

NEES ITSC Meeting - June 20, 2006

Attendees: Bruce Kutter, Shannon Whitmore, Sri Sritharan, Dan Wilson, Cliff Roblee, Jon Lea, John Bobbit, Jerome Hajjar, Andre Reinhorn, Chirs Stanton, Jason Hanley, Peter Courvares, Laura Lowes, Lelli Van Den Eiden, Ahmed Elgamal,

8:15 Move and 2nd to approve minutes from May 16th teleconference – vote deferred until end of the day

8:18 Lelli Van Den Eide – Current status report from NEESit

- Documentation distributed to committee
- Overview
 - Status report with respect to Data Plus plan
 - Budget - \$3 million for personnel, \$1 million for travel, equipment, etc.
- NEESit tools that support a multi-site project
 - Internet2 & WebEx support entire process
 - NEEScentral: management of documents
 - SDSC teragrid computing for pre-test analysis
 - FlexTPS to support testing
 - FlexTPS, Data Turbine, RDV, to monitor testing
 - Local tools developed at sites to support uploading of data to NEEScentral
- Data Model
 - Goal: preserve and organize all data necessary to reproduce experiment
 - A “data modeler” to be hired by NEESit – interviews to be held next week
 - A “data librarian” to be hired by NEESinc – offer made, but not accepted, new round of interviews to be held
 - Use case is driving development
 - Use case is SFSI pre-NEESR project
 - Multiple sites used for experimental structural testing
 - Centrifuge testing
 - Soil testing
 - Computational modeling at multiple sites
 - Expect that ~70% of current use case will transfer to other projects
 - Data models
 - Model by 1) Peng and Law and 2) Bardet / Swift / Kutter / Wilson are basis for current model
 - These models are very similar to model by Pancake
 - Ruther review of existing data models will be done by new hire
 - Data model originally was project centric, currently the development is moving towards a more “event” centric model. This simply allows for data to be associated with events, where an event may be an earthquake or tsunami occurring or a researcher moving from one site to another.

AR - A data dictionary required.

JL - A data dictionary will be developed

- Demonstration of Data Model User Interface
 - Includes coordinate system, basic material data, etc.
 - Basic model is a list of sensor name, location
 - Primary issue that arose was in terms of experiment set up and “bulk upload” of basic sensor (i.e. sensor location, type etc.)

LL - Would like to see NEESit identify and support software that can facilitate upload of sensor basic data

JL - FY07 probably ought to include identification of a format / standard for specification of sensor data

BK - That is what the data model is. Any software can be used to specify basic information

AR - Changes to sensor data occur in real time and are not necessarily updated during the test. Need to have a means of linking the engineers research notes with the stored data

PC - Need to have a means of recording the software used to generate basic sensor data that are stored in

- Telepresence:
 - Goal:
 - Use cases
 - French / Sritharan pre-NEESR project including testing of walls at MAST
 - Lowes NEESR project UIUC project includes testing of walls at UIUC
 - RDV demonstration by Shannon
 - Testing of Data Turbine / RDV
 - 1st test was in May 2006 on French/Sritharan test using MAST facility by Sritharan, Nakaki, etc.
 - 2nd test was in June 2006 on French / Sritharan test using MAST facility
 - Issues have arisen –
 - band width caused problems running RDV
 - interface between data turbine and site DAQs resulted in some data loss

9:55 – Discussion & Observations

JH - Use case scenarios have been extremely helpful in supporting development process.

JH - Probably need to think about how they will be used in future development

JL - Danger of use-case scenarios is that they result in tools / development that is too narrow and cannot be extended to other projects, other data types, etc.

SW & LVDE - Intent is that the development be extendable to all other tests.
There will likely be the need to add additional data, e.g. more material data.

10:20 – Cliff Roblee – review of NEESit Site Visit

- Issue #1 - need to articulate and clarify the NEESit vision
 - To accomplish this,
 - A task group has been formed
 - A vision forum is being held at the Annual Meeting
 - The issue will be discussed at the August board meeting
 - The vision document will be prepared for the November 2006 board meeting
 - The outcome of the vision definition effort will be incorporated into the FY07 work plan
- Issue #2 – provide additional leadership that will broaden the view of the domain
 - Elgamal added as PI
- Issue #3 – too much time being spent on custom software development
 - Some custom work is required
 - Try harder to incorporate commercial, off-the-shelf software
- Issue #4 – NEESit needs to take a leadership role in leading the community towards more advanced use of technology
- Issue #5 – better leveraging of SDSC resources
 - Quarterly meeting between Fran , director of SDSC, and NEESit and NSF will help to strengthen coordination.

JH - need to emphasize coordination between NEESit and other SDSC activities

- Issue #6 – EOT is under-developed
 - Use cyber-infrastructure to support EOT
- Issue #7 - Budget tracking tools
- Issue #8 – value of sub-contracts products
- Issue #9 – metrics
 - Cliff proposes two levels of metrics
 - Low level – bug fix rate
 - High level – success in meeting NEES objectives
 - Need to establish a task group within NEES ITSC to determine what the metrics are to establish the success of NEES
 - Need to coordinate with other committees
- Issue #10 – staffing
 - Need to hire a data modeler (NEESit) and a librarian (NEESinc)
- Issue #11 – need to provide / demonstrate end-to-end functionality

JH - Response to question #10 (pg. 10) - issue that working one-on-one with end users will not scale - is not particularly compelling. How will we move forward with user support.

LVDE - Face-to-face communication is necessary to support development activities

AR - web-based tutorials and training available on the NEESit site provide an ideal method for communicating with community about tools that are available to support research projects

LDVE - quarterly technical forums

LVDE - Staffing impacts budget and scope of work. Hiring a data modeler, keeping Anke Kamrath on a 5% and adding Elgamal affects the budget and scope of work. It will not be possible to expand the scope of work in other areas.

JH - Issue of custom code development and desire to use off-the-shelf software where available

AE - It seems unlikely that custom code development is being done unless it is absolutely necessary

CR - may be that there is a better need to communicate why custom code development activities were undertaken

LVDE - need to work more closely with SDSC advanced technology lab to investigate tools that are available

DW - procedural - we have not had sufficient time to review NEESit response to site visit review. What type of response is required by NEES ITSC?

AR / JH - Not clear how decisions were made to use specific technology. There needs to be more feedback from the community regarding adoption / development of domain-specific tools. May be necessary to formalize the process by which various domain tools are adopted.

SW - some big decisions require input from the community. Adoption of WebEx was pretty minor and did not really require this. Adoption / support of simulation software will require input.

AE - NEESit seeks to work with NEESinc and NEES ITSC to support development activities. Development needs to be somewhat collaborative.

AR - The users, i.e. the earthquake engineering community, needs to be better represented in the development process

LVDE - The use-case groups are providing a means for the earthquake engineering community to contribute to the development process. We need to expand the use-case scenarios to include more researchers and more types of projects

AE - my and Jon's presence will help to ensure that community's interests are served.

CR / JL / LVDE - Jon Lea will be responsible for formalizing / documenting user requirements.

JH - How do we ensure that the best technologies are adopted?

JH - may be that it is necessary to establish several working committees that investigate various topics: e.g., simulation

AR - Another option would be to charge a domain PI and/or NEES site IT staff with investigating particular it issues. This process needs to be formalized and organized.

SS - How to get user feedback?

SS - Have users' write up experience following an experimental test

JH - Assign a NEESit staff person to NEESR projects to ensure interaction

LL - Need to have a formal process for adoption / support by NEESit of new technologies that significantly affect the earthquake engineering

AE - will address this issue.

SW - is this user driven or NEESit driven?

There is the need to take into account the issue of computer science research vs. CS application

11:37 –Ahmed Elgamal's thoughts on the future

- What do we want in the future?
 - Good example - nanoHUB (<http://www.nanohub.org>) is a place to view and learn about new developments in nanotechnology. Are there features of this site that can help us? This website provides tools for collaboration.
- Need to encourage digital content at all levels of research effort – sensor data, simulation data,

JB - feedback from earlier meetings with EE domain suggested that the domain is happy with status quo.

CS - in the past we did not have a lot of carrots to offer, but we are starting to develop these carrots

DW - NEESit should be looking at activities that require users (i.e. researchers) to put in most time and effort

LVDE - all agree that we need to get community involvement, but how do we do it?

PC - use case groups provide an opportunity to solicit feedback and provide a group of users that will communicate to the EE domain NEESit developments. Don't

want to exclude interested parties, but don't want to spend too much time trying to engage uninterested individuals

JH to AE - What is NEEit's plan for interaction with the international EE domain?

AE - want to see NEESit take a leadership role

LVDE - would like to encourage NEESinc to set a tone for international collaboration. NEEit will contribute to the role that NEESinc establishes

SS - during the international forum - there was certainly a desire to ensure that the US doesn't dominate the development process. Want to ensure that there is international collaboration

LVDE - want to develop a formal standard w.r.t. data model, because groups around the world are adopting, using and extending data models. We need to establish a fixed standard.

1:00 Jacobo Bielak – review of recent developments and activities

- Appointment of Ahmed Elgamal as PI on NEESit project and thanks to Anke Kamrath for her leadership of NEESit
- Revisit issue of “Feedback from case study project participants”

1:17 Feedback from case study participants

- NEESit perspective on use-case studies
 - LVDE
 - use-case studies and agile development process have made it possible to prioritize development activities, implement new tools and get immediate feedback from researchers.
 - Would recommended continued use of this strategy and expansion of the strategy to include more of the community.
 - SW
 - The strategy has been very helpful
- Feedback from case-study participants
 - BC: the process has been very helpful and provided a good opportunity to interact and see needed developments accomplished
 - DW: We've made very good progress in recent months.
 - CR: Funding has gone to students at the sites associated with the data use-case scenario to exercise the tools being developed and ensure that the tools are robust
 - JL: the use-case scenario has been a good way to stimulate discussion about aspects of the process. Ensures that everyone understands exactly what has been done and what is being done.
 - LL: the experience has helped to speed the development process

- SS:
 - Used RDV tools to support research at NEES MAST facilities. A report was written by SS and Wei at NEES MAST regarding aspects that worked and did not work. These comments helped, tremendously, to support continued development
 - Problems that have arisen include issue of the volume of data transfer, robustness of RDV and data turbine, network issues
 - These new tools make it possible to participate in experiments remotely. Without RDV, SS would have had to go to U. Minnesota.
 - I would be willing to run the experiment remotely; though, it is desirable to have a PI on site at extreme load cycles.
 - What data make me confident that I can run the experiment remotely: Image data are very good. Still image data are transmitted outside of RDV. Video data gives an impression of global behavior.

1:43 Lelli Van Den Einde and Jon Lee: review of draft NEESit FY07 Work Plan

- Jon Lea
 - Activities split into three categories:
 - Logical extension of current activities
 - New activities
- Lelli Van Den Einde (slides available from LVDE)
 - Data - ~\$590,000 for FY07
 - UI overhaul of NEEScentral
 - Data model expansion
 - Local data management tools
 - NEES Site activities maintenance
 - Telepresence ~\$393,000
 - RDV usability enhancements, audio, integration with NEEScentral
 - Data Turbine robustness, utilities, integration with GridAuth.
 - NEESdaq bug fixes
 - Hybrid simulation ~ \$150,000
 - NTCP backward compatibility
 - Communication channels
 - Reference implementation
 - Simulation ~ \$224,000
 - OpenSees support
 - Support for other simulation packages
 - Visualization ~\$162,000
 - Research or develop tools to enable
 - Collaboration
 - Integration Advance Cyberinfrastructure ~\$250,000

- Research new technologies and new software to enable NEESit to leverage other software development activities
 - User support ~ \$134,000
 - Infrastructure ~\$182,000
 - Outreach / Training ~\$42,000
 - Documentation / Web-based Tutorials ~\$123,000
 - QA ~ \$218,000
 - Management ~ \$853,000
 - Overview
 - 20 FTE = \$3.8 million
 - Total = \$4.6 million
- Subcontract to OSU
 - In FY06 – 3.0 FTE are supported at OSU
 - 2 FTE (including management) work with NEESit to migrate site spec. database to NEESit. This work has been completed.
 - 1 FTE – tsunami notebook and tsunami database
 - In FY07 - LVDE recommends cutting this to 1.0 FTE in FY07
 - 1.0 FTE will manage tsunami notebook and database and migrate it to NEESit
 - 2.0 FTE were data experts. This work has been integrated into NEESit activities.
 - The tsunami notebook and database are central to the tsunami research effort. Will it be necessary to continue to support this work in the future? How much of an impact will this have on the tsunami research effort?

SW and LVDE - OSU does not provide technical expertise that is not available at NEESit. Having the development work done at OSU introduces additional management overhead that would not be required if the work was done at NEESit.

AE - Is it possible to review OSU activities for FY06 and verify that deliverables have been provided. Is there documentation of OSU activities for FY06?

JH - NEESit should, in their budget that is submitted to NEESinc, provide specific documentation supporting / explaining the reduction in the OSU sub-contract from 3.0 FTE to 1.0 FTE

CR - Review of FY07 Budget

- Due to NEESinc by 25 July 2006 is budget and scope of work
- Note that the budget can be adjusted by 10%

JB - Level of breakdown as presented is essentially okay; however, additional detail is required to complete the scope of the activities

DW - Presented level of detail is not adequate,

AE - NEESit will provide ITSC with a detailed budget by 4 July 2006.

2:45 – Closed session of ITSC with NEESit recused

REPORTING

DW - would like to see a accounting of FY06 activities to support proposed FY07 budget

JH / CR - As was done for presentation of FY06 budget and activities, would like to see names associated with tasks

DW - What level of reporting is provided by NEESit?

CR - Site Visit included recommendation for management controls. CR and JL are working with NEESit to put these controls in place. These controls are new.

DW / CL / JL - We've been pushing them hard to produce deliverables

SCOPE of WORK for FY07

JB - would like to see FY07 Budget broken down in to tasks, deliverables, levels of functionality with FTEs assigned to accomplish these.

JL / CS / SS - Last year they did a better job of explaining what the functional objectives were for FY06 and associating FTE with functional objectives.

JBielak - What still needs to be done to complete activities of FY06. This should be emphasis for first 6 mo. Of FY07?

CR - Data -

- have considered shake table, centrifuge, field sites. Need to expand data models to structural labs, tsunami
- need to ramp up use of database development tools to support data modeling
- need to pull into users / participants / use-case scenarios identified in FY06 work plan. Use these to fill in scope for first 6 mo. of FY07.

DW - may want to ask NEESit to provide a budget for the first 6 mo. of FY07, with a budget / work plan for the 2nd 6 mo. to follow once Ahmed Elgamal has time to review current status of NEESit

Statement to NEESit

"ITSC recognizes that NEESit is working to refine their project management process, including the development of a formal reporting process, and ITSC encourages NEESit to continue these efforts. NEESinc will continue to work to articulate reporting requirements and to work with NEESit to establish a reporting template"

Recommendation to NEESit

"By 4 July 2006, re-submit a budget and work plan for the first 6 mo. of FY07 that continues the direction of the FY06 Data Plus work plan with respect to Data Modeling and Telepresence and Collaboration activities."

Recommendation to NEESit

"For December 2006, it is necessary that NEESit have a fully functional data model and set of telepresence tools that have been vetted by the community and have some level of community approval. Completion of these tools must address the criticisms of the site review team. Additionally, it is necessary that NEESit have a plan for the future."

4:15 – Discussion of FY07 budget and work plan

JBielak - Presentation of above recommendations.

AE - It is necessary to address the issue of vision. NEESit needs to start working on this immediately. It is undesirable to postpone for 6 mo. addressing the issues identified by site review team.

LVDE - there are a number of reporting tools that NEESit uses: MS Project, Use case scenario document, Fog Bugs, etc. It takes significant time to maintain these.

AE - NEESit has been carrying the burden of outreach to the sites. NEESit would like to support and integrate site developments.

4:40 – Cliff Roblee – funding of new NEES nodes

CR - There is an interest in a one-time grant of funds to create NEES nodes at non-NEES equipment sites.

SW - NEES requires a higher-level of data reporting than most sites are willing or interested in maintaining

DW - NEES provides an opportunity and the infrastructure to enable a higher-level of sensor inventory and maintenance

SS - There is an advantage of standardizing equipment at these secondary nodes,

SS / LVDE / LL - These secondary nodes must meet some requirements that ensure that the grants ultimately advance the agenda of NEES

PC - On-going management of the secondary nodes will require time from NEESit

CS - A better use of the money would be to fund graduate students to create tools to support existing NEESit infrastructure

5:07 Jacobo Bielak - Hybrid simulation

- Hybrid simulation was a 3rd priority for FY06.
- Paul Hubbard (1 FTE) was working on this issue
- A lot of discussion has occurred. Multiple proposals were submitted; these proposals were mutually exclusive.
- Currently efforts are focusing on 1) developing a common framework that will support most of the features included in these proposals and 2) development of site-specific software that will enable use of facilities in hybrid simulation

LVDE

- Thus far, there has not been a discussion that has included all participants.
- If we want to use FY06 dollars, then this needs to be done by the end of September. This is too soon to develop a comprehensive solution that is supported by the community

JH - Don't want to let the need to spend FY06 dollars drive the development process.

LVDE / SS - Desirable to have a working group comprising representatives from all of the interested sites meet and discuss needs so that the common framework meets all of the need

5:17: Jerry Hajjar – TgoIT Vision

- Task group is being organized, need to identify a few more committee members

5:18: Anke Kamrathi Van Den Einde- Visualization Demonstration Project

- UCSD demonstration project has been completed
- Student has been hired to put data in correct form so that the UCSD VisDev team can visualize the data
- Need to form a group to create the “story board” that defines how the data should be presented

5: 25: Cliff Roblee - Working group for Performance Metrics

- Performance metrics are an urgent need for all members of NEES: NEESinc, NEESit, Sites
- Performance metric address both short term as well as long term (what defines the success of NEES) goals
- The most meaningful metric for the EE community is number of data sets incorporated into NEES data repository. However, NEESit has not control over this.

J Bielak - we will assemble a small working group to identify metric for reviewing NEESit. This will likely include a representative of NEESit, but also the researchers who are the users

5:29: Cliff Roblee - Status / Requirements for NEESgrid and CHEF

- Currently sites are required to maintain NEESgrid and CHEF.
- Sites want to know if it is necessary to maintain these since they are no longer using it.

- LVDE – NEESit will make recommendations as to the specific pieces of software that needs to be maintained.
- ITSC – “Sites are required to maintain a NEES POP. NEESit will define the minimum implementation representing a NEES POP.