# PXD DAQ (mostly Onsen) – Status, Schedule, News

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für Bildung
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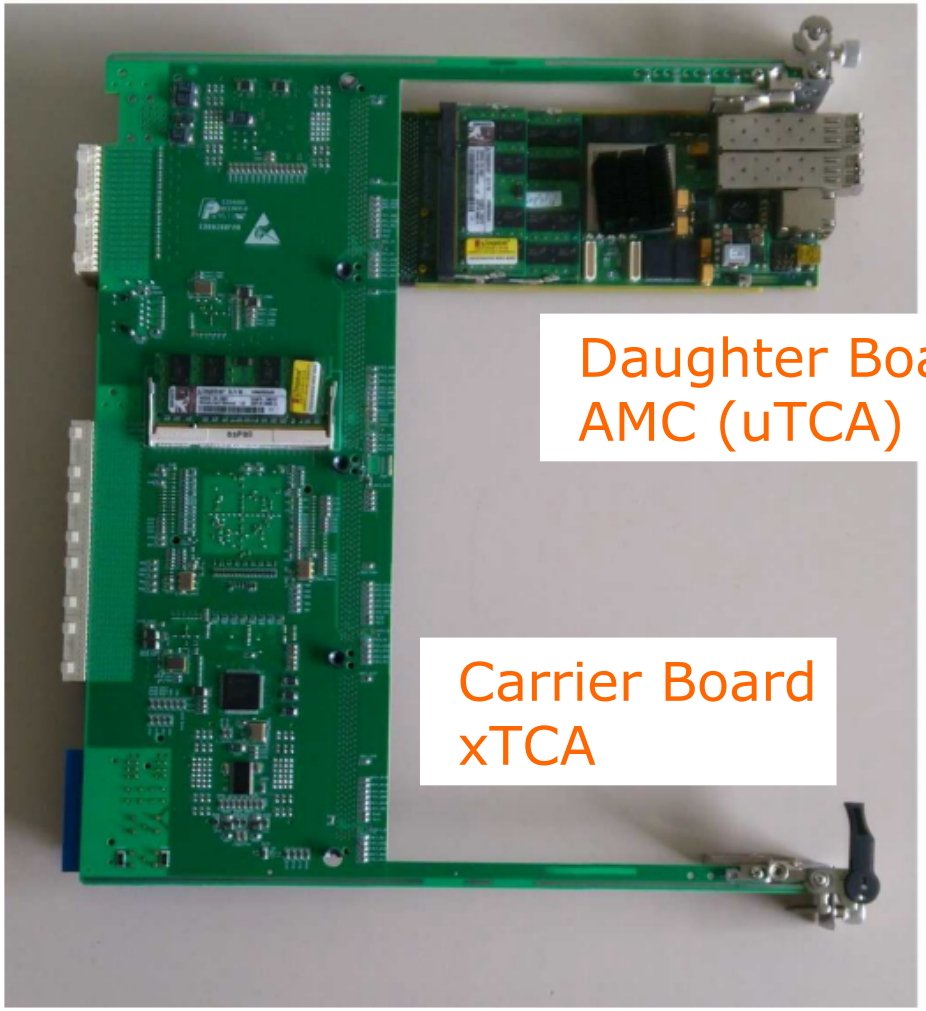
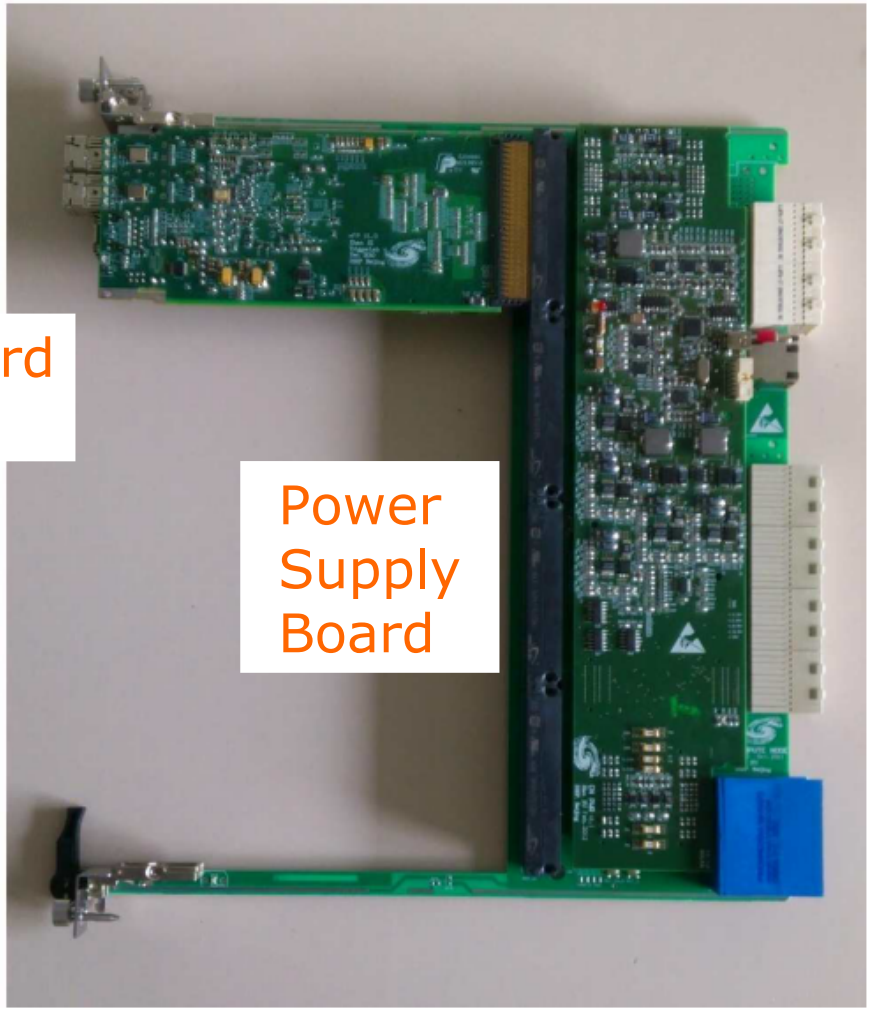
16th International Workshop on DEPFET Detectors and Applications
Seeon, 25.-28.05.2014

Reminder: Compute Node v3 → carrier board and AMC board
AMC is uTCA formfactor (but partially different pin assignment)
Reminder: only AMC used at DESY tests



# Schedule and Board Production

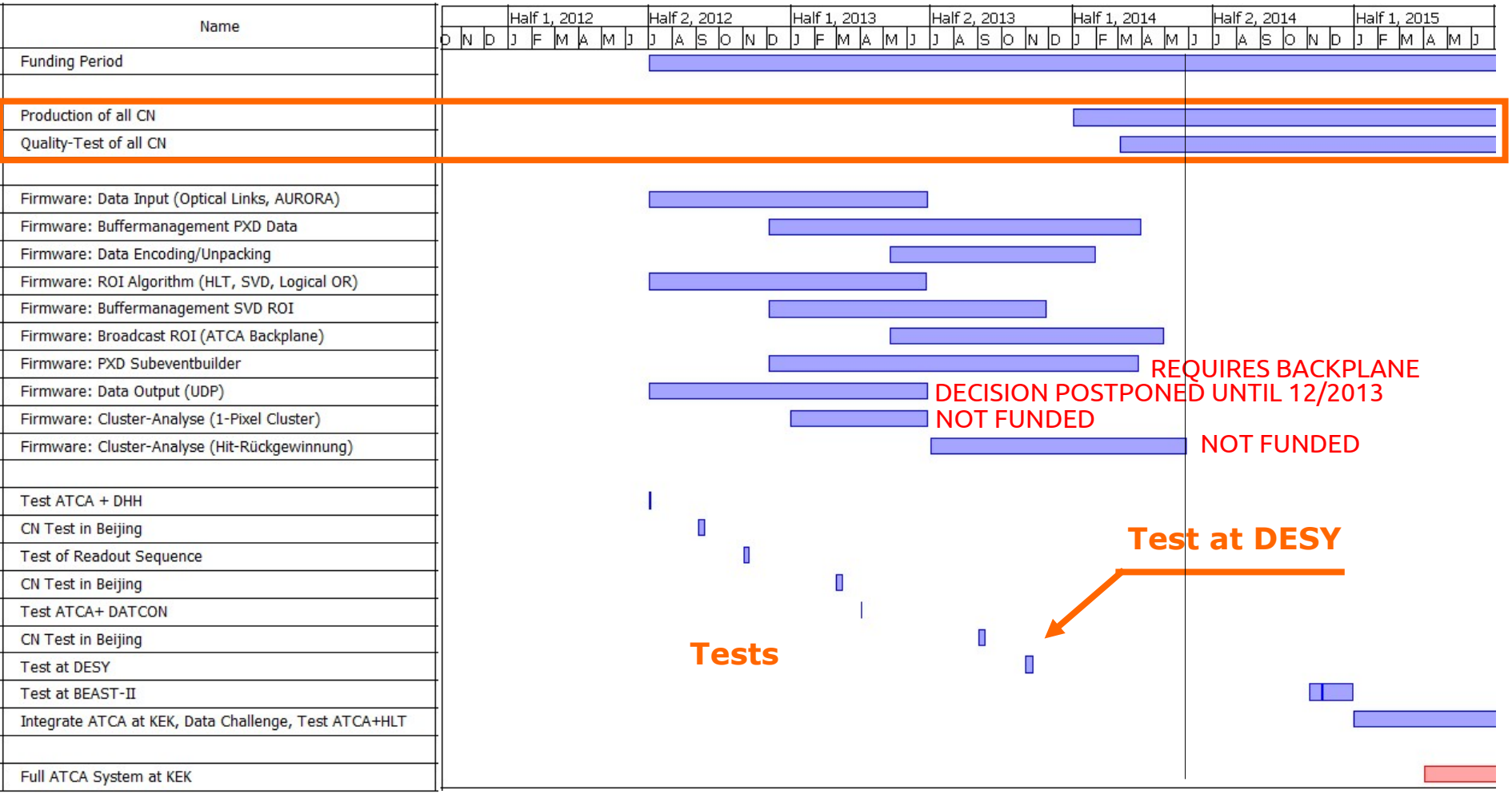
## AMC (uTCA) cards

- 2+8 AMC v3.2 in Giessen
  3 of these 8 have problems (Flash, RAM)
  (but can be used for some tests)
- 2 x AMC v3.1 (in Bonn), not pin compatible
- green light for mass production given in 10/2013
  (but no mass production yet)

## xTCA Carrier Board

- requires re-design (some LVDS links unusable, clock distribution)
  we tried correction and auto-route
  $\rightarrow$ did not work
- Jingzhou started working on it
  schedule: new prototype autumn 2014
- development of carrier board firmware
  starting on v2 board (virtex-4) $\rightarrow$ creates a lot of work

# Official Schedule of PXD DAQ (submitted 12/2011)



# Schedule for complete system

original schedule was 31.12.2014 for complete system

| | |
|---|---|
| 32(+4) AMC cards (ONSEN) | plan: funded by IHEP |
| 8(+2) carrier boards (ONSEN) | plan: funded by IHEP |
| 15 AMC cards for (DATCON) | plan: funded by Bonn |

n.b. all existing cards are funded by BMBF so far (as prototypes)

discussed with Zhen-An Liu $\rightarrow$ new schedule 31.03.2015
why ?
need 4 months for testing all cards
(test IP cores, x-ray, etc.)
then ready by 01.08.2015 (complete PXD @ MPI ?)

# OVERALL STATUS AND NEWS

Klemens Lautenbach (basf2 unpacker/decoder)
→ applied for DAAD fellowship to go to KEK
10/2014-01/2015 (inviation by Itoh-san)

new student Dennis Getzkow
firmware for carrier board, master thesis, due 09/2015

new group, Mainz (Concettina Sfienti)
ideas: IPMI microcontroller board, EPICS, DAQ DQM

AMC cards are also used by PANDA (2 new Ph.D. students)
→ brought back the 3 cards from DESY for now
→ asked Zhen-An for mini-series (8-16 new boards)

documentation ! (→ wiki)

# NEXT BMBF Application (deadline 01.11.2014)

- pixel recovery
  high dE/dx → (Bethe-Bloch) → low p (Karlsruhe)
  will use clustering on DHH (TUM)
  → requires changes in data format (Giessen, TUM)

- silicon-only tracking online
  PXD (2 layers) + SVD (n layers, **n<4**) + no CDC

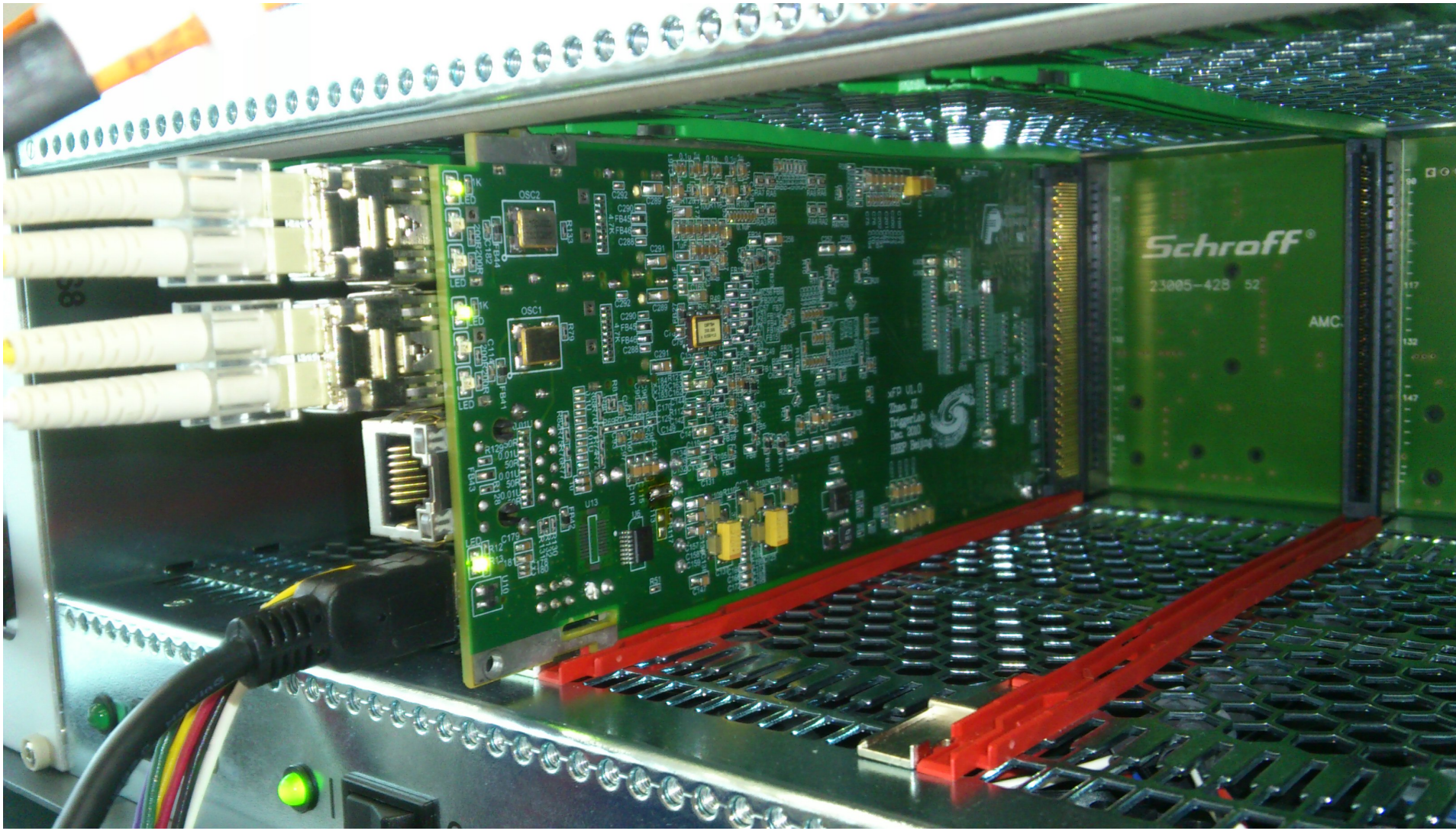
1. DATCON finds ROIs
   accept tracks w/ missing hits, reduction factor can be ≤10
2. ROIs are sent to ONSEN
3. SVD data for ROI tracks are sent to ONSEN
4. re-track PXD hits (inside ROI) and SVD hits
   maybe recovered pixel as seed

platform: ONSEN, or a new „afterburner“ system
goals: - lower pT range (slow pions)
- increase reduction factor ≥10 (if increased background)

# BACKUP

# uTCA custom BACKPLANE project

- planned by Bonn group for DATCON (multiplexer)
- may be backup plan for xTCA carrier board (if problems)
- purpose of carrier board for ONSEN ?
  - event building
    $\rightarrow$ not required anymore, can be done by EVB
  - ROI distribution
    $\rightarrow$ required (limited TCP bandwidth)
- backplane for ONSEN: DAISY chain (simple!)
  $\rightarrow$ send ROIs from AMC (port i) to AMC (port j), 1 port = 4 lines
  i,j, are same for each AMC $\rightarrow$ same firmware
- ONSEN system would consist of 4 uTCA shelfs
  not much larger than 1 ATCA shelf
  $\rightarrow$ still sufficient space in EHUT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AMC