

PXD Permanent Set Up

Goals and Schedule

PXD Permanent Set Up

PXD permanent set up goal is fourfold:

- Have a complete and well controlled/understood/debugged set up running 24/7 in a large lab accessible by the entire collaboration for tests and for increasing the system complexity step by step
- Understand and disentangle DAQ/trigger issues (PXD and SVD), complemented by on site test beam campaigns
- Complete integration Phase 2 detector systems
- Commissioning of the half shells using final hardware before the shipment to KEK

HERA Hall

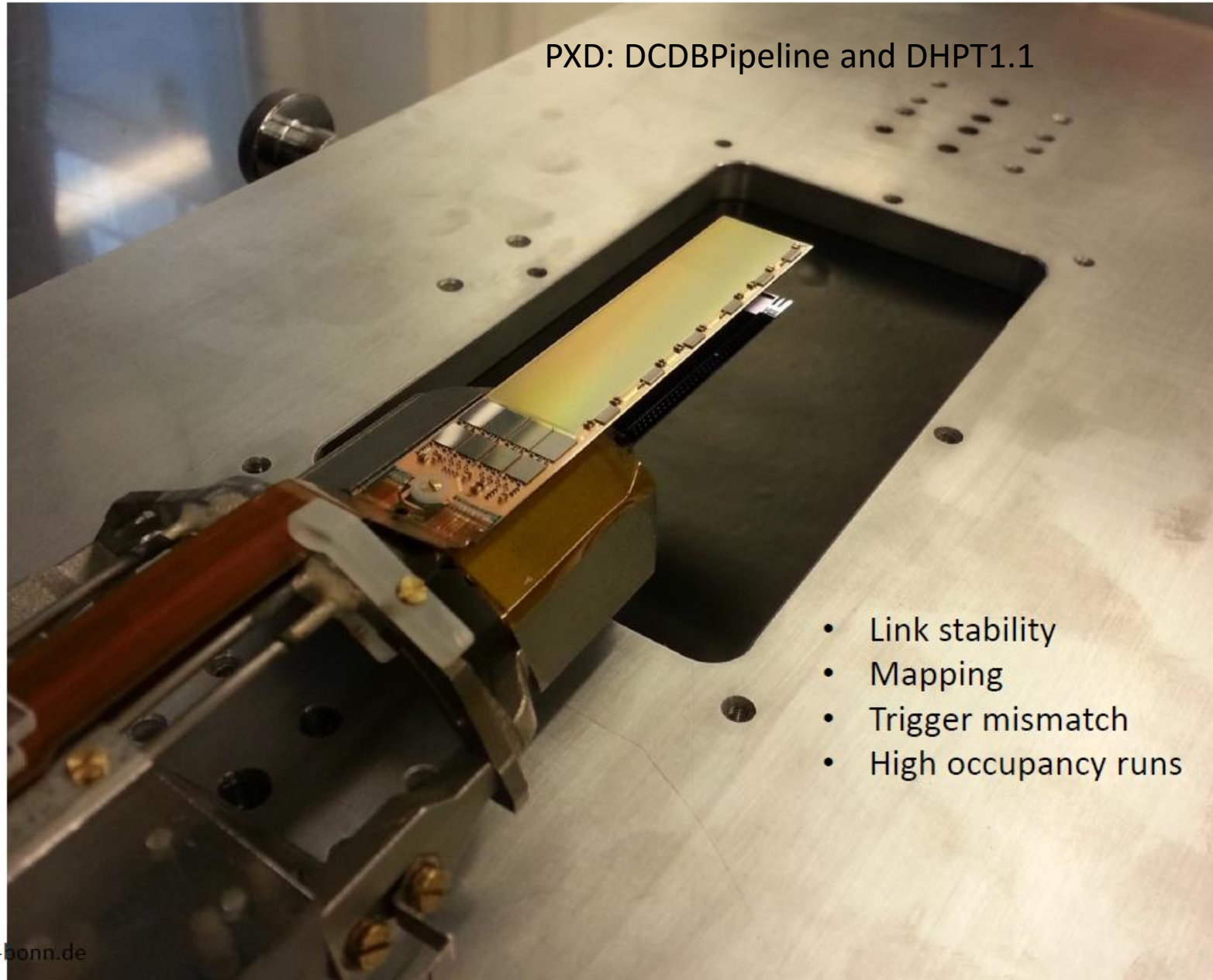
DAQ Rack

Mockup

HERA Hall



Step 1: PXD



PXD: DCDBPipeline and DHPT1.1

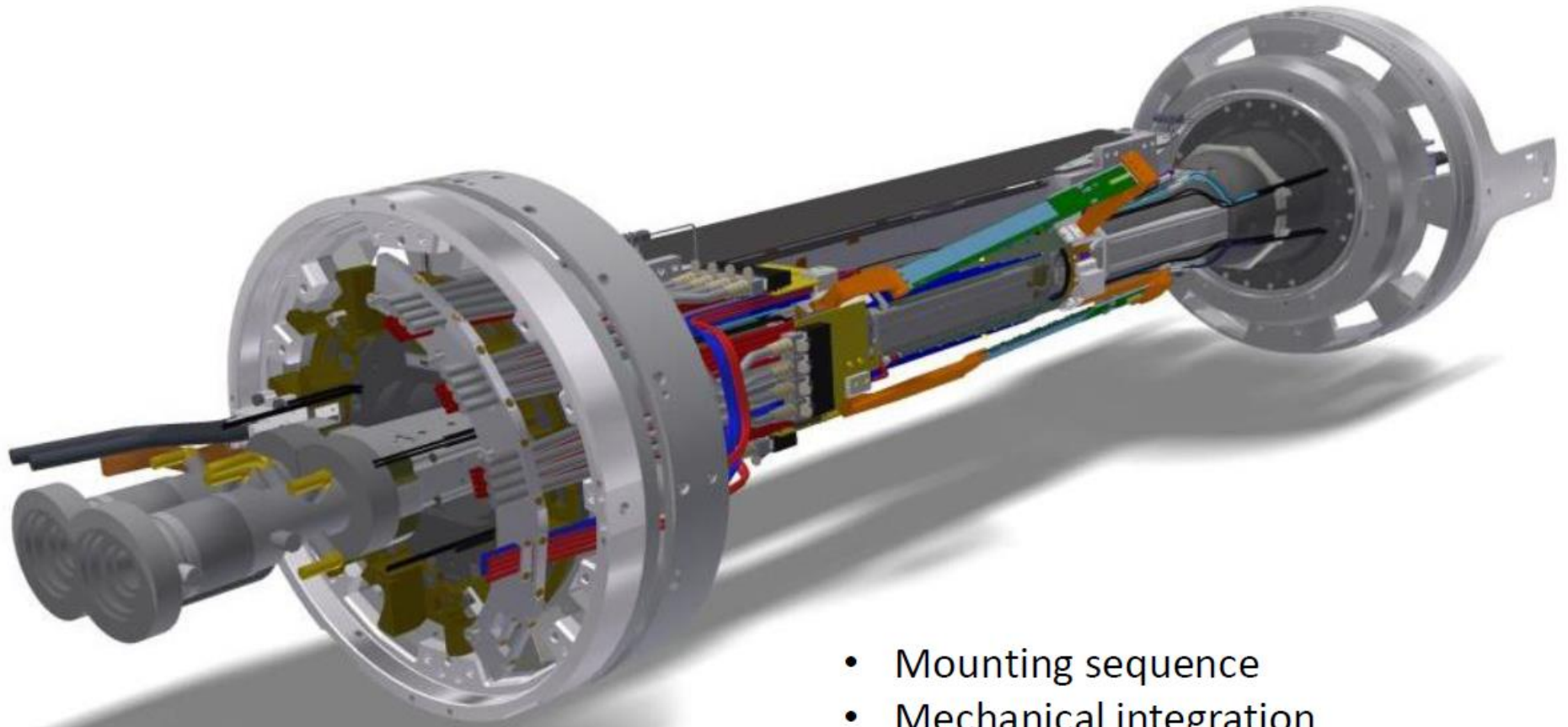
- Link stability
- Mapping
- Trigger mismatch
- High occupancy runs

Step 2: VXD

PXD: DCDBPipeline and DHPT1.1
SVD: Cartridge

- Trigger mismatch

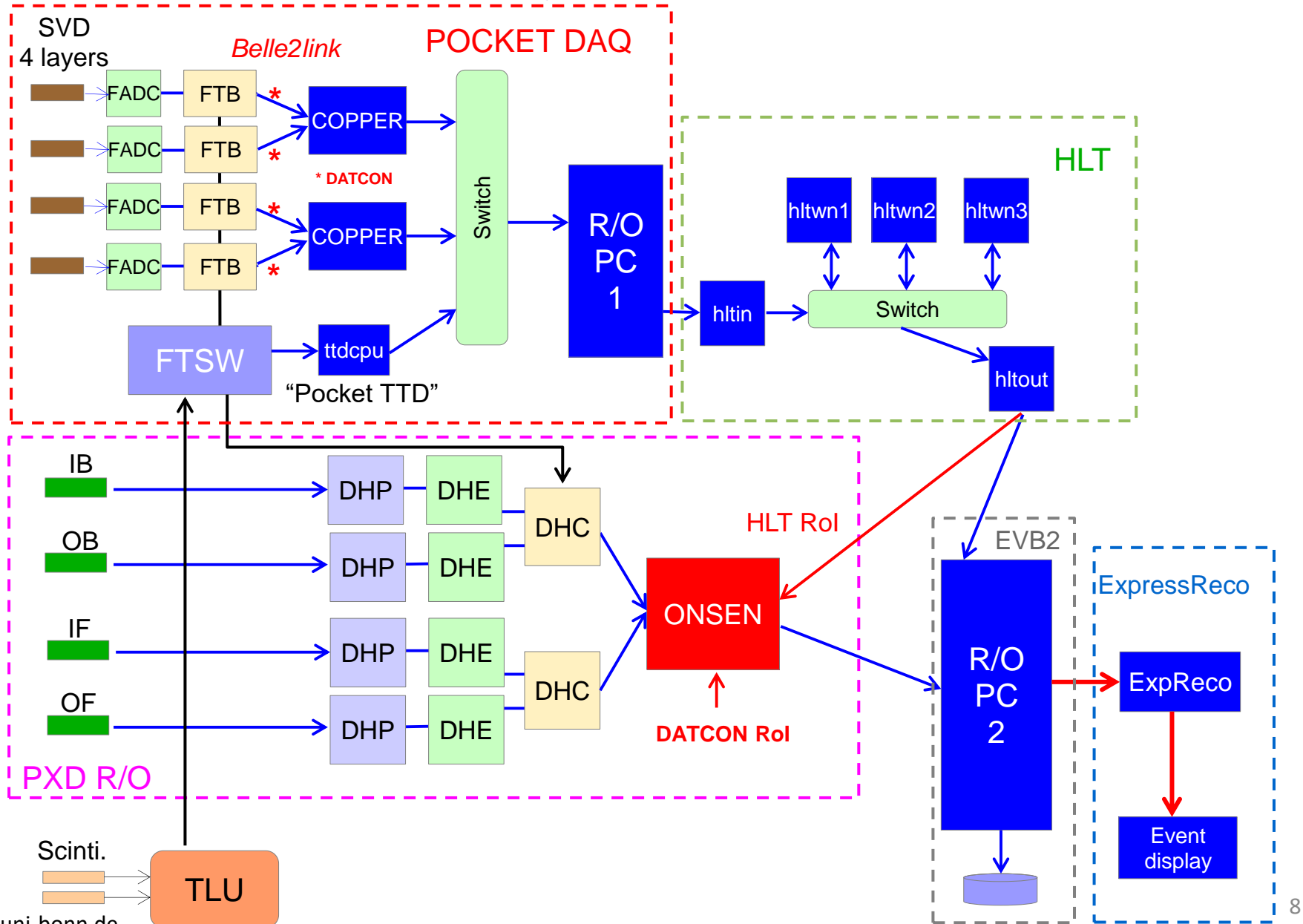
Step 3: Phase 2



PXD: DCDB4.2* and DHPT1.2*
SVD: Cartridge

- Mounting sequence
- Mechanical integration
- Cooling
- Grounding

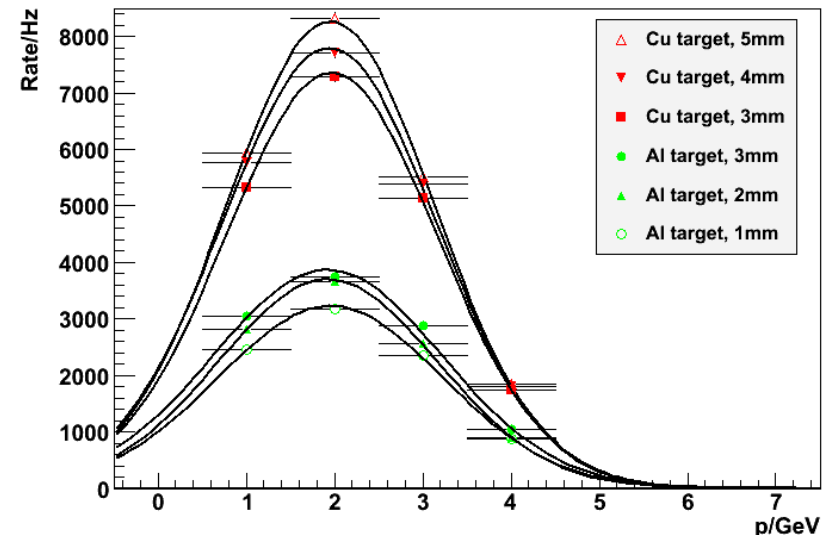
VXD-Test Beam DAQ Structure



Step 4: Test Beam

- VXD common test beam in **December 2016** (5th to 23rd December 2016)
- Small sector of the final sensors and ASICs
2 PXD + 4 SVD ladders
- Complete VXD readout chain: HLT, monitoring, event building, PocketDAQ
- CO₂ cooling, slow control, environmental sensors
- Illumination with (up to) 6 GeV e⁻ under solenoid magnetic field (PCMAG)
- Alignment, tracking algorithms, ROI

■ **Goal: System integration and (step 2) in Phase 2 Commissioning**

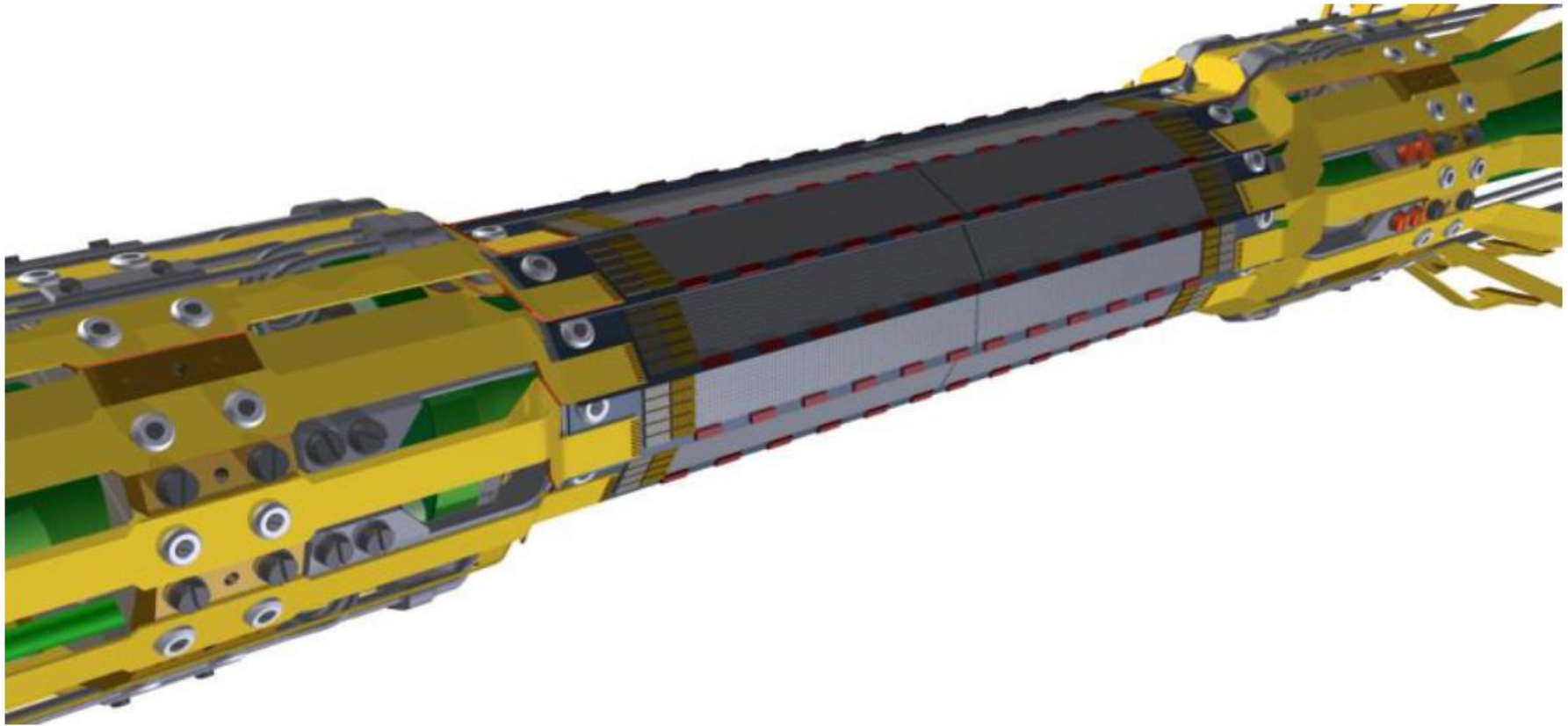


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- VXDTF
- Data reduction system
- No longer workarounds



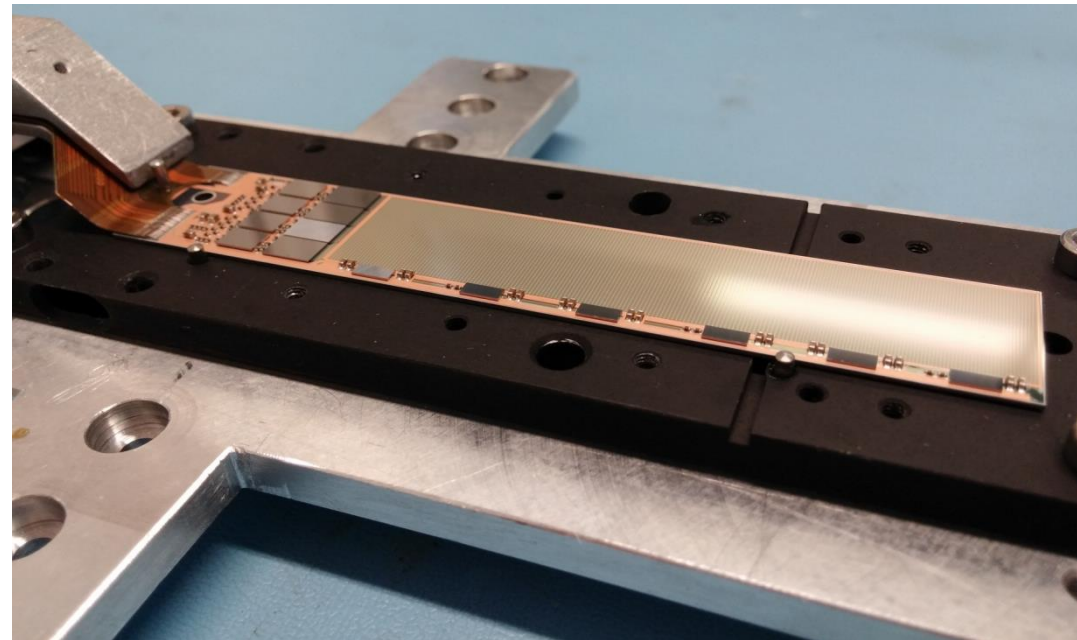
Step 5



- Complete Phase 3 PXD

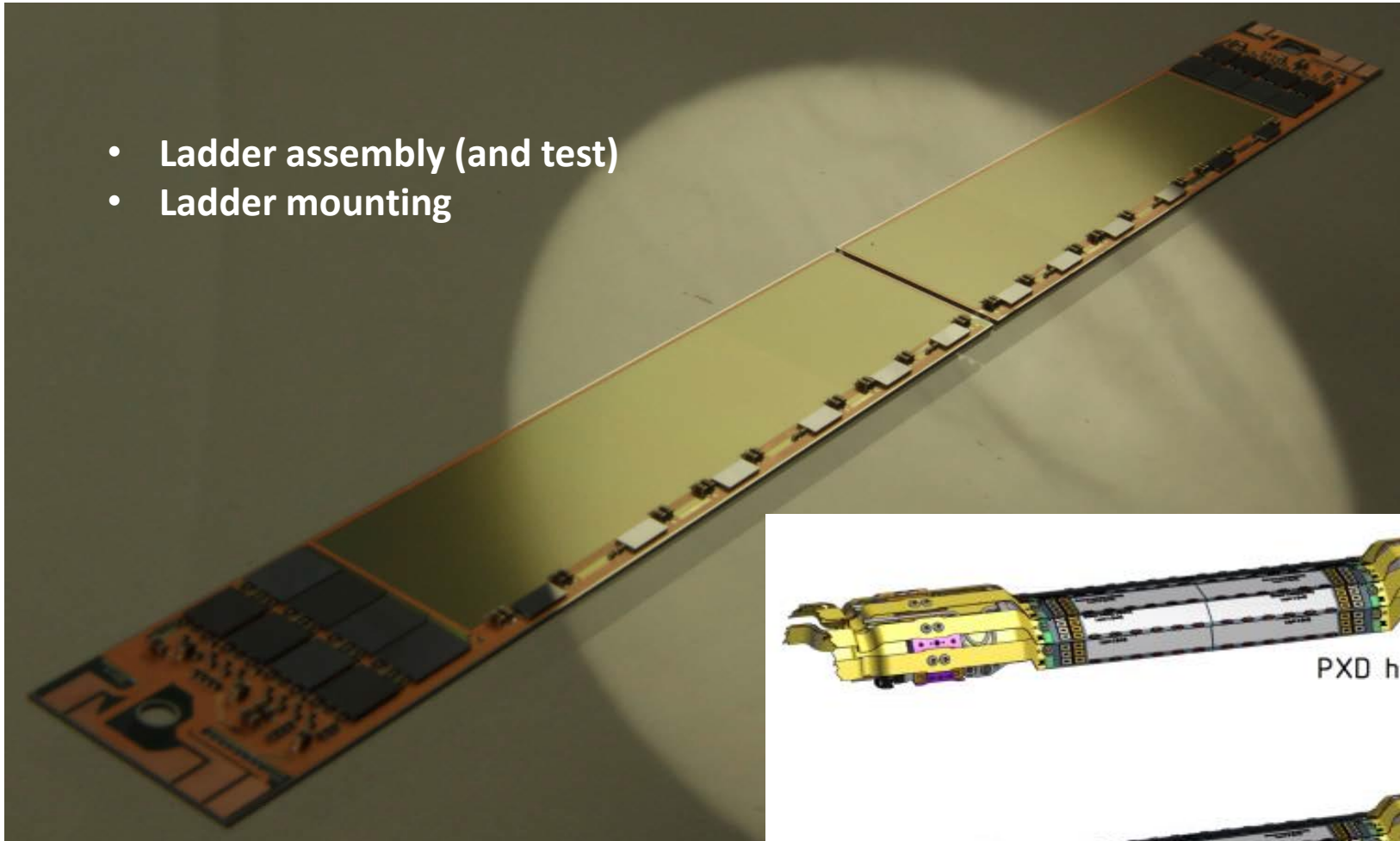
Summary PXD Module Test

- Each PXD module tested prior to assembly into the half shells:
 1. Power up. Voltage sanity check
 2. ASIC sanity check. JTAG boundary scan
 3. Digital test pattern, delay scans
 4. Switcher control signals
 5. Raw data readout
 6. Pedestal distribution, noise
 7. Response on radioactive sources



Ladder Assembly – Half Shells

- Ladder assembly (and test)
- Ladder mounting



PXD half shell-01



PXD full shell

Commissioning at DESY using the well debugged permanent set up

Summary PXD Module Test

Tsukuba hall B1 room

SVD
(Ladder mount table)

Outer cover gluing ✓

Support cone gluing ✓

Endring gluing ✓

Mount SVD structure on
ladder mount table ✓

Ladder mount !!!

Attaching to Division tool ✓

Tsukuba hall B4 (CDC) room

BP+HM+PXD
(VXD assembly table)

Alignment of Beam pipe position ✓

Fixing Heavy metal on the table ✓

Attaching BP onto heavy metal parts ✓

Covering upper heavy metal parts ✓

PXD commissioning at DESY

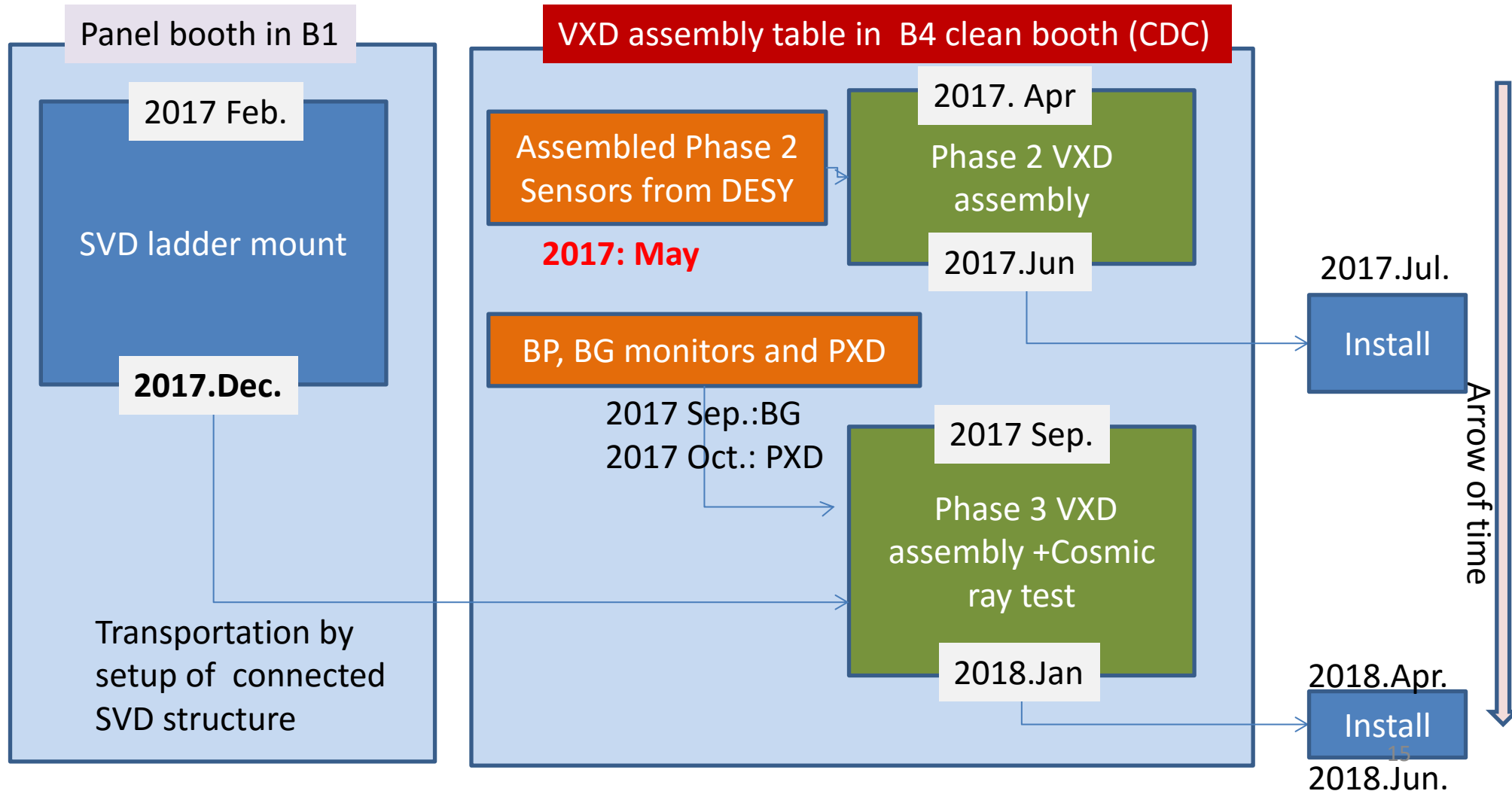
Attaching PXD system

Connection BP+PXD with SVD
(@VXD assembly table)

VXD installation ✓

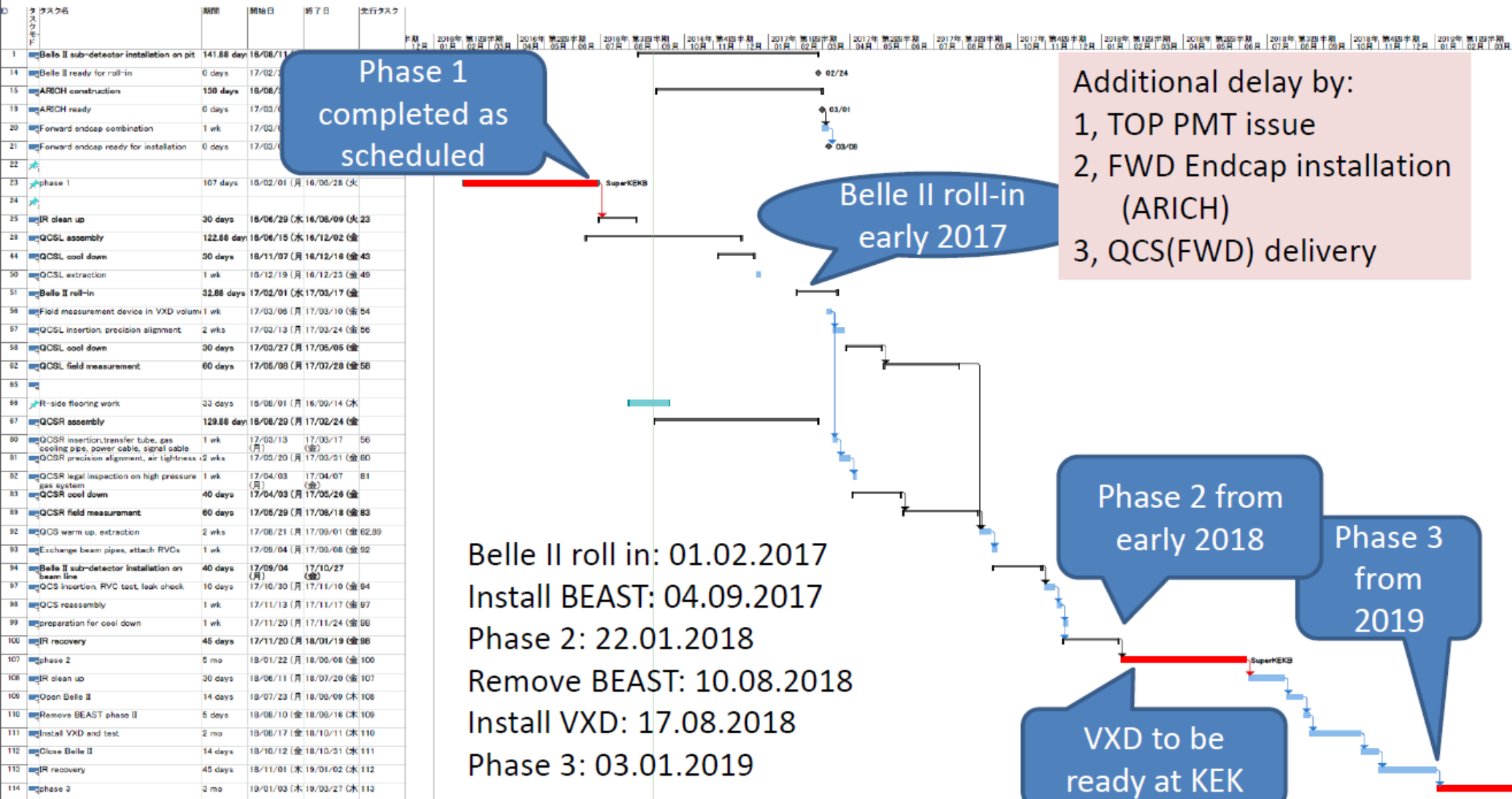
Tsukuba hall B4

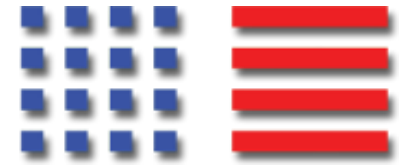
VXD Assembly



Schedule

(possibly, but it will be decided in next B2GM)





Thanks