

CISN Advisory and Steering Committees Meeting

October 17, 2005

OES Headquarters, Sacramento CA

Summary of the Meeting

Present

Advisory Committee members: Stu Nishenko, Neil O'Hare, Chris Poland, Maury Power, Dan Shapiro, Rick Gailing, John Anderson, Dan Dyce, Jeff Sedivec

Absent: Gregory Beroza, Loren Turner, Ron Alsop, S. Ziolkowski/Jeff Lusk, Edward Bortugno, Paul Jacks

Steering Committee members: Bill Ellsworth, Doug Given, Egill Hauksson, David Oppenheimer, Woody Savage, Tony Shakal, Jeroen Tromp, Jim Goltz (for Rich Eisner), Rufus Catchings, Mike Reichle, Barbara Romanowicz, Doug Neuhauser

Absent: Lucy Jones

Guests: Bill Leith, Grace Koch (for Henry Renteria)

Welcome

Goltz introduced Grace Koch, Deputy Director, Preparedness and Training Division, who welcomed the assembly to OES. She noted, in the aftermath of Katrina, that more than 20 hearings (meetings, state fairs) had been held on emergency scenarios and homeland security, and raised the question, "is California ready?" Deficits in state budget impact programs and state preparedness. The redirection of limited funding to address levee issues in California following Katrina was cited as an example. She closed by noting that these are challenging times, but with opportunities.

The presentations during the rest of the morning and into the afternoon summarized the activities and progress of the CISN and concluded in the early afternoon with a report on ANSS. Break out sessions for the CISN Steering and Advisory Committees and a wrap-up session concluded the meeting

CISN Report

The CISN presentations were moderated by Jeroen Tromp, and consisted of presentations on the current status of CISN, the CISN earthquake engineering data center, earthquake early warning, ShakeMap, and the new CISN strategic plan.

Current Status

Doug Given summarized the current status of the CISN and the progress to date from OES/ANSS funding. Given stated that the CISN goals were to –

Operate a reliable and robust statewide seismograph network
 Rapidly distribute information
 Archive earthquake information
 Develop improved algorithms and new products

Current CISN Instrument Deployments

Instrument	Deployed
Urban Strong Motion	974
Broad Band/Strong Motion	208
Short Period/Strong Motion	77
Short Period	427
Structures	199
Borehole	51
Total	

OES Funding History CISN

Year	OES
2001	3.6
2002	2.6
2003	2.4
2004	2.4
2005	2.4

Operate a reliable and robust statewide seismograph network: CISN has continued to develop network robustness through installation of 30 ‘dual feed’ stations (sending the same data continuously to processing centers in northern and southern California) and the CISN ring (T-1 circuit between USGS Menlo Park, OES Sacramento, and USGS/Caltech Pasadena)

Rapidly distribute information: CISN products such as the Earthquake Engineering Data Center, the Earthquake Notification System (ENS), CISN display, and the CISN Alert Map.

The subjects of *Archiving earthquake information* and *Developing improved algorithms and new products* are addressed in the following presentations by Shakal and Hauksson.

The current challenges that Given saw facing CISN were the need to increase coverage, upgrade aging equipment and provide more outreach to the OES centers and the community.

CISN/ANSS Engineering Data Center

Tony Shakal described the status of development of the National Center for Engineering Strong-Motion Data, which is a formal partnership between the CISN and ANSS data

centers. The Memorandum of Agreement to form the National Center was completed on October 14, 2005. The National Center was created to address the need for a unified national data center, and is based on the concept of a virtual data center connecting Sacramento and Menlo Park, with links to the National Earthquake Information Center in Golden and ANSS Regional centers. A close relationship with the COSMOS Virtual Data Center is under discussion.

Shakal summarized the products of the CISN Engineering Data Center, noting that the CISN Internet Quick Reports are a popular way for many to receive engineering data after an earthquake.

Earthquake Early Warning

Egill Hauksson summarized the background and current status of earthquake early warning (EEW) concepts, and noted the interest in having CISN participate in testing three algorithms for generating early warnings. The CISN Steering Committee had issued a statement supporting EEW research and testing, with the objective of gaining clear knowledge of what the seismological capabilities for early warning really are. Hauksson raised the question as to whether CISN should support earthquake early warning. The group felt that the role of CISN is to provide seismological data for testing algorithms, but not to issue warnings.

Hauksson noted examples of early warnings including regional warnings and site-specific warnings that could be used for active control systems, gas shutoffs, etc. Gailing challenged the usefulness of gas shutoffs, and both Savage and Nishenko clarified that shutting down high voltage transmission systems is difficult and not necessarily the most prudent action. It was noted that EEW development research will lead to improvements in the current real-time products coming from CISN. Hauksson suggested it would be more productive to allow the seismological capabilities to be better understood before putting focus on refining user interests. Goltz described studies completed for the TriNet Project, noting that it was difficult to be specific in asking users what they could use in terms of warning times. He offered to provide a written summary of the TriNet early warning work.

The estimated cost to test and improve the three algorithms as well as to build the needed CISN infrastructure to host the algorithms is \$260 K/yr for at least three years. This would have to be new money, as it cannot come out of existing CISN budget. No CISN funding is currently going to EEW.

ShakeMap

Tony Shakal discussed the uncertainty issues surrounding the ShakeMap: sparse measurements, fault representations, and interpolation between observations using empirical ground motion models and site response. Several asked how uncertainty could be effectively used by typical ShakeMap users: do they want a map of the probability of exceeding ground-motion values, and what is the tradeoff between speed of preparing ShakeMap and the level of uncertainty? The San Simeon earthquake was raised as a typical example of a ShakeMap with initial uncertainties.

ShakeMap 3.1 to be released and will address some of these issues. The group made the observation, that if the quality of the ShakeMap improves over time as more data are added following the earthquake, why does CISN need to make an immediate release. Identification of the optimal solution is needed.

CISN New Strategic Plan

David Oppenheimer and Egill Hauksson presented the new CISN Strategic Plan to the Advisory Committee. They acknowledged that the original 2001 Strategic Plan was based on a \$6.6M state-funded budget rather than the actual \$2.4M funding. Full federal funding of ANSS also did not occur. Oppenheimer summarized the CISN goals that have been achieved, summarized progress expected in the coming five years, noted areas in which progress had stalled. Challenges include level funding coupled with relentlessly increasing costs; increasing demand for high-quality data and products, increasing complexity of the CISN system, and staff turnover.

Extensive discussion followed the presentation, and included the following points:

- Consider revising the Strategic Plan to recognize current funding climate.
- The strategy should reflect the goals for ANSS and OES.
- Aging equipment would become a problem if there were insufficient action in meeting the CISN goals.
- May need to prioritize the Strategic Plan elements when funding is limited.
- There are big benefits in use of CISN data and products for engineering and construction that are noted in the National Research Council report.
- Public expectation is for rapid response.
- People distributing the funding need to use economic benefit to the public as a heavily weighted factor.
- Better strong-motion instrument coverage benefits both engineering and emergency response.
- Need to balance long-term use of strong-motion data and other data versus using the data in ShakeMap.
- The Department of Interior does not ask for the funding for ANSS that is appropriate for the public perception of need.
- Katrina showed that science matters, and that more instrumentation leads to more information.
- There needs to be more and better use of currently available information for emergency response.
- There is a narrow window for response to Katrina. Hazards matter! Now is the time to ask for funding for catastrophic events, especially in California.
- The NRC study provides a clear basis for encouraging the implementation of the CISN strategic plan.
- Missed earthquakes are missed opportunities to improve engineering and construction, and we should not back off from our goals.
- Consider reprioritizing the short-term plan to stay functional, and be prepared to address the long term with added funding.
- As an example, hospital reconstruction may be excessive because we do not know enough yet to improve the use of construction funds. We need to show a variety of benefits and expand our focus.

- The benefits of CISN as noted in the NRC report should be worked into the Strategic Plan.
- There could be CISN funding through DMA 2000, by making a good case for pre-disaster mitigation.
- Federal funding is available for improving communication capabilities for response.
- Need to provide a coherent message to the California congressional delegation; the Advisory Panel could write to Henry Renteria

Committee Meetings

Following the CISN Report, the CISN Steering and Advisory Committees held breakout sessions over lunch.

Advisory Committee

The Advisory Committee selected Stu Nishenko as the new Advisory Committee Chair, and Neil O'Hare as the Vice Chair. Following the selection, the Committee organized their responses to the CISN Steering Committee question – What strategies do you recommend to increase funding to meet the goals in the Strategic Plan?

Steering Committee

The Steering Committee discussed concerns about the number of Advisory Committee members who did not come to the meeting. The Advisory Committee members should have a vested interest in CISN in some specific way, and should feel that their involvement makes a difference. There could be more activities during the year that involve the Advisory Committee, such as workshops. Perhaps the Advisory Committee should organize its annual meeting. The PMG would like the Advisory Committee to provide advocacy and a users' perspective.

CISN Outreach

Following lunch and the Committee breakout meetings, Woody Savage moderated the session on CISN Outreach.

A presentation by Jim Goltz on the current status of CISN Display and Shake Cast led to group discussion on accelerating the implementation of the CISN Outreach Plan prepared by OES. A brief discussion produced the following points:

- Reduction in OES staffing has limited the resources available for CISN outreach.
- CISN Display and ShakeMap scenarios are well received products.
- Seismologists can be helpful in supporting scenario exercises.
- Having “certified” scenarios is useful.
- Emergency managers are not fully aware of what they can use.
- More outreach to engineers is needed. Not enough is being done to involve them.

ANSS Report

Bill Leith (USGS, Reston) acted as moderator for this portion of the agenda.

Status of ANSS and Tsunami Initiative

Bill Leith presented a report on the ANSS system and the tsunami initiative. FY 06 budget for ANSS is \$8 M, and IT security accounts for 10% of budget. In the discussion, Leith noted that ANSS is a top-rated capital project. The NRC report can be used to refine ANSS plans considering the benefits to construction in conjunction with NEES.

National Research Council Report

Bill Leith summarized the National Research Council report ‘*Improved Seismic Monitoring- Improved Decision Making*’ and reported that the NRC study satisfies OMB requirements for benefit-cost study of ANSS.

Discussion comments:

- There was no specific consideration of emergency response cost-benefit, but several anecdotes were mentioned.
- There could be follow-up on major scenarios to emphasize and quantify the benefit of preparing for the scenario events.

Structural Response Monitoring

Woody Savage reported on progress of the Structural Response Monitoring component of ANSS. He reviewed the development of the ANSS Structural Instrumentation Guideline and the implementation of the Guideline to develop a list of prioritized projects. Installations will begin in 2006. .

Advisory and Steering Committee Wrap Up

Steering and Advisory Committees broke out into 30 minute separate discussions

When the Committees reconvened as a group, Nishenko presented the Advisory Committee deliberations and recommendations to the Steering Committee.

The question posed to the Advisory Committee was, “What strategies do you recommend to increase funding to meet the goals in the Strategic Plan?” Nishenko replied that given that actual funding levels for CISN are less than originally proposed, the Advisory Committee focused on the need to prioritize activities to match current funding levels. In other words – “What can CISN do with an annual (state) budget of \$2.4 M along with Federal and non-governmental shares as well?”

Presentations in the morning demonstrated that significant progress, albeit slow, has been made in the CISN system over the last five years. The Advisory Committee wanted to understand where current budget dollars were spent and what impact level or reduced funding would have on network operations with time. Where would the impacts from reduced funding occur and how would they affect the reliability and robustness of the network? The Advisory Committee felt that these issues needed to be established before lobbying for new funds.

Linking the failures in the Katrina disaster to the need for improved emergency preparedness and monitoring in California (especially earthquake) is hard since the connection between seismic instrumentation and post-earthquake response is not well understood outside of the professional community. CISN and ANSS lie at the cusp between the research community and the 'real world'. CISN produces data –however, the value of those data lie in the use of and the derivative products based on those data. Improvements to building codes based on seismic data are some of the best known and documented examples of seismic monitoring benefits. The Advisory Committee recommended that the Steering Committee receive copies of NRC report for other examples.

The Advisory Committee presented three recommendations to the Steering Committee:

1. The Advisory Committee should form a subcommittee for outreach and advocacy. There should be several Steering Committee members providing liaison. This subcommittee can write letters to public officials and conduct meetings with suitable individuals and organizations to encourage funding of CISN.
2. The CISN Strategic Plan should be modified to serve more as a Business or Operational Plan for CISN.
 - Address short term issues and priorities
 - Establish benefit/cost assessments for priorities in the Plan
 - Set milestones for tasks, with adjustments as funding allows
3. Expand the outreach of CISN to go beyond ShakeMap to engage the engineering and operational communities with CISN products and benefits.
 - Expand involvement with the engineering community to bring the benefits of CISN to them (as identified in the NRC report).
 - Increase the institutionalization of CISN by working with OES to establish encouragement and support for CISN products to be available where they are needed (e.g., CISN Display in every firehouse, police station, hospital, public facilities)
 - Encourage broad public participation in operating seismic monitoring instruments (e.g., engaging the popularity of DidYouFeelIt).
 - ShakeMap continues to be a great success and support for the emergency response community should continue