

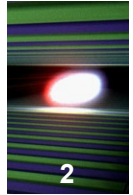
WP-75

Detector Development

XFEL Project Progress Report (1-2012)

presented by
Markus Kuster

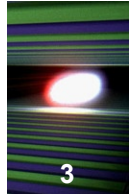
Comparison of forecasted and achieved progress: Jan. 12 → Mar. 12



- Update on the status of the detector group
 - Detector scientist - Monica Turcato
 - Interface to the DSSC project
 - Radiation damage tests
 - 0D/1D detectors for spectroscopic and veto applications
 - Software engineer/physicist – expected 1. Sept. 2012
 - Candidate accepted (contract not yet signed)
 - Data analysis/calibration software
 - Detector performance simulations/start-to-end simulation
 - Interface to external 2D detector groups

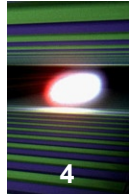


Comparison of forecasted and achieved progress: Jan. 12 → Mar. 12

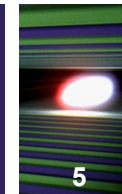


- Engineer for analogue electronics development re-announced
- Electronics technician under recruitment
- Coordination: interface to AGIPD/DSSC consortia established
 - Monica Turcato for AGIPD
 - Jolanta Sztuk-Dambietz for DSSC
 - Initiated regular integration meetings including leading scientist for SQS (M. Meyer), SPB (A. Mancuso), MID (A. Madsen)
 - Optimization of mechanics design, definition of detector operating modes, prototype systems, preparation of implementation phase
- LPD/DSSC contract extension towards implementation phase
 - Negotiations in progress, definition of deliverables, milestones etc.
- HV/LV specifications for the 2D imaging detectors have been finalized

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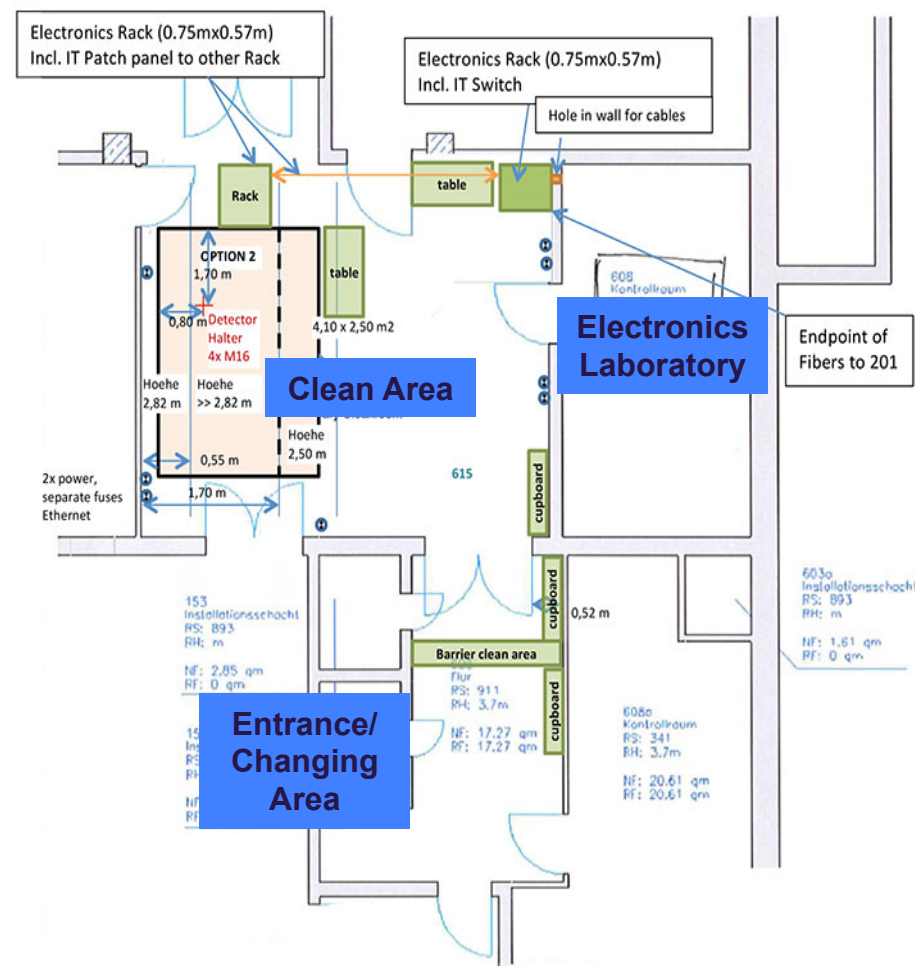
- Clean room laboratory in XHQ
 - specifications finalized (input for planning)
 - cost estimate expected in the next weeks
- Requirement and specifications for the pnCCD vacuum and detector control system have been finalized
 - Beckhoff PLC system development has been started with WP-76
 - system integration and tests will start in the next weeks
- 2nd meeting of calibration WG March, 7th 2012
 - Started with the definition of
 - calibration infrastructure requirements
 - calibration software requirements
 - general status of calibration concepts (non-linear gain, memory droop)



Clean Area



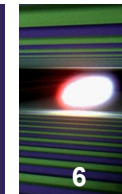
HERA South 6th Floor



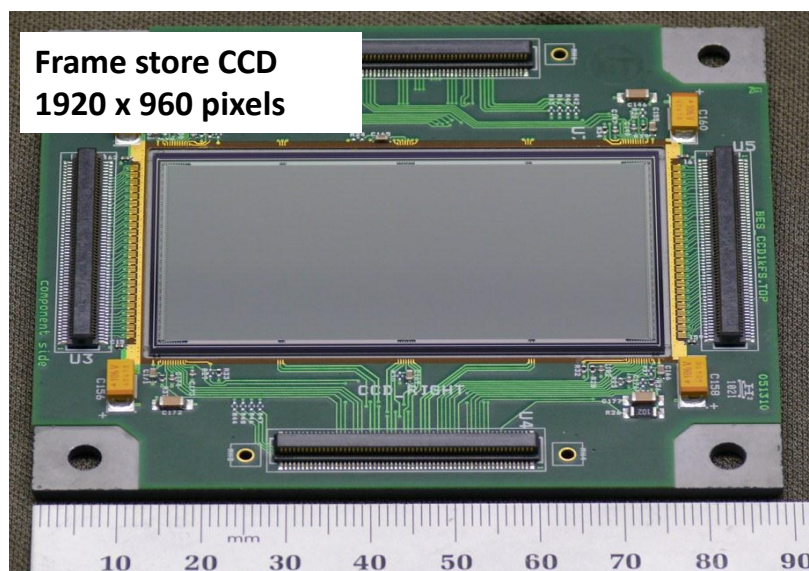
■ Status installation

- Rooms cleaned, clean tent in place and operational
- Workbenches, electronics equipment in place

Next: installation on ground floor



LBL Fast CCD



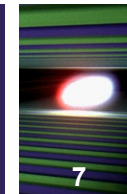
- Market study has been finalized
- Potential collaborators identified

Low risk backup solution

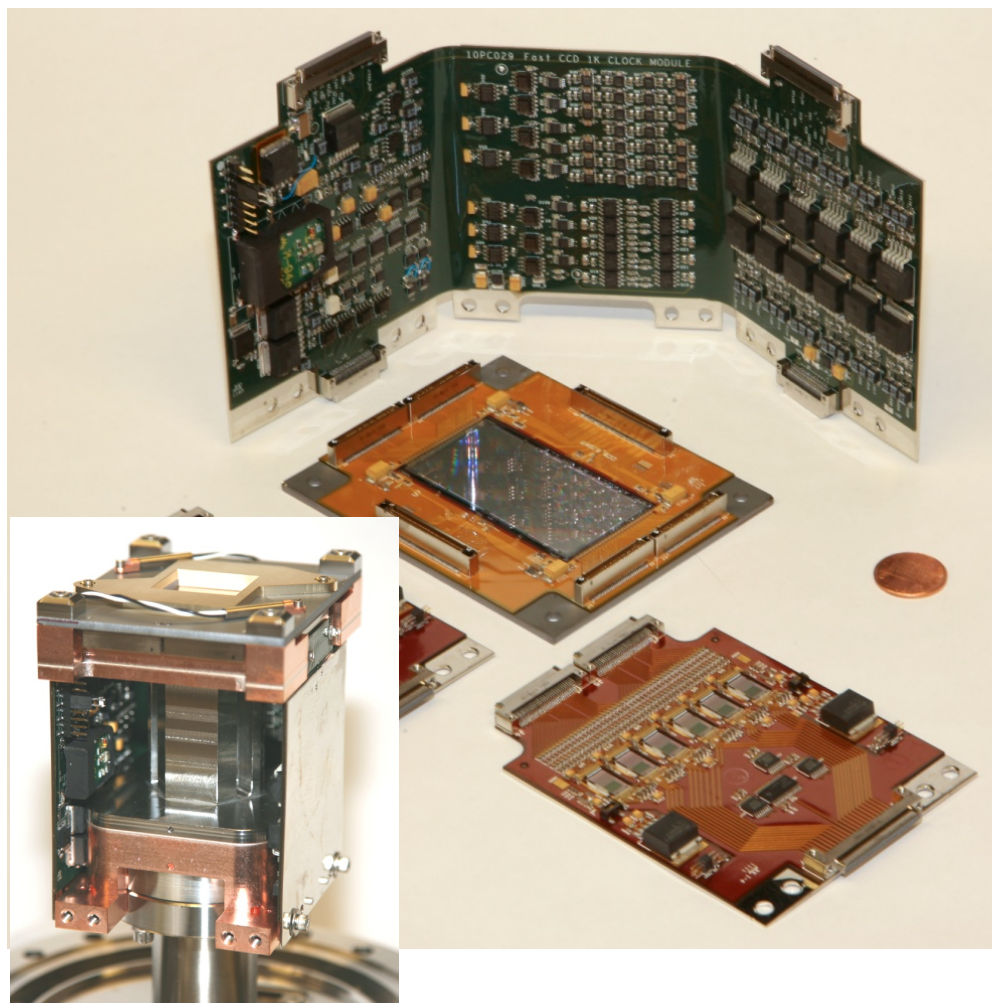
Write up of the survey is in progress

- Fully depleted CCD
1920 x 960 pixels
- Energy range
 $0.25 \text{ keV} < E < 6 \text{ keV}$
- Pixel size $30 \mu\text{m} \times 30 \mu\text{m}$
- Readout 100 - 200 fps
- QE
 $> 80 \% \quad 1 - 8 \text{ keV}$
 $> 50\% \quad 250 \text{ eV}$
- First performance tests with photons, results are close to specifications (noise)
- Proposal to the XFEL MB is under preparation

Low Rep. Rate/Low E/Small Pixel Option

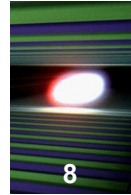


LBNL Fast CCD



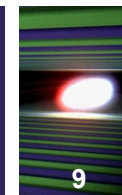
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Activities and milestones scheduled for the next half year

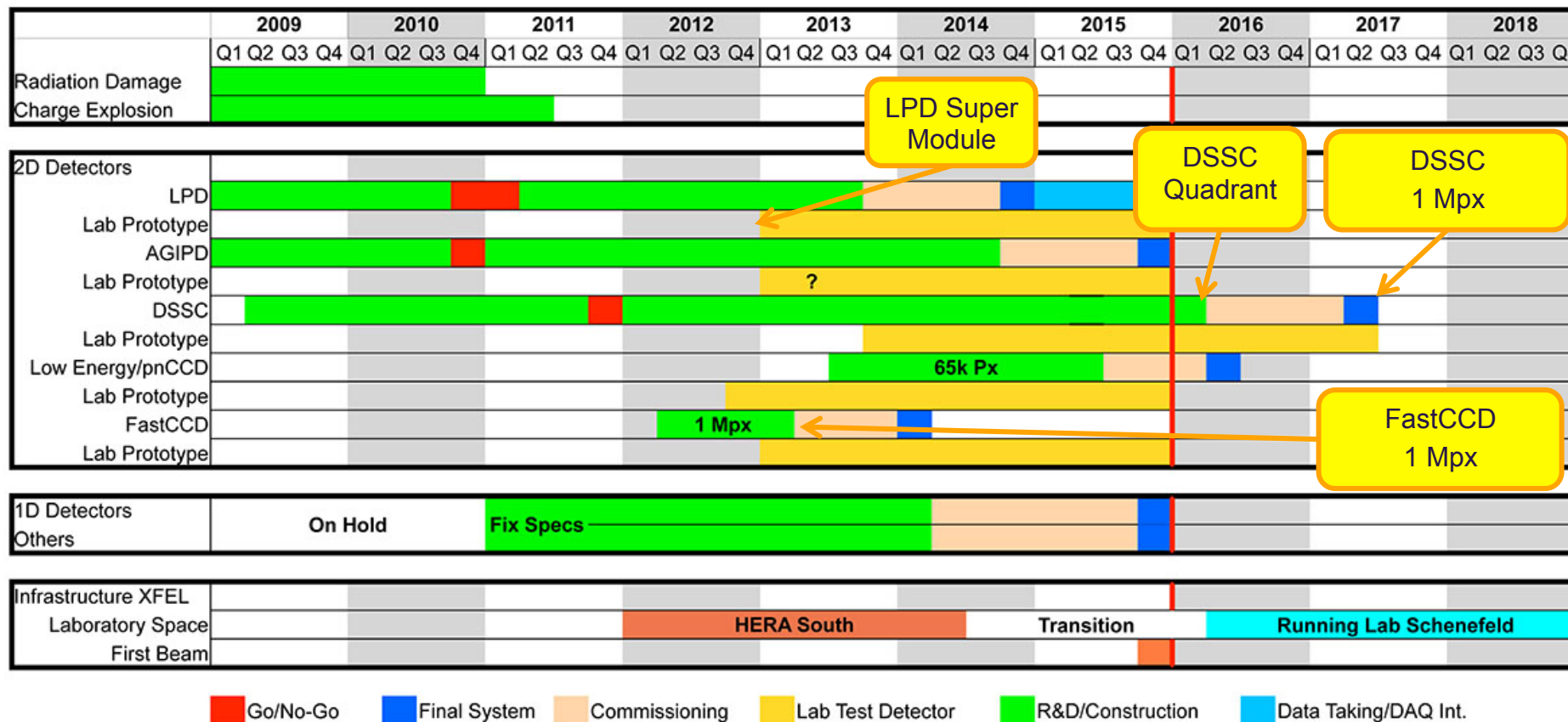


- 11th meeting of the XFEL Detector Advisory Committee
May, 14. – 16. 2012 in Hamburg
 - Status of detector activities at LCLS, SACLA, radiation damage, overview on detector projects (WP-76/75), reviews
- Negotiations on contracts (deliverables and milestones)
LPD and DSSC
- Prepare MB decision and collaboration agreement with LBNL
- Definition of calibration infrastructure requirements
- Continue control/DAQ system integration of pnCCD test system
- Start with infrastructure planning for HERA South ground floor
- Finalization of AGIPD sensor design
- Continue study on second generation imaging detectors
- Finalization of the WP-75 R&D road-map beyond 2015

WP-75 Schedule and Critical Path

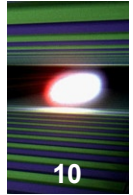


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Delays

- AGIPD: sensor submission, ASIC design, mechanics
- LPD: noise and radiation hardness problems



- Project management, controlling and budget consolidation
 - Coordination between WPs
 - ➔ Only little coordination between WPs (budget, manpower planning, interfaces)
 - ➔ Critical milestones and inter WP dependencies should be established
 - Budget and controlling
 - ➔ At present there is no easy way for WPLs to get information on the actual budget status, spending, invoice status, carry forward from previous years etc.
 - ➔ Would appreciate if WP get direct access to budget information (web based, read only)