

Report on the ANSS NetOpsIX Workshop, March 20-21, 2018 hosted by PNSN at UW Seattle.

The Organizing Committee for NetOpsIX was composed of Matt Gardine (UofA Fairbanks), Renate Hartog (UW Seattle), Peggy Hellweg (UC Berkeley), Brian Shiro (USGS HVO), Mitch Withers (Univ. of Memphis) and Ellen Yu (Caltech). The workshop included sessions on IT Best Practices, a wide variety of topics related to AQMS, and a half day Developers Workshop at the end. There were 63 registered participants from 24 organizations (different USGS networks are counted as separate organizations).

The organizing committee wishes to thank the Pacific Northwest Seismic Network (PNSN) for hosting the workshop and providing local logistical support, the venue, and refreshments. The committee also thanks the USGS for travel support. Several recommendations and observations were made at the workshop, in no particular order.

1. The participants noted the value in meeting face-to-face to exchange best practices, brainstorm new ideas, and to forge new collaborations. There is overwhelming support among NetOps participants to continue to have workshops on topics related to data and earthquake information for ANSS.
2. Modularity is important and facilitates development. AQMS could adopt a more modular design for ease of bringing new features to the system. (e.g. See the original Earthworm design goals originally from Carl, Alex, and Barbara: http://folkworm.ceri.memphis.edu/ew-doc/OVERVIEW/1_History.htm#design).
3. ShakeAlert is resource intensive and competes with AQMS development and maintenance for limited human resources.
4. Not all development takes place in California, and support elsewhere is needed. As more networks become involved in development, better coordination, versioning, repositories, and standards must be supported and enforced.
5. There are too many development tasks and not enough developers. Should regional network COOP agreements allow for developer salary?
6. AQMS would benefit from an “overseer”, not unlike ISTI’s role with Earthworm. This would likely improve the quality, robustness, and consistency standards within AQMS.
7. Collaborative development is important, though, and everyone needs to be informed to avoid duplication of effort. The AQMS code repository as it exists today does not foster collaboration. The repository needs to be open to the public to foster sharing of code and documentation. But, if AQMS source code is opened to many more networks, what level of support is any one RSN obligated to provide? Again, an “overseer” role may help .
8. No person is tasked (and financially supported) with ensuring uniformity among development branches in the AQMS code repository.
9. Note, however, that the SWG is not tasked with a broad overhaul of AQMS to streamline its function (e.g., simplify messaging method, adopt a modular standard, re-

write some code). Another level of effort is required for this. Again, an “overseer” analogous to ISTI’s role with Earthworm may help in this regard.

10. At a minimum, the ANSS needs to hire at least one developer to serve as a “postprocessing guru” who can implement recommendations and requests from the community. Note, however, we want to avoid being dependent on a single person (e.g., Jiggle/Allan).
11. The CISN trac wiki needs to be opened back up for read access without a password. There was overwhelming support for this idea among NetOps participants. (It had gotten “locked down” after an incident with a disgruntled EEW employee.)
12. There are insufficient resources for documentation, and developers are not always the best documenters. Wikis can be effective, but how can we encourage wiki contributions from expert users?
13. Many RSNs are motivated to migrate to PostgreSQL because they cannot afford Oracle without an institutional license.
14. The AQMS user base will significantly increase by going to an open source database and by making the code publicly accessible by hosting it in a software repository such as GitHub. The challenge being, are we, as the AQMS community, in a position to support it? Can we encourage design goals such as modularity, better documentation, coordination of development etc., and what if we have multiple database ports or OS ports (as we do now)?
15. A surprising number of ANSS RSNs are not members of the FDSN. This oversight can be addressed here: http://www.fdsn.org/forms/membership_form.htm
16. Travel support for developers to work together, host “sprints”, etc. would be helpful. Perhaps future NetOps meetings could feature developer sprints with specific time-limited goals in the spirit of “hackathons.”
17. The burden on hosts of ANSS NetOps workshops has increased over the years to the point that it may now be unrealistic for smaller RSNs to host. Meeting space can be expensive, remote participation is complex, and the staff commitment is significant. Future workshops could share the load among other RSNs as much as possible (though meeting space costs may be difficult to share).