chassis built, reviewed
- Pulser fanout built, reviewed
 - Power needed for pulser fanout; part of LV interconnect



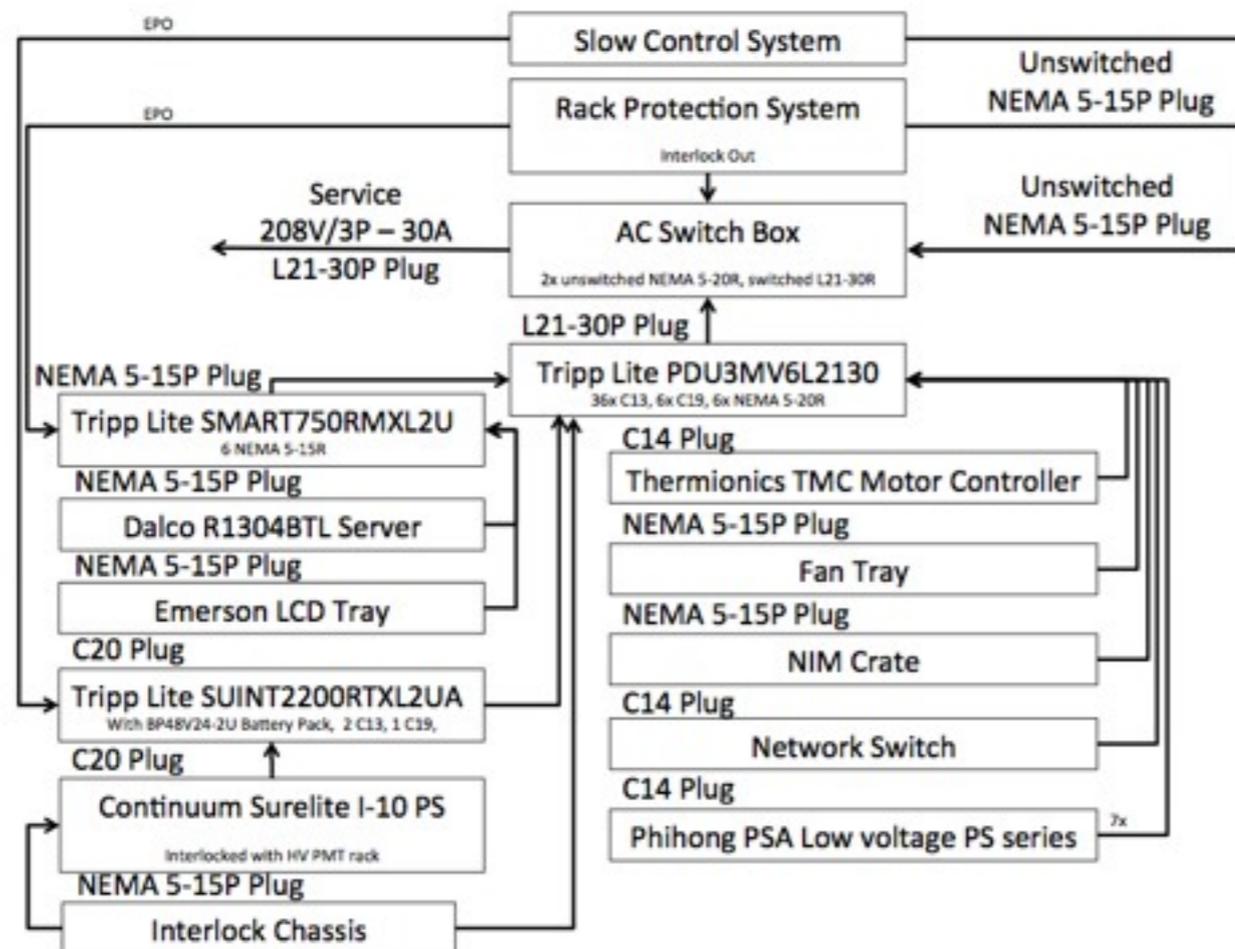
PS Rack outline

- Design now firmed up: see Thomas/Christoph's talk
- Must procure 2 longer racks
 - Needed so laser PS will fit; have 1 already
- Interlock with cryo liquid level: need to design and build

Laser Rack outline



Laser Rack AC Distribution Scheme



- **PMT Racks**
 - Need to design/build interlock box - similar to laser rack
 - Nothing else new to report
- **DAQ Racks**
 - Procured server racks from CDF, nothing further here
- **Com, Accel**
 - Nothing to report here; nothing special requested
- **Cryo Purity Monitor**
 - Nothing to report here; nothing special requested

- **Between racks:**
 - Fiber data connections between all racks: slow control, PMT, etc.
 - Copper connections with dry contacts between racks for interlocks
- **Between racks and computing room:**
 - Will run fiber only from computing room to platform racks
 - Working out exact routing -- central network switch versus decentralized switching
 - Ranger boxes purchased for communication between DAQ and TPC/Trigger
 - Fibers need to be purchased; also looking into trunk line for easy routing
- **More detailed questions - direct to Eric C.**
- **This plan, along with isolated platform and AC power should ensure isolated detector ground**
 - Should also avoid ground loops

- Work on reception test stand is progressing quickly
 - Suppliers for all components identified
 - Many components already on-site or will be delivered in next few weeks
 - Have a good schedule for realizing test stand by mid-May, when it is needed

- Continuing to lay groundwork for full rack build-up
 - Many parts designed, prototyped, tested
 - A few parts left to design and test
 - Will be ready for rack build-up in summer 2013