QuarkNet Responses to the 2020 Advisory Board Recommendations

Make a plan for the long-term future and sustainability of QuarkNet.

It is safe to say that for the past 18 months or so, our focus has been to cover COVID-related issues, but now that things have settled down, we can turn our attention to the longer-term future.

Is there a clear future leadership team? This should be determined in enough advance as possible to have sustainable overlap and a training period.

Our leadership has evolved over the years, which gives credence to our approach. While we don't have a future team in place, we have good experience in how to bring in our future leaders. Regarding staff, we view fellows and lead teachers as the source for future leaders. We provide opportunities for individuals to practice and to develop leadership skills by working with staff, giving presentations at professional meetings, and assuming leadership roles in our activities. Multiple staff members are sufficiently knowledgeable about our activities so that when the time comes for a staff member to move on, he or she can work with the others to help select a successor in time to provide the kind of overlap suggested. Shane, Deborah, Jeremy, and Adam have all moved up from participants to leaders.

Regarding PIs, we are on the lookout. Given the focus on LHC physics in the current NSF grant, we can look to mentors and other colleagues in LHC-based experiments as potential candidates. Mitch and Morris were originally mentors who are now PIs. Mark was a mentor who assumed a staff position after Bob Peterson retired.

What does the team want cosmic ray detectors to look like in a decade? What can be supported? This should be input to whether to invest in cheaper technologies.

In the near term, the team plans to maintain the current network of detectors and to build cosmic watches for classroom integration. The discussion of a new detector design and construction raises issues. Such an undertaking is desirable but would require a significant investment in time and effort as well as sufficient teacher interest to support a large order of new boards making them cost effective, and Fermilab would have to support this work.

Consider longer term plans for funding. It would be great to rely on NSF funds indefinitely, but the team should consider approaching other experiments, (DUNE, LBNF, and perhaps LIGO and FNAL muon expts) for funds just like has been done ATLAS and CMS.

The IRIS-HEP coding grant shows that others can take advantage of QuarkNet experience and infrastructure. Also, STEP UP has invested in QuarkNet, and we have received a very recent overture from "Galactic Astronomy." We have a strong reputation so that an investment in QuarkNet makes good sense. We can approach other experiments with this in mind. DUNE and the FNAL muon experiments would support neutrino physics and cosmic ray studies.

Invest in new Snowmass process

This was not documented, but QuarkNet can provide important input.

We did! Marge and Ken were leaders for subgroups in CEF4 Public Education and Outreach. Mark, Deborah, Adam, Joel, Enrique Arce-Larreta, Idaho center, Marla Glover, Purdue center, and Shane were subgroup members.

The Data camp and coding program should explore external sources and help

These programs are superb, but there is no reason to reinvent the wheel.

We have signed on a Scope of Work for a new subaward from IRIS-HEP of ~$120,00 a year for two years, assuming thing so well this year, to support coding activities.

Data Portfolio – investigate from Drupal logs to see which pages seem to be used the most as a way to direct future efforts.

Based in part on this recommendation, we implemented an analytics feature for the Drupal site. This feature reports access to individual DAP activities and other resources both by identifiable and anonymous users. However, these numbers alone are unable to reflect total usage, as teachers often make copies of an activity for their own use and to share with colleagues. Our evaluator shares teacher-reported data on DAP classroom usage from surveys and from classroom implementation plans that give a more reliable picture DAP resource usage. Reports from current experiments motivate the development of activities to help teachers explain results to students.

Diversity & Inclusion

Continue to search for partners of the Native population near Black Hills.

The BHSU center is strong with a good network of teachers. When we can offer needs assessments, we can work with BHSU to bring in more teachers of Native American students.

Consider engaging with parents in local schools, perhaps via Parent-Teacher/School-Parent associations.

For us, this is a local center activity. We can use our bully pulpit to remind centers of this idea and showcase what is happening at local events.

Suggest preparing a list of all the schools that have participated in QuarkNet. This can be cross-referenced with demographic data for each school to allow for a rough study on demographics touched by QuarkNet.

We are dependent upon schoolwide public reporting of student demographics, such as ethnicity, and the percent of students participating in free or reduced lunch programs. This level of information can be determined (when available) at the case-study level related to a specific QuarkNet center or centers.

Advisory Board

The board appreciated having the slides in advance. While we hope to be able to see the presentations in person in the future, having the slides posted somewhere for viewing in advance in the future would be very useful.

We did this.

Look into increasing diversity of the advisory board itself.

This in an ongoing assignment, but the two new members have increased the board's diversity.

Consider whether the Advisory Board should have a designed chair to ensure clear lines of responsibility.

We asked current members to select a chair.

COVID Response

The Advisory Board applauds the quick and impressive redirection to support teachers during the pandemic, and suggests seriously considering which of these new programs and tools should be continued even after the pandemic ends

Staff is continuing the following activities:

Coding Camp
QuarkNet Educational Discussions (QED)
Big Analysis of Muons in CMS and ATLAS (BAM)
Virtual meetings to supplement in-person meetings

Also, staff is considering the possibly of continuing QuarkNet Wednesday Webinars (QW2) and Summer Session for Teachers (SST).