

NSLS-II Science Advisory Committee

Close-out Presentation
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Overall SAC is very impressed

- The facility is developing according to plan, which is an achievement all by itself
- SAC acknowledges that this is a product of an enormous amount of work by the entire NSLS-II team
- SAC expresses appreciation for the strategic plan

Strategic Planning

- Is the new strategic plan actionable and appropriate for the facility at this point in its development?
 - SAC overall is extremely pleased that there is a Strategic Plan that is actionable
- Is the balance in planned effort between the different areas; accelerator development, beamline operations and beamline development appropriate?
 - Accelerator needs more prominence
 - Always connect technological developments to scientific goals (e.g. segmented undulator – why is this useful?)
- Are there areas that we are pursuing that we should not be?
 - Re-evaluate suitability of HEX beamline to be sited at this machine; impact on the beam quality at this low emittance should be studied. Are there other needs of the State of New York that would better use the NSLS-II potential, for example B-CDI for micro-electronics research?
- Are there opportunities we have missed that we should be addressing?
 - Items should be more closely tied to the strategic directions, e.g. a sentence for each beamline identifying Grand Challenges that will be addressed.
 - Executive summary should matrix the DOE mission and grand challenges of science to the beamline portfolio
 - In the future, each chapter should have a “What you need to know” box to help it be more accessible to the non-specialist

Operations and Beamline Development - Accelerator

- Within accelerator operations, is the balance between maintenance, studies and operations appropriate? Are the plans for accelerator development appropriate and achievable?
 - Apparently very efficient process to get new beamlines in operation, with tax in form of reduced accelerator improvement and development
 - No apparent possibility to increase machine study time right now, in near future with less new beamlines this time should become available for accelerator
 - Outline longer term goals for accelerator upgrades in order to keep intellectual resources and give guidance for future bl developments

Operations and Beamline Development - DAMA

- Is the data acquisition, management and analysis strategy appropriate? Are we on the right path? Are the priorities right? Are opportunities we have missed?
 - SAC endorses DAMA's approach of a suite of tools to be broadly used for software development
 - New group management has apparently gotten up to speed in very short time
 - Good approach to tackle the challenges by leveraging collaborations within DOE facilities and others, using and contributing to open source
 - With the many open positions becoming filled this development will certainly gain momentum. This is an opportunity to evaluate centralized versus distributed personnel resources. The many beamline coming online are feeling pressure to provide adequate services in this area for users
 - At current, some sub-optimal solutions are used at beamline, e.g. local storage / local analysis capacities, these should systematically be replaced with central infrastructure
 - Address user experience, e.g. create single-logon

Operations and Beamline Development – Future Opportunities

- Are the plans outlined to further develop beamlines appropriate, given the current funding situation? Are there opportunities we have missed; to reduce costs, to obtain funding or to leverage other resources?
 - Congratulations to a rapid development of capabilities at many beamlines in parallel so far
 - Many good examples from beamlines, e.g. developments in advanced sample environments, data analysis chains etc.
 - The strategic plan for many of the beamlines outline very specific and appropriate development plans for the near future, encourage all beamline to update their plans to the level presented e.g. for HXN
 - Multimodal approach bears potential to increase capabilities at many beamlines in a cost-effective way. Sample preparation needs should be met both with appropriate equipment and with expert support staff to ensure successful experiments

User Program

- Is the user program making appropriate progress?
 - Yes, in most cases the user program is doing very well
 - The ramp-up is impressively fast
- Does the proposal review and allocation produce the appropriate balance between new users and experienced users?
 - There was quite a bit of discussion on this
 - There are conflicting demands between increasing the number of new users, and new experiments, vs. having returning, experienced users who are more likely to be self-sufficient and more productive
 - New users, and user groups with few people, put additional strain on the beamline personnel
- Are there other beamtime access mechanisms we should implement?
 - No. Too many different mechanisms could present challenges. The portfolio is appropriate
 - Recommend further expansion of BAG proposal scheme to other appropriate beamlines
 - Consider making end of run summary a requirement before more beamtime is allocated

For the beamlines reviewed

- Are they each on track to develop world-leading programs? If not, what should be done?
- Have they got the mix between commissioning new capabilities and running a user program right?
- Is the user program on each looking healthy for this point in their development?
- Are the future plans for the respective beamlines appropriate? Are there opportunities we are missing that we should go after? Conversely are any of the beamlines pursuing directions that they should not?

Exchange with staff (1)

- The groups were not yet concerned about the possible influence of the external politics, more about their own internal problems
- Concern about career opportunities
 - Effectively sacrificing their career for the beamline
 - Staff discretionary beamtime is very limited, chipped away by the pressure to increase the number of unique users as fast as possible
 - Opportunity to apply for external funding is limited for some groups; yet are expected to apply
 - Too much time is spent on controls development as too few controls staff available
 - Small groups (even single person) attending beamtime also taxes beamline scientist
 - Management should do a better job of articulating how LDRD proposals are evaluated
 - What is Management's view (definition and valuation) of in-house research?

Exchange with staff (2)

- Issues about isolation
 - Too many silos, lack of communication across and between groups
 - Lack communication from lab leadership down through the organization
 - In particular there is a barrier between accelerator and beamline mechanical engineering
 - Accelerator mechanical engineers would prefer to be part of a larger facility group of mechanical engineers in order to more properly matrix
 - Some groups feel out of touch with the “big picture” for the lab
 - what science is being done for what purpose using the systems that the groups are responsible for. Periodic tutorial seminars on various photon and accelerator science topics for the staff could be beneficial.

Exchange with staff (3)

- Management is hierarchical, out of touch with the needs of the beamline scientists (needs better communication)
 - Is there a middle layer that is taking too many resources?
- Controls and other technical support – matrix approach is not working
 - Technical staff often feel isolated; do not always know why beamlines are being built, why specific item is needed
 - From beamline scientist point of view: too few people on controls, move between beamline too much, no ownership of specific project - ends up becoming more of a burden on the beamline scientist