

**Notes from TIC WG E Subgroup Meeting  
Monday, September 27, 2004 (12:10–1:20 pm CDT)  
Adam's Mark Hotel, St. Louis, Missouri**

**Participants**

Walter Arabasz, Chair/Recorder  
Glenn Biasi  
Tom Murray  
David Oppenheimer  
Mitch Withers  
Harley Benz (observer)  
Bill Leith (observer)

**Agenda**

- Follow-up to presentation and discussion of TIC WG E status report at preceding ANSS-NIC planning meeting
- Discussion of action plan, particularly a division of labor, to accelerate working group efforts

**Background**

This meeting was originally planned as an informal get-together of those working group members attending a 1.5-day ANSS-NIC meeting in St. Louis, MO, on September 26-27. At the NIC meeting, a report on our working group's progress to date (<http://www.seis.utah.edu/anss/wge/intsum.shtml>) was presented and discussed.

The core issue of whether ANSS should continue in its status-quo form as a distributed system or have a system design with some centralized functions (such as data processing and product delivery) has become a key issue for ANSS planning. Consequently, the NIC has asked TIC WG E to accelerate its work and deliver recommendations as early in 2005 as possible.

As our working group anticipated earlier, two fundamental parts of ANSS system building have to be dealt with: (1) "political" challenges to changing the status quo and (2) technical details of a more ideal ANSS system. Both issues were recognized by the NIC as greatly important. Partly as a result, one NIC member very interested in these issues—Glenn Biasi of the University of Nevada, Reno ([glenn@seismo.unr.edu](mailto:glenn@seismo.unr.edu)) was invited to join TIC WG E.

These notes are from an informal meeting held as a working lunch immediately following the end of the NIC meeting in the Adam's Mark Hotel. Bill Leith and Harley Benz joined the luncheon meeting as observers.

**Discussion**

Walt Arabasz said that the desirable outcome of the meeting was an action plan with a division of labor to help meet our charge (see following section on *Action Plan and Division of Labor*). Bill Leith pointed out the hybrid national-regional nature of ANSS and some implications. Harley Benz emphasized how important it was to decide on ANSS's system design so that the work of other TIC working groups could be better directed and

rationalized. Our group members understood that our job was now more urgent in the aftermath of the NIC meeting. One example is that data archiving decisions are highly coupled with what we do.

Walter described how David Oppenheimer's arguments for a different way of handling data processing in ANSS had awakened him to new possibilities for dealing with concerns like assured system response to large earthquakes and the strains of 24x7 duty-seismologist readiness to review automated earthquake alarms within 15 minutes. Regarding the option of centralized processing, David cautioned that a hypothetical facility for centralized processing might not necessarily be NEIC—the system he has in mind doesn't exist yet. ANSS has to specify what's needed and build it. In any case, before regional nets can be persuaded to "outsource" any of their data processing, there will have to be "confidence building" in the new arrangement.

Glenn Biasi asked whether processing was the main reason for changing the status quo. Walter said the issue of assured response to large earthquakes—not only, say, the backup reporting of an epicenter and magnitude by NEIC but also the delivery of information and products from new strong-motion networks in the impacted area—was an important consideration. Mitch Withers asked whether we were going to revise the system architecture diagram in OFR 02-92; he emphasized the importance of local expertise in regional seismic nets. Harley pointed out that standardizing ANSS products was another consideration for ANSS's system architecture. Earthquake locations, magnitudes, and moment tensors, are among the standard products—and moment tensors, for example, are now being outsourced in many cases.

David suggested that ANSS wasn't doing an adequate job in creating earthquake products. In his view, university seismologists primarily had a research role and might be better suited to that role than creating routine earthquake products. Walter pointed out that university network operators like those in Nevada (Glenn), Tennessee (Mitch), and Utah (Walter) shouldn't be viewed as "academic." In cases like these, the networks are operated by a state institution, and function as a core part of a state earthquake program.

David elaborated on his CISN experience. When the possibility of state funding arose in California, the state office of emergency services basically told the various institutions participating in CISN to get their act together so that they could deliver what the state was expecting. The USGS/Menlo Park and Berkeley, for example, coordinate such that the USGS (with its station density) provides earthquake locations and Berkeley (with its broadband data) does the magnitude computations ( $M_L$  and  $M_W$ ). According to David, it's all done purely with software, and the result is "a better product." Regarding outsourcing of data processing, David explained that network operators—including himself—will have to feel comfortable with the result and get back what they want in terms of quality, use of appropriate velocity models, and so on.

Mitch described the case of the recent earthquake in Kentucky (September 17, 2004, magnitude 3.7) in which NEIC produced the initial location and CERI then relocated the event, which replaced the NEIC solution on the Web. Harley said that until we have standards, there aren't rules in place for replacing solutions.

Tom Murray asked whether the problem we were talking about was just a "computer network" issue. Insofar as 24x7 human review and catalog production are concerned, the answer is no. Tom was asked whether outsourced data processing might offer benefits for

the volcano observatories. The problem, in his view, is that volcano monitoring involves specialized interpretation. The Alaska Volcano Observatory (AVO), for example, operates localized networks around each active volcano. The analysts at AVO locate all the local seismic events of interest and exchange data and coordinate with analysts at the Alaska Earthquake Information Center for regional earthquake monitoring.

How are we proposing the change the status quo? Ideas considered so far include offsite processing and streaming data from data concentrators to more than one processing center. In terms of achieving uniform earthquake products, it was pointed out that ANSS earthquake products are really non-uniform because the products differ for global, regional, and urban applications.

David observed that we don't have standards for data handling. He pointed to the example of IRIS in which station data that don't meet IRIS specifications are discarded. Having a national system (with enforced standards), in his view, would bring some sanity to ANSS. Walter outlined two possibilities for achieving standardization. One way is to require that in order to be identified and funded as an element or module of ANSS, that element or module of an existing network has to be certified as meeting ANSS standards (and not all parts of an existing network necessarily have to be incorporated into ANSS). The other way is to outsource data processing and have the data processing facility produce standardized products.

David asked Harley about federal security requirements. Do changes in software have to be documented at NEIC? Yes. How soon before OMB examiners start looking at certification of software in regional networks? Harley thinks this may happen soon—beginning with the USGS nets in California.

Discussion was curtailed to allow the group to move on to the opening session of the National Earthquake Conference, scheduled to begin at 1:30. (The Sept. 26–27 ANSS-NIC meeting was arranged as a convenient pre-meeting to the national conference.)

### **Action Plan and Division of Labor**

Before breaking up, the following elements of an action plan were made . . .

1. TIC WG E should plan to meet on November 17 and 18, 2004 in San Francisco. Bill Leith earlier suggested that if TIC WG E wants to piggyback its first face-to-face meeting onto a scheduled meeting of the ANSS National Steering Committee (NSC) in San Francisco, it should plan to meet on Nov. 17–18. The NSC will meet on November 18 and 19, so one or more representatives from our working group can report to the NSC on November 19.
2. Representative(s) of TIC WG E should present preliminary (not necessarily final) recommendations for ANSS system building to the NIC at the Fall AGU in San Francisco in December. (An evening meeting of the NIC will be arranged for some time during the AGU December 13–17, 2004, convention.)
3. We need to make more progress with our working group charge before meeting November 17–18 in San Francisco. In advance of that meeting, we agreed to (1) divide up work and (2) produce written summaries for distribution to other members of TIC WG E before that meeting. The plan is as follows:

- Outline and motivation for adopting the Baldrige Criteria for Performance Excellence, especially a focus on customer service — **Walter Arabasz (lead) with help from Rick Schult**
- Summary of important guiding principles for ANSS system building and key ANSS performance goals relevant to system design (using results from TIC WG A and B) — **Mitch Withers (lead) and Art Lerner-Lam**
- Characterize “where we are now,” region by region (if not network by network) in terms of being able to meet key ANSS performance goals — **David Oppenheimer (lead) and Glenn Biasi**
- “Consider how CISN has evolved” . . . We judged that we already have adequate information in the form of earlier input provided by David Oppenheimer and particularly in the lessons learned that are described in the CISN report, “Performance of the CISN During the 2003 San Simeon Earthquake” (see [http://www.cisn.org/docs/CISN\\_SanSimeon.pdf](http://www.cisn.org/docs/CISN_SanSimeon.pdf))
- Begin shaping/writing the “Road Map for Partnership” to deal with potential “political” hurdles for consensus-building to change the status quo in ANSS — **Walter Arabasz (lead) will interview non-USGS network operators in our group (Glenn Biasi, Art Lerner-Lam, Tom Murray [for some Alaska perspective], Tony Shakal, and Mitch Withers) in order to identify some representative major issues that individual networks might have, along with potential ways to deal with them**
- Description of technical details of the vision of where we want to go (simplified endgame—with more than one option?) and steps to get there — **David Oppenheimer (lead), Ray Buland, Phil Maechling, Rick Schult**