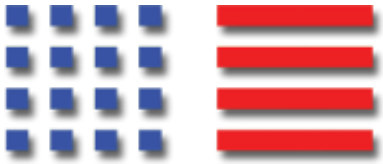

PXD Permanent Set Up Schedule

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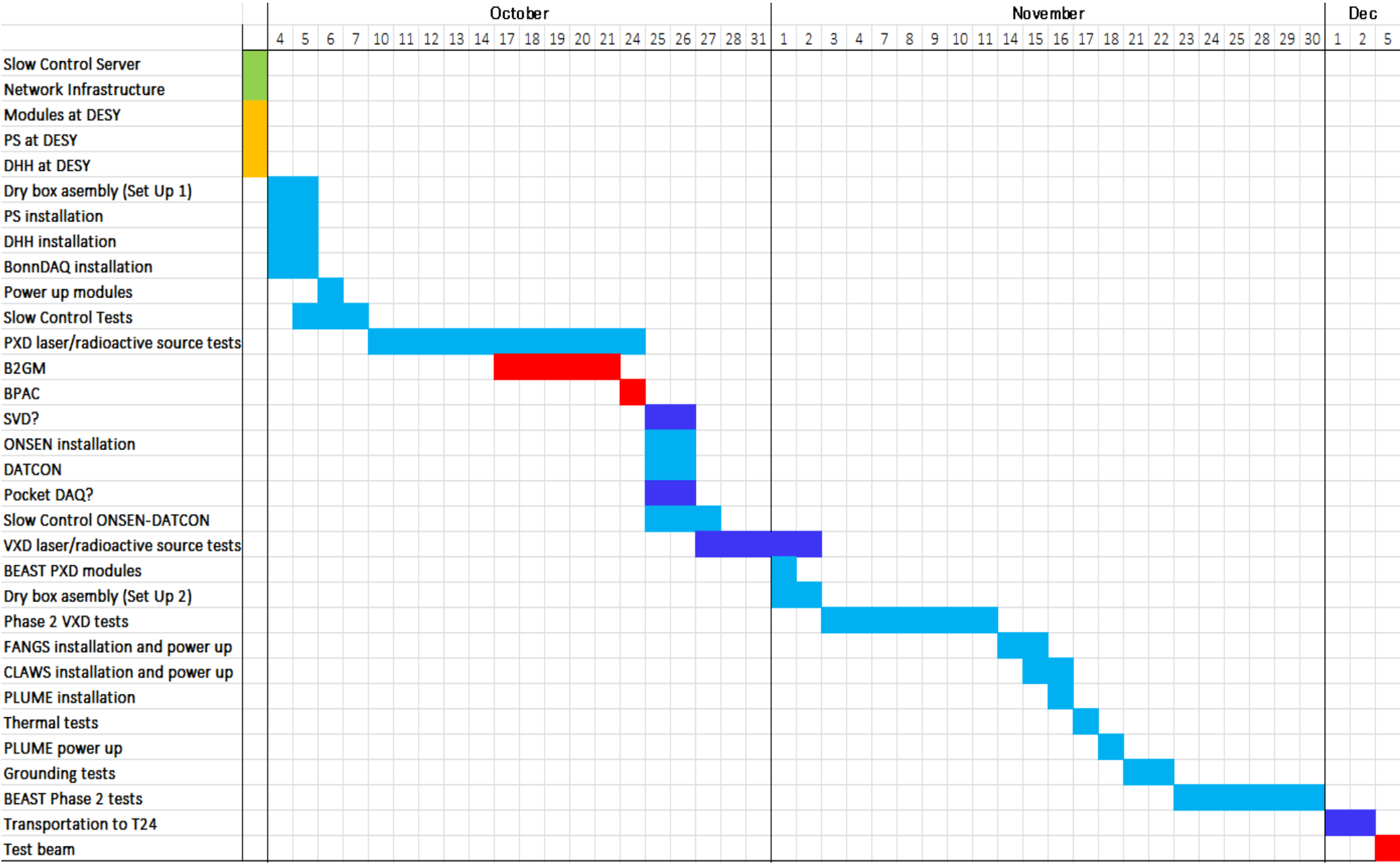
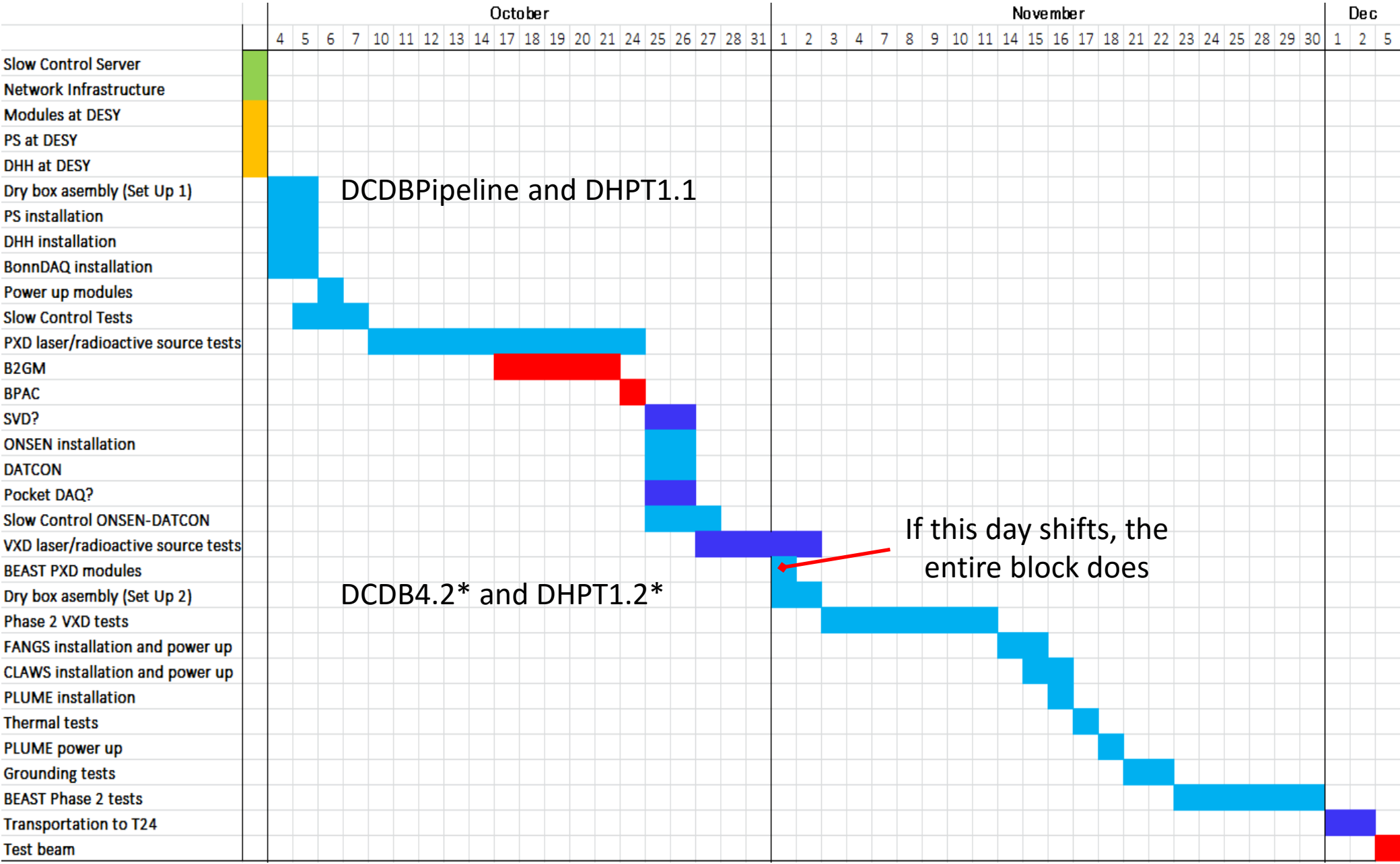
Schedule


October
November
Dec
4 5 6 7 10 11 12 13 14 17 18 19 20 21 24 25 26 27 28 31
1 2 3 4 7 8 9 10 11 14 15 16 17 18 21 22 23 24 25 28 29 30
1 2 5
Slow Control Server
Network Infrastructure
Modules at DESY
PS at DESY
DHH at DESY
Dry box asembly (Set Up 1)
PS installation
DHH installation
BonnDAQ installation
Power up modules
Slow Control Tests
PXD laser/radioactive source tests
B2GM
BPAC
SVD?
ONSEN installation
DATCON
Pocket DAQ?
Slow Control ONSEN-DATCON
VXD laser/radioactive source tests
BEAST PXD modules
Dry box asembly (Set Up 2)
Phase 2 VXD tests
FANGS installation and power up
CLAWS installation and power up
PLUME installation
Thermal tests
PLUME power up
Grounding tests
BEAST Phase 2 tests
Transportation to T24
Test beam

Schedule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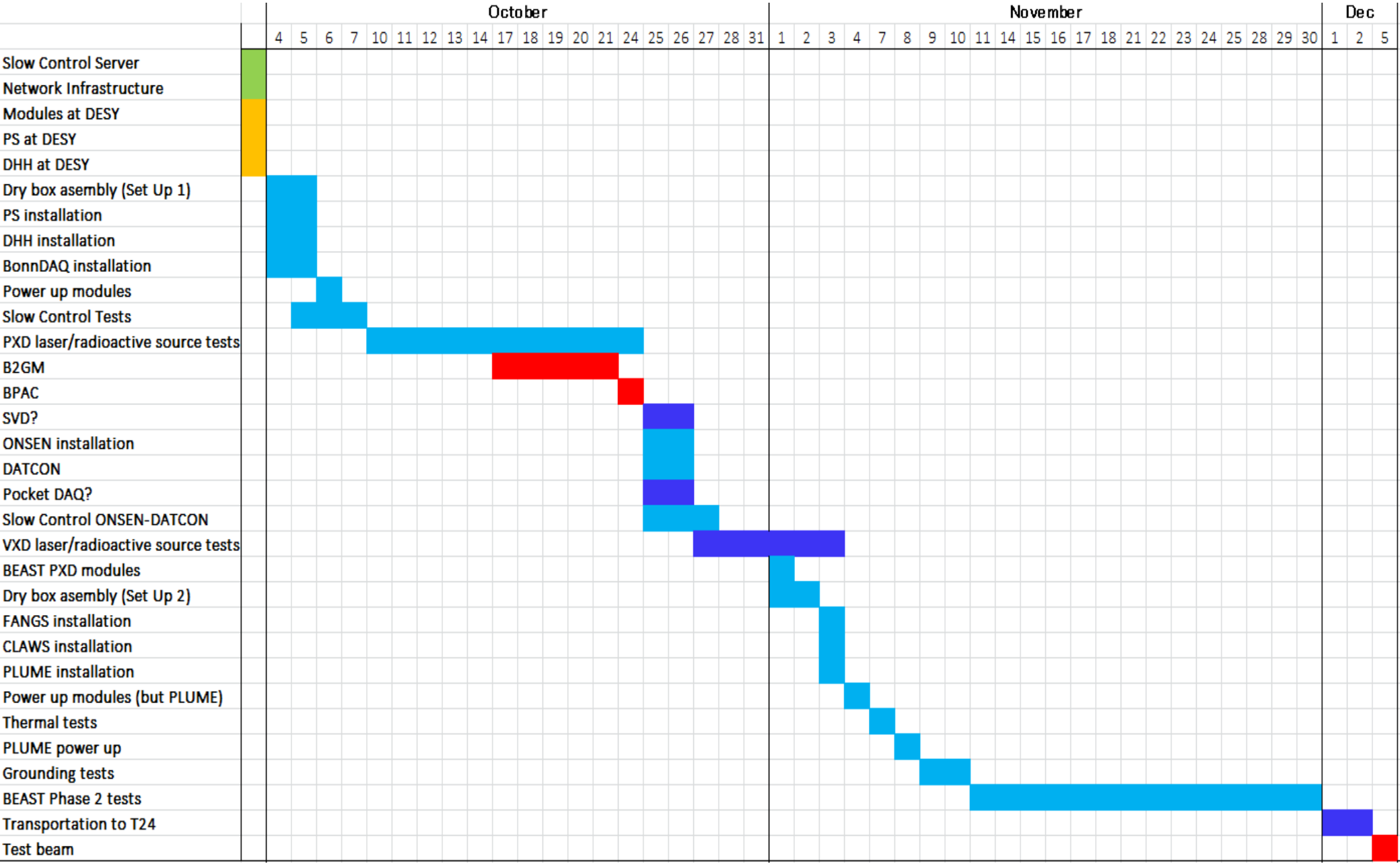
Thermal tests
PLUME power up
Grounding tests
BEAST Phase 2 tests
Transportation to T24
Test beam
DCDBPipeline and DHPT1.1
DCDB4.2* and DHPT1.2*
If this day shifts, the entire block does

Alternative Schedule



Manpower and Equipment

Target: 2 complete ladders (4 modules)

- Modules (HLL)
- DHH system and PC (TUM)
- ONSEN (GIE)
- Fibres ONSEN-DHH (GIE)
- Fibers DATCON-ONSEN (BN)
- Power supplies. Power cables. Patch panels (LMU)
- Laser. Radioactive sources (DESY)
- Network switch. Slow control server (DESY+HEI)
- Data cables (MPP+BN)
- DATCON (BN)
- Mechanics (MPP+DESY)

Manpower: To be discussed

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Open Questions

- Core weeks: 2 weeks after BPAC, for connecting and making the system robust and easy to be operated by shifters

- If TOP/CDC/VXD/ECL/roll in delayed, we should consider (if allowed by the DESY schedule) moving the VXD test beam to January
  - One entire month for lab operation
  - Start the test beam with PXD only in December

- Idea to have a 24/7 running system, remote access possible

- AIDA funding available for test beam (only!)
  - European Project Leader
  - 3-5 European Scientists
  - Up to 3 Japanese Scientist

- Could you provide us a detailed plan for testing (whan, what do you need, for how long?)
  - PXD and SVD DAQ and Slow Control
  - Alignment and tracking

- Interference with cabling/piping at KEK

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SC-Related Tasks During the Testbeam

- RC/PSC
  - DHH only
    - 1 DHH
    - Christian Pulvermacher, PXD DAQ experts
    - 1 day during 1st week of October?
  - DHH+PS — PXD DAQ experts
    - 1 DHH + 1 PS connected to the same module
    - early to make this the default startupoption?
  - ONSEN ⇒ Björn Spruck
  - DATCON ⇒ Björn Spruck
  - Inclusion into global RC/PSC
    - KEK DAQ experts
    - after start of data-taking?
- DQM-feedback to operator
  - needs EVB + running DQM
  - not before coding is finished…
- Alarm System
  - no influence on other systems' schedules.
  - can be extended as new conditions appear

Requirements for SC Tests

- IPMI ONSEN – stress test
  - ATCA Shelf, Shelf Manager, IOCs
  - Needs: correctly configured network and shelf manager, IOC, PV archiver
  - As much boards as possible
  - Goal: Find performance issues in IOC, interferences with different IOCs and many boards, long term stability
  - Will (mostly) run parallel to other tests, only if problems are found I need exclusive access (esp for firmware upgrade)
  - No DAQ, no sensor, no DHH… is needed

Requirements for SC Tests

- IPMI DATCON
  - MTCA Shelf, Shelf Manager, IOCs
  - Needs: correctly configured network and shelf manager, IOC, PV archiver
  - As much boards as possible
  - Check interferences with different IOCs (ONSEN), NAT MCH, long term stability
  - Will (mostly) run parallel to other tests, only if problems are found I need exclusive access (esp for firmware upgrade)

Requirements for SC Tests

- ONSEN SC
  - Stable firmware setup, including correctly behaving Pvs
  - Firmware and epics in flash (autoboot)
  - Correct network setup, local IOC on ONSEN boards, epics archiver
  - Monitoring of data flow needs DHH, (pseudo) HLT, (pseudo) event builder
    - Maybe DATCON
  - Detecting unusual stated needs “injection” of errors, exclusive
    - Recovery from these states
  - Can be broken down in several steps
  - … updated list (changes since last TB) of PVs and their expected value is still missing
  - SC is mandatory for complete RC – otherwise RC cannot react on actual status

Requirements for SC Tests

- RC
  - Needs ONSEN SC to work or Ready and Abort conditions are unusable
  - RC running locally on ONSEN board as part of SC is needed
  - DATCON RC
    - Here we need two signals (PV) from DATCON board, ready and abort
    - Apart from that, RC has been prepared already (same as ONSEN)
  - 1st step: Local RC can be tested, but is kind of toy …
  - 2nd step: local PXD RC (DATCON + ONSEN)
  - 3rd step: global (NSM) RC
  - 4th step: global (NSM) RC with other systems, then data taking
  - Step 1-3 should be doable in 1-2 days. No need for DAQ or sensors running
  - 4 is the critical one and needs the full system

Proposal for DESY schedule, Autumn 2016, part 1

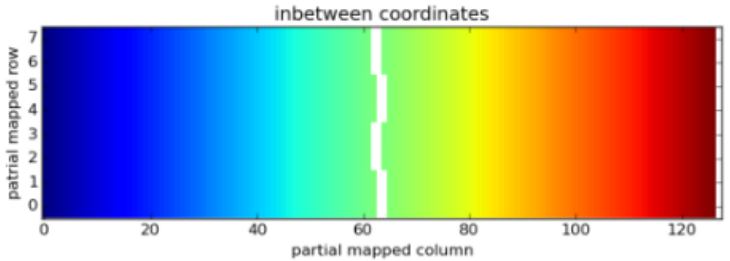
1. 01.09.2016, switch on the detectors
   (laser, power supplies, pedestal scan w/ BonnDAQ)
   ONSEN not required
2. solve trigger problems between SVD and PXD (latching?)
   pizza- ONSEN, no ROI selection, controlled remotely
3. EVB is required from the beginning, but HLT not
   $\rightarrow$ HLT emulator, always full frame ROI
4. when trigger problem is solved
   $\rightarrow$ get rid of all the „–1“ workarounds (unpacker, HLT, EVB2)
5. install optical link between DHP and DHE
6. solve mismatches between DHE and DHC
   (76 MHz, wrong commands to DHP ?)
   n.b. beamtime 04/2016 shows DHE–DHC mismatches even
   after cable exchange (unstable link) $\rightarrow$ expect debugging
7. switch on HLT (not HLT emulator anymore)
8. implement simplified re-mapping on DHE
   (intermediate data format, proposed by Florian at Seeon16)

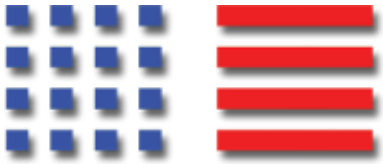
Proposal for DESY schedule, Autumn 2016, part 2

9. get rid of the re-mapping workarounds (HLT, DATCON, unpacker)
10. investigate data errors from 04/2016, with NEW DQM
    (e.g. why has DHC start frame sometimes != 20 bytes ?)
11. pizza-ONSEN, switch on ROI selection
12. fix open issues in HLT-ONSEN interface
    - HLT reject handling
    - HLT „sendAll“ bit → events w/o ROI selection
    requires timing debugging on ONSEN
13. include DATCON
    (assume that new uTCA backplace was already tested in pre-tests)
14. only if enough time: move to cluster-based data format
    (a) implement clustering algorithm on DHE
    (b) change to new data format on DHC, ONSEN, basf2 unpacker
        backward compatibility will be lost!
    (c) new logic on ONSEN (accept out-of-ROI-inside-cluster-hits)
    (d) needs basf2 „cluster DQM“

Ultimate goals

- Verification of stability DHPT⇔DHE links @76MHz
- Operation of 2+2 half ladder detectors
- Final design of DHH carrier cards with optical interfaces
- Detector types : IF, IB, OF, OB
- Trigger rate tests
  - Average 7 kHz trigger rate (one ONSEN module)
  - 30 kHz in pulse mode within short intervals of few seconds ?
- Readout modes
  - Raw data (pedestal measurement)
  - Zero suppressed data
- Zero suppressed data format
  - Direct DHPT format
  - Intermediate remapping format
    - Remapping hits within each DHPT





Thanks

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