

LCLS UEC Meeting Minutes: 2021-12-17

Present: E. Biasin, R. Sension, C. Knotts, D. Rolles, Y. Cao, G. Doumy, G. George, J. Kern, M. Trigo, M. Dunne, M. Mitrano, , M. Khalil, P. Sun, G. J. Williams, , C. Rajendran, T. Gorkhover, Paul Jones

Absent: A. Marinelli, E. McBride, N. Hartley, B. Ofori-Okai, D. Oberthür

Guests: Matthias Kling (LCLS SRD Director) and Sebastien Boutet (LCLS Operations Director)

Introduction of UEC members and Guests

Updates from Mike Dunne:

- **LCLS-II:** After 4 years of effort, LCLS II is now fully under vacuum (4 km from injector to the end of the undulators). Gas is now flowing around the cryo modules, with cooldown planned to start in January.
- **LCLS Strategy:** Mike gave a presentation to the DOE BESAC meeting in December, covering the future direction of the facility and its long-term competitive position. This included the concept of LCLS X, which is a proposal to outfit a suite of new beamlines and instruments in new experimental halls, making use of the accelerator capability being installed by LCLS-II and LCLS-II-HE. Consultation with the user community, and engagement of the UEC, will be a focus of the coming months as we put together the scientific and strategic case for this long-term development.
- **Run 21:** The call for Run 21 will come out at the end of January, with experiments likely starting in the beginning of October. Discussion about how to make best use of the new LCLS-II beam, balancing the ramp-up of performance with delivery to the soft X-ray instruments. LCLS foresees user assisted commissioning and user assisted development with scientific objectives. A primary focus for Run 21 will be to get the high rate beam up and running. LCLS wants these early periods to involve the user community fully, so we learn together and drive the facility performance appropriately.
- **Recruitment** – LCLS is recruiting in number of areas, including beamline science (e.g. for qRIXS and TXI), controls, lasers, sample environment. The UEC's help in spreading the word is sought. Suitable for graduates and undergraduates who are early in their career. There has been a focused effort over two years to grow the facility staff to get ready for LCLS II (with an approximate doubling of the size of the operations team). Matthias Kling and Sebastien Boutet are the primary points of contact.

Key Topic: Beamline scientists' career development and user operations delivery.

This topic follows on from the previous meeting's discussion about ensuring sustainable and attractive careers for LCLS staff.

Matthias will talk about restructuring on the science, career development side and Sebastian will talk about restructuring instrument access and capability to retain users:

Matthias Kling (SRD Director):

New structure of SRD division, split into 6 departments: AMO Science, biology, chemical science, material science, matter under extreme conditions, and laser science. Laser science incorporated into SRD has many benefits which we have seen in the first 2 months of operation.

Allocation of staff to science departments is based on best fit, not restrictive, with staff encouraged to work in more than one area, and engage staff outside of SRD.

Motivation and guiding principles for SRD's restructuring:

(1) Ensure LCLS delivers internationally leading scientific impact

- Drive facility R&D directly informed by scientific goals
- Encourage scientific engagement, focus, and coordination by SRD and LCLS staff
- Continuously update priority LCLS science opportunities and development plans

(2) Align LCLS organization with our stakeholders

- Strengthen ties to user community, other SLAC directorates, and Stanford
- Build stronger ties with DOE and NIH program managers
- Develop new user communities in emerging science areas

(3) Drive career development for staff – focus on individual strengths and interests

- Flexibility to interact across SRD departments and groups
- Integrated with Operations Division and overarching methodology R&D
- Smaller SRD teams focused on key topics that will drive LCLS SRD

Sebastien Boutet (Operations Director)

The Operations Division was formed in 2020 to provide a clear structure for preparation and delivery of user experiments. It is based around the instrument axis, with a mixture of staff matrixed from SRD and a team of technical delivery staff.

Each instrument has a defined team, comprising a lead instrument scientist, other beamline staff, controls, data systems, laser systems, area management, and technical support. The intent is to strengthen local expertise, ownership, and engagement – enhancing continuity of knowledge and provision of more robust systems for users.

The past two years have been difficult, with substantially reduced user presence, placing a significant burden on local staff. A number of actions were taken to relieve pressure in the system, including:

- We reworked the remainder of Run 19 and Run 20
 - Removed 7 experiments from Run 19
 - Smoothed out peak loads, and reduced the number of configuration changes
- Created open shifts in the schedule for training: safety and operations
- Allocated more time for Machine Development and commissioning
 - Halted the practice of taking MD shifts to fit in more experiments

- Pushed multiple configurations to Run 21 to minimize setup changes in Run 20
- Phased installation of new capabilities
- Operations robustness (embedded teams, POC certification, OJT, documentation)
- Hiring staff to rebalance to operations for LCLS-II era, and to prepare for HE and MEC-U
 - Large increase planned in controls support
 - Additional engineering staff focused on operations

Questions:

With the new SRD structure, how does it affect the teams which are allocated specific beamlines? Is it now that there are multiple people for multiple scientific departments? How does the scientific structure connect to the operational structure?

Ans: yes, multiple departments feeding into instrument teams, which is an advantage that drives interdisciplinary discussion.

Scientific teams approach the users very early on in the phase when users think what kind of experiments the users could do? What to include in their proposal? We like the team to actively discuss with the users which will be more efficient.

How it works concretely for a staff scientist? They could be part of multiple scientific and instrument teams. Will this create more meetings and more burden for the scientist?

Ans (Matthias): We are well aware of this problem and trying not to burden our staff with meetings. When I asked SRD staff if they would like to have meetings every 3 or 2 weeks, they would like to have every two weeks, there are certain type of meetings which the staff love to participate in. Beyond that one of our main objectives is to create more onsite presence at the instrument and that can by itself remove the need for meeting and increase productivity.

Like the idea of people overlapping and learning things from each other. How does the user interface with a group, is it clear who is responsible for what? Is this information available to somebody when they are at planning stages of an experiment? This in light of what Mike said, he is envisioning commissioning instruments in collaboration with users. That will be successful only when users are brought in early in the process and people know who to be in touch with.

Ans: The science department heads are the natural points of contact for early experiment discussions with users. The lead instrument scientists are the natural points of contact for specific endstation / capability discussions. The details of the department heads will be updated on the web page.

Just putting information on websites will not be active enough. Suggest to think of other active ways, such as a newsletter or townhall meetings on specific topics.

Ans: Good idea. We will look to split the traditional Town Halls into a short plenary and then multiple parallel sessions focused in each area / instrument.

When you have new beamlines and new instruments, I feel like the beamline scientists can't do everything and one thing I felt that was missing was helping users to use the GUI and new DAQ capabilities. Somebody being available during the beamtime will be helpful, and is currently missing. The new capabilities are only powerful if people are aware of them.

Ans: This is a task that we expect the controls POC assigned to a given instrument to help greatly with. We are current shorthanded in this area, and are actively hiring. The plan is to over-correct to create some level of overlap and redundancy.

Integrating the laser team into SRD will be helpful in understanding what to develop, and to help ensure that the lasers used in the hutches are robustly engineered.

It needs to be really communicated well the change in ways experiments are planned. A focused townhall might be good, and I was wondering if it would be good if it could be integrated in the proposal process. May be if you have an idea, you can send a preproposal, just a paragraph, to LCLS and they can assign to people that will fit to an appropriate instrument and they could get in contact with the user early enough to prepare a proposal.

Ans: Good point, great idea

Comment: over the next 5-7 years we need to transform to collecting data and analyzing data on the fly. That is a big change and we need to go this direction without doubt.

Comment: I would encourage the science head LCLS leadership in general to engage with students and post docs.

Mike: Hosting students and post docs could be co-funded at LCLS. I encourage users who would like to come and spend time at LCLS to contact us. We will seek to find resources to make that happen.

Make enough time for early science and commissioning of new instruments, to avoid frustration of doing commissioning when the expectation is science delivery.

Ans: Yes we agree. For LCLS-II we wish to embark on a user-assisted early science program for the first period. This could be via a normal PRP review or via an LCLS-led approach. Needs to be discussed at the next UEC meeting in January.

