

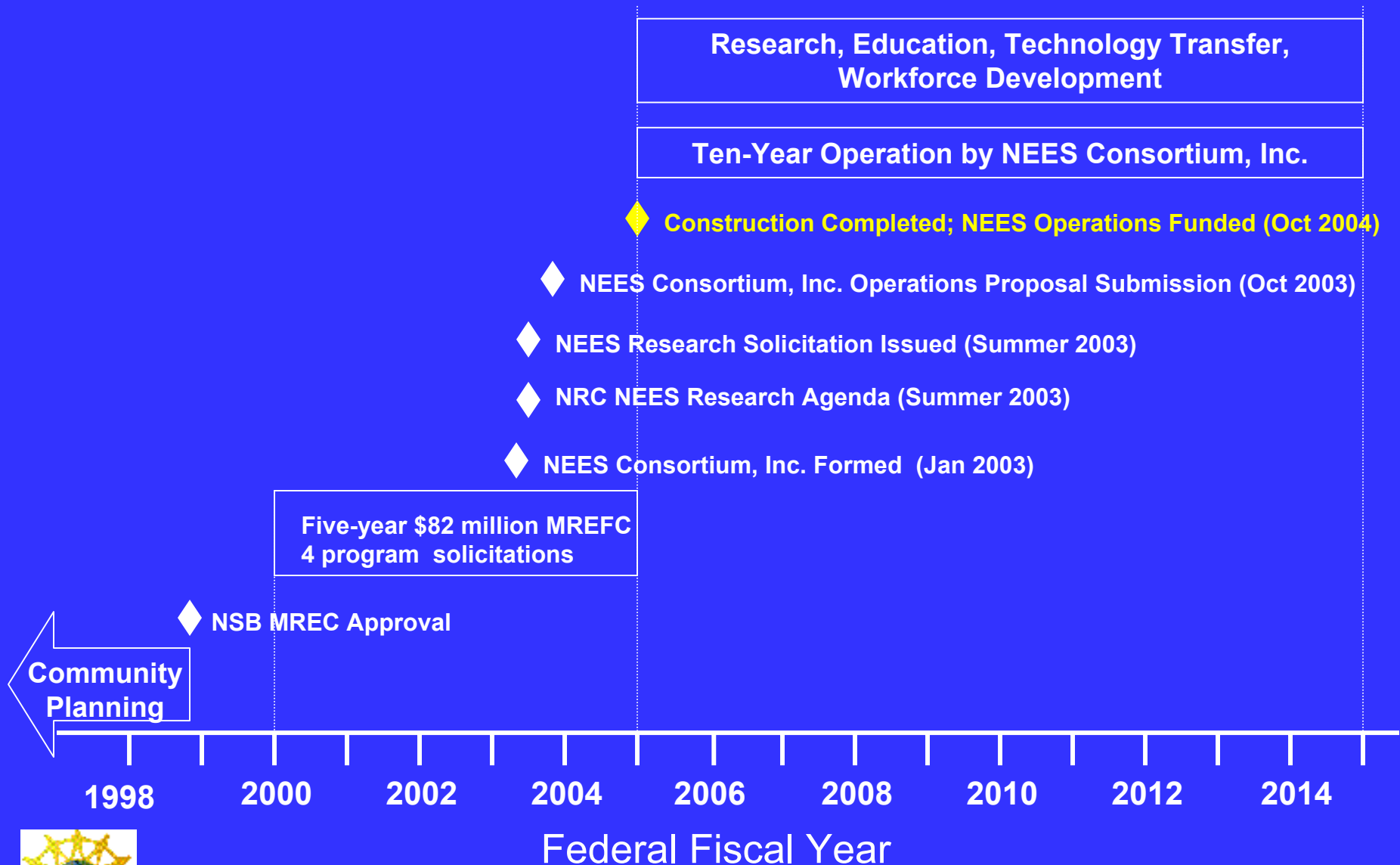
George E. Brown, Jr.
Network for Earthquake Engineering Simulation (NEES)
A U.S. National Science Foundation
Major Research Equipment and Facilities Construction (MREFC) Project

***The U.S. George E. Brown, Jr.
Network for Earthquake Engineering Simulation***

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Arlington, VA USA 22230
jpauschk@nsf.gov
<http://www.eng.nsf.gov/cms>
<http://www.eng.nsf.gov/nees>



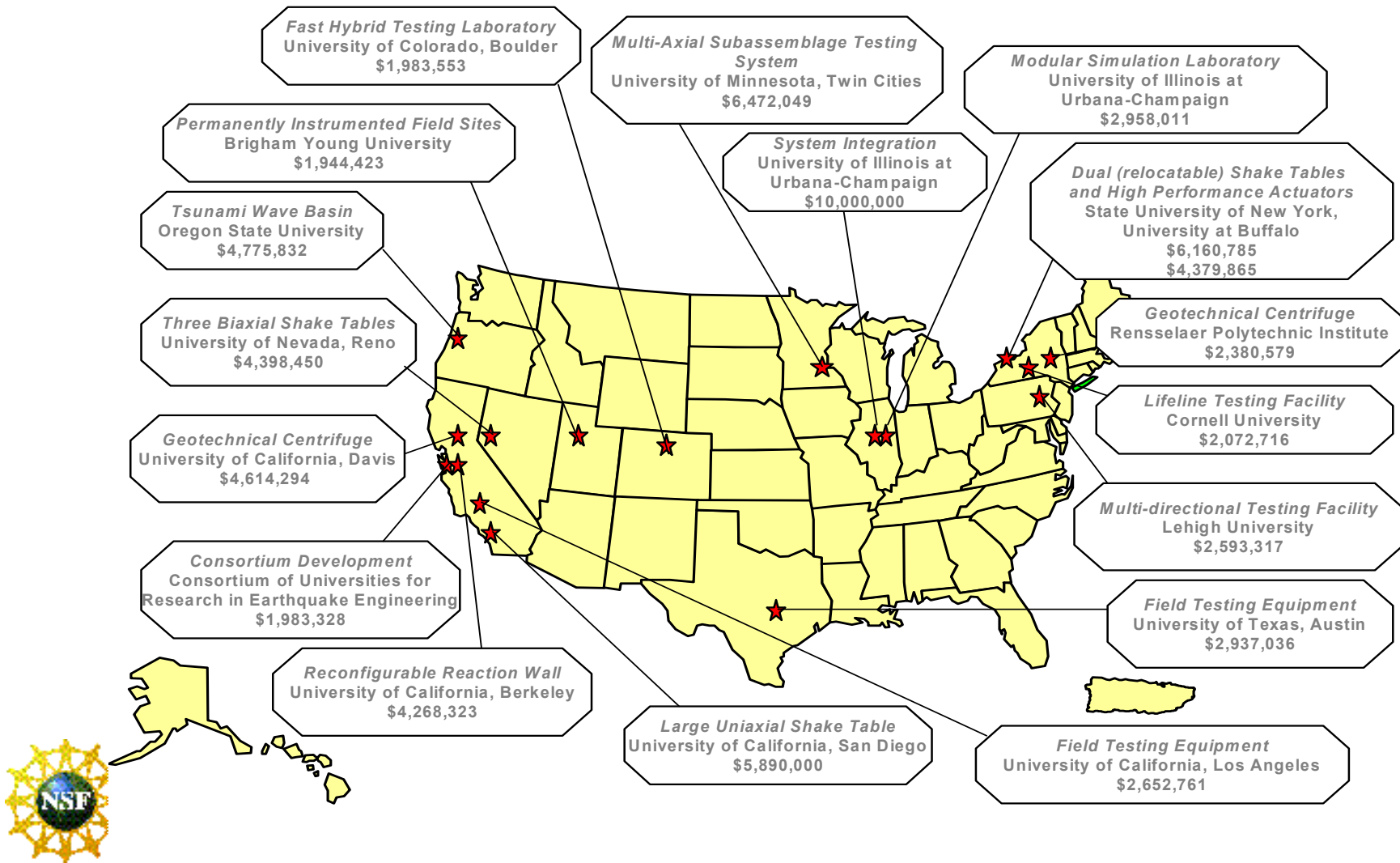
NEES TIMELINE



NEES Construction Award Portfolio

FY 2000 – FY 2004

(18 awards for \$82 million)

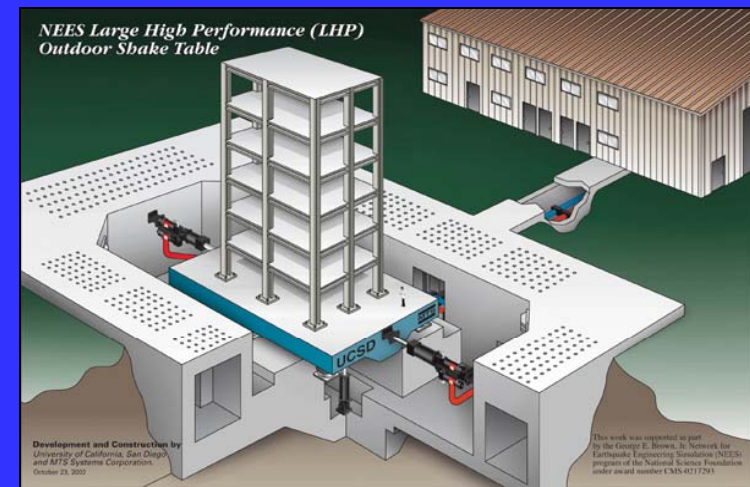
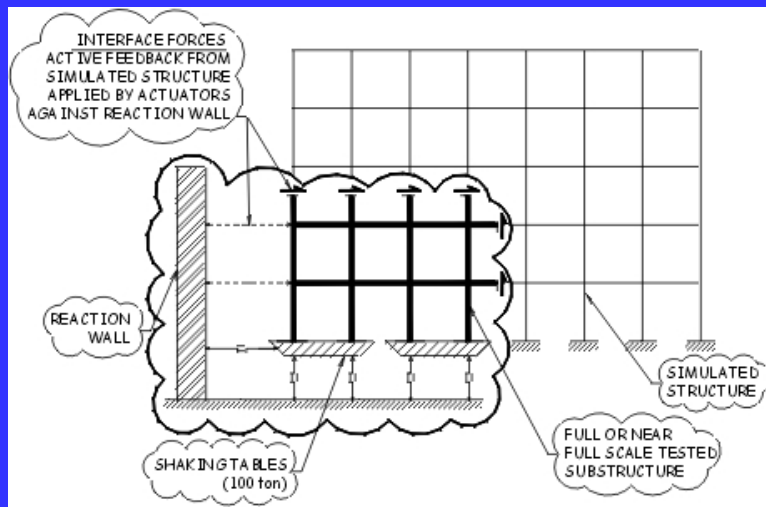
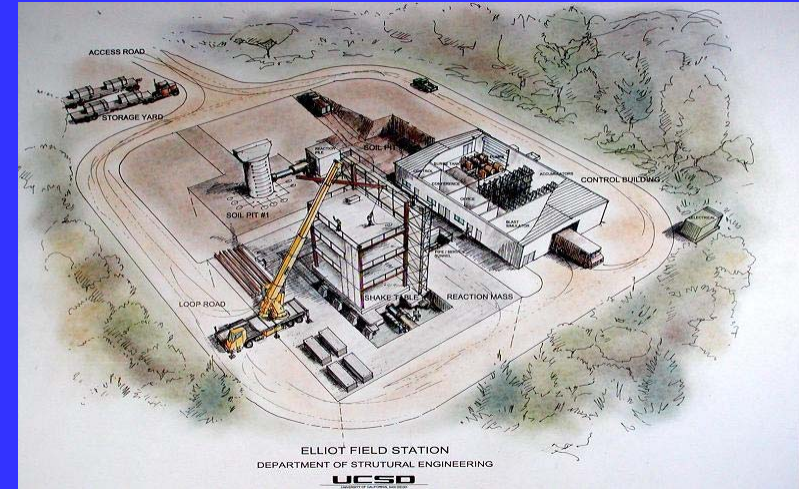
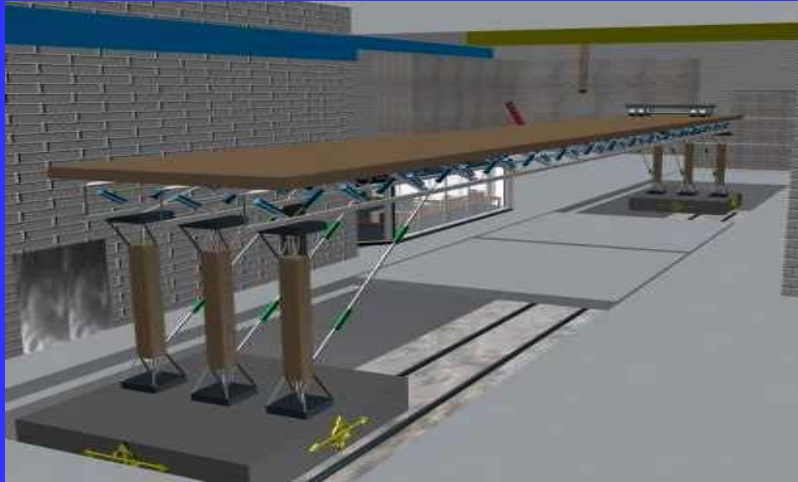


NEES Consortium, Inc. FY 2005 – FY 2014

- Funded by NSF
- Leadership & focal point for NEES
- Operate NEES under ten-year plans (strategic, business,...)
- Establish & administer policies & procedures for shared use of NEES equipment sites & network
- Promote NEES to integrate experimentation, computation, theory, databases, & model-based simulation
- Facilitate outreach & training for NEES equipment sites
- Develop partnerships with other U.S. and international equipment sites, programs, & networks
- Pursue technology development for NEES
- Interface with NSF & other federal agency programs



NEES Equipment Sites



Two 6DOF Shake Tables and Dynamic Actuators at SUNY Buffalo

Large SDOF Outdoor Shake Table
University of California, San Diego

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NEES Equipment Sites

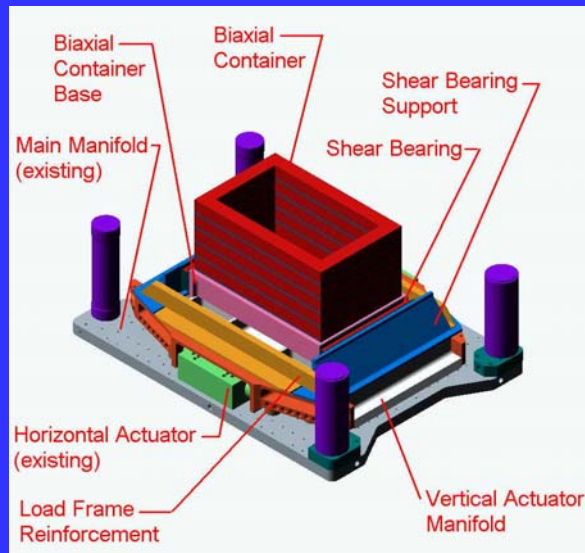
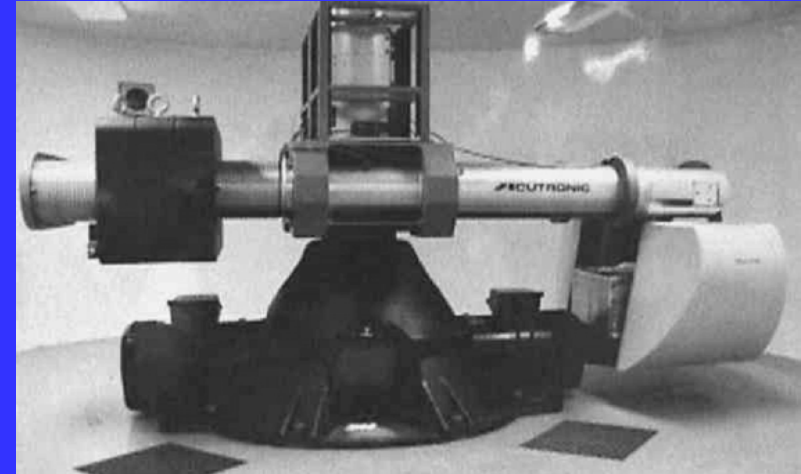


Three 2DOF Shake Tables
University of Nevada, Reno
(On-line November 2002)



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NEES Equipment Sites



Robot Tools



Geotechnical Centrifuge
University of California, Davis

Geotechnical Centrifuge
Rensselaer Polytechnic Institute



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NEES Equipment Sites



Tsunami Wave Basin
Oregon State University

Reconfigurable Reaction Wall
University of California, Berkeley

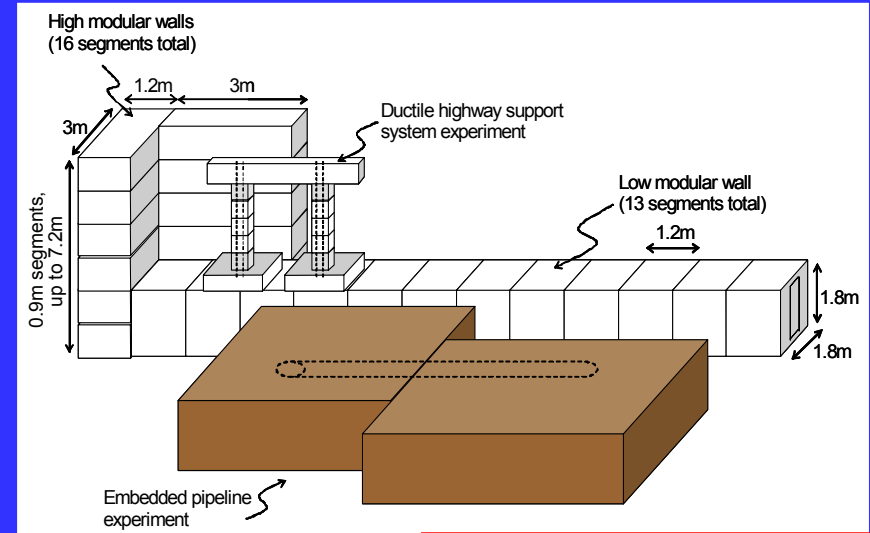


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NEES Equipment Sites



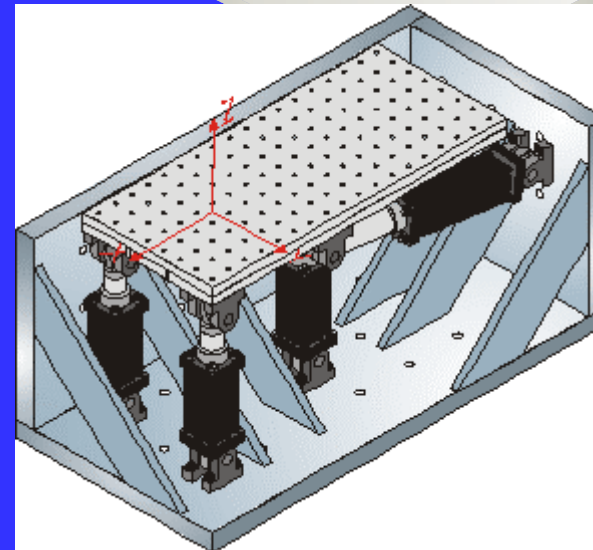
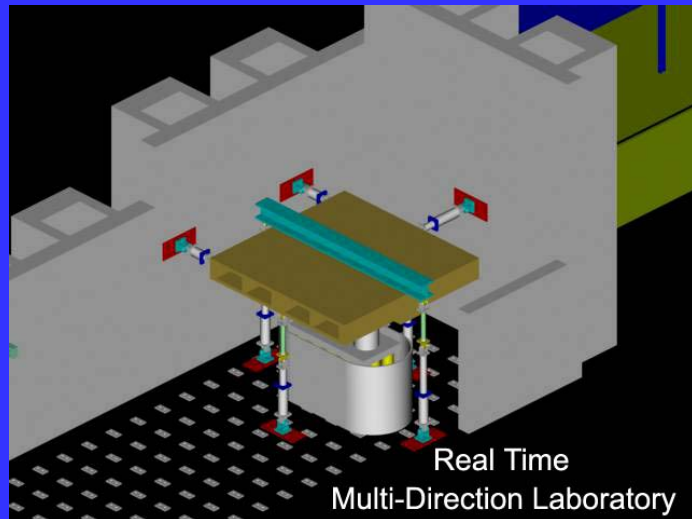
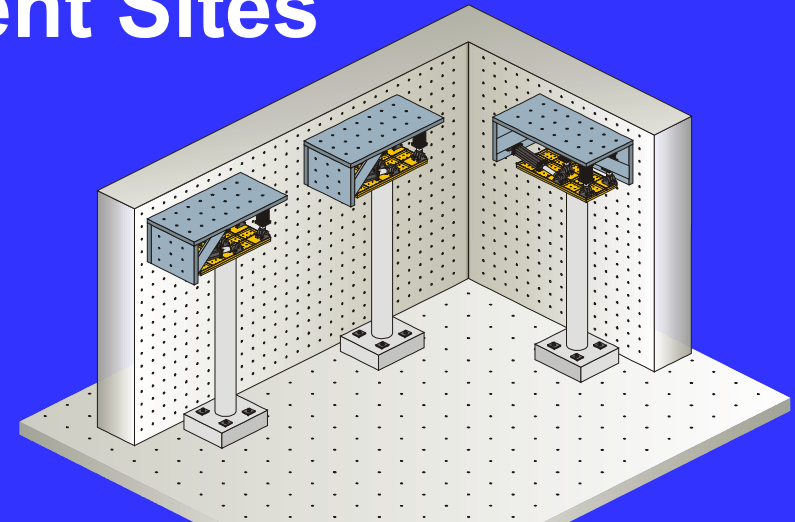
Multi-axial
Subassemblage
Testing
University of
Minnesota



Lifeline Testing Facility
Cornell University



NEES Equipment Sites

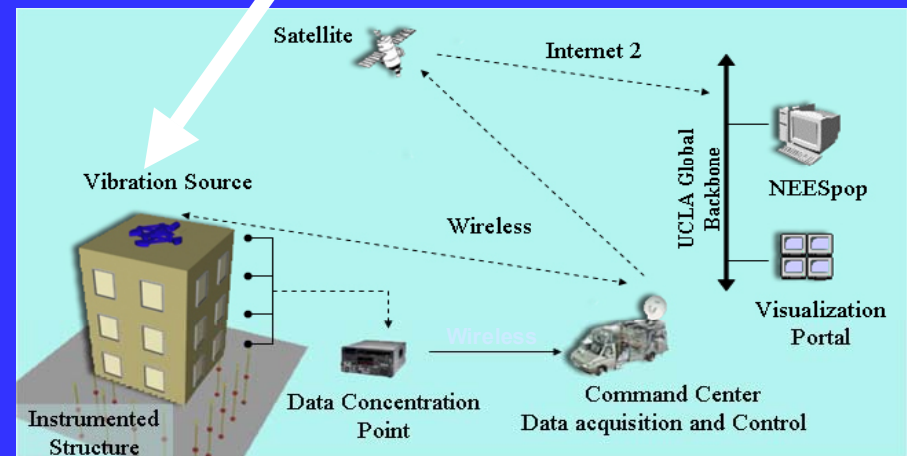
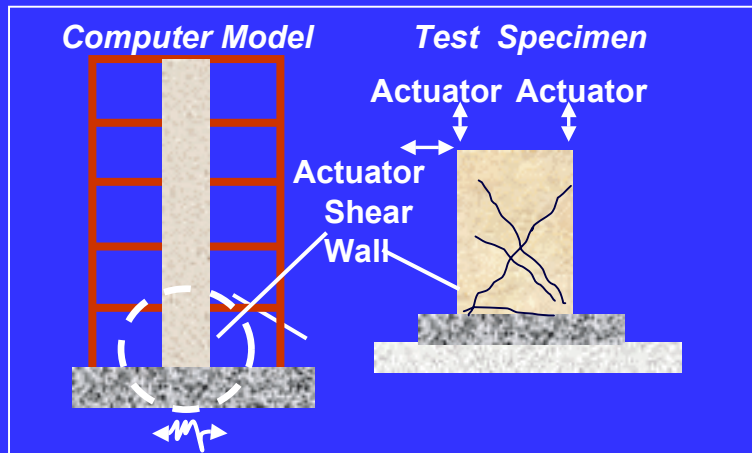


Multi-directional Dynamic Testing
Lehigh University

Modular Simulation Testing
University of Illinois, Urbana-Champaign

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NEES Equipment Sites



Fast Hybrid Structural Testing
University of Colorado, Boulder

Structural and Geotechnical Field Testing
University of California, Los Angeles

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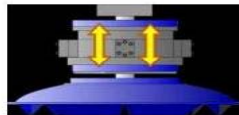
NEES Equipment Sites



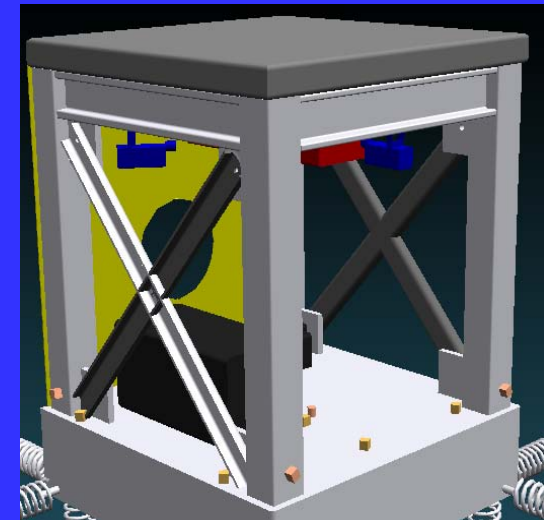
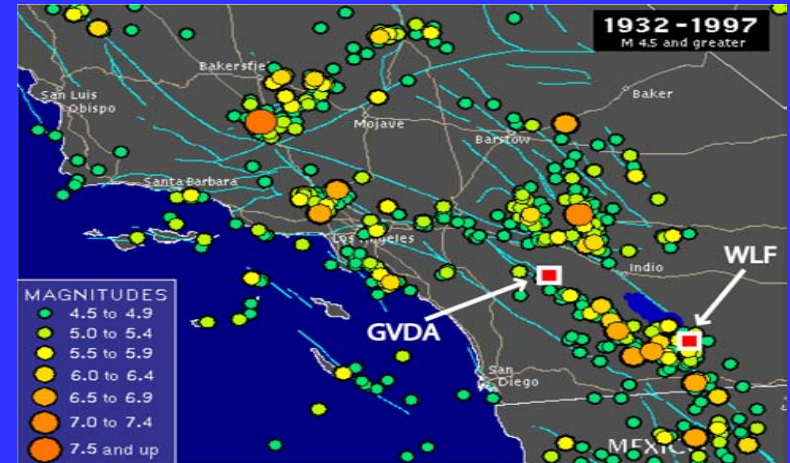
Performance



Horizontal



Vertical

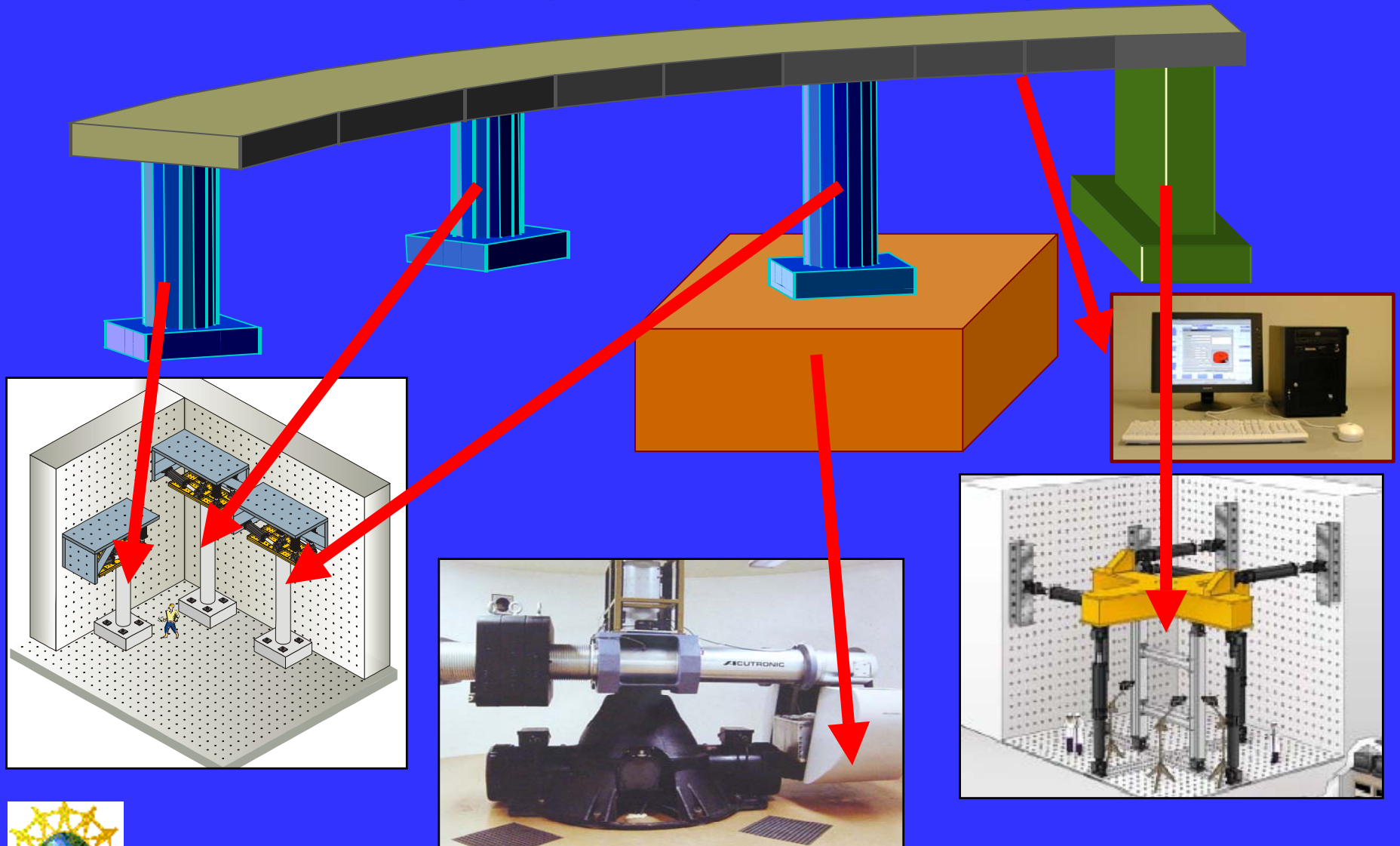


Geotechnical Field Testing
University of Texas, Austin

Two Permanently Instrumented Field Sites in CA
Brigham Young University

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Vision of NEEES

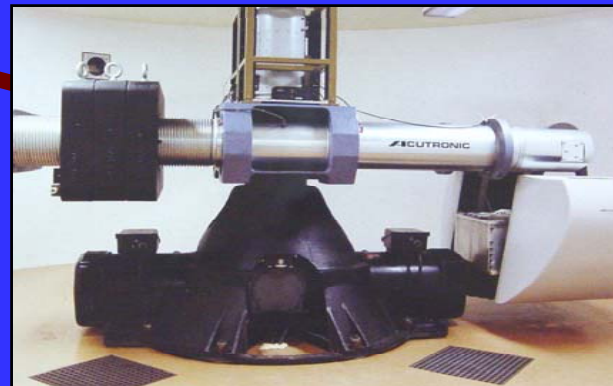
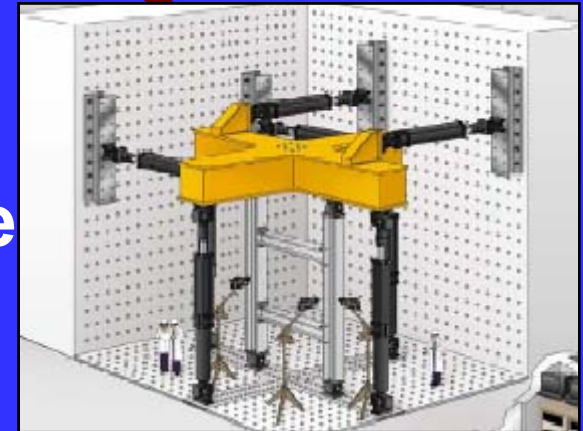
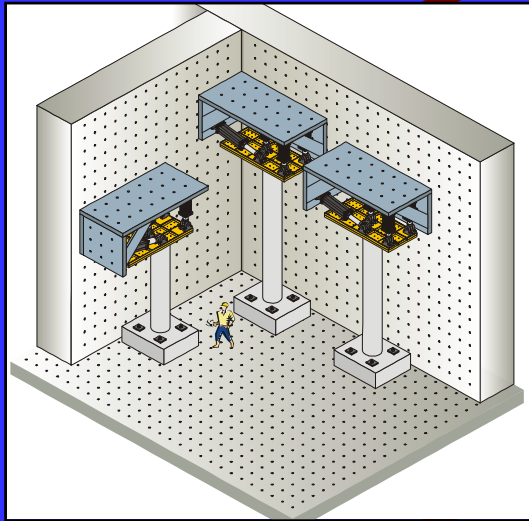


George E. Brown, Jr. Network for Earthquake Engineering Simulation (NEES)

Vision of NEES



**NEESgrid
Cyberinfrastructure**



George E. Brown, Jr. Network for Earthquake Engineering Simulation (NEES)

NSF 00-7: NEES System Integration

"NEESgrid: A Distributed Virtual Laboratory for Advanced Earthquake Experimentation and Simulation"

Bill Spencer, PI

University of Illinois at Urbana-Champaign

bfs@uiuc.edu

Award Amount: \$10,000,000

Duration: August 2001 - September 2004

National Science Foundation NEES Award CMS-0117853

<https://www.fastlane.nsf.gov/servlet/showaward?award=0117853>

Project Web Site: <http://www.neesgrid.org>.

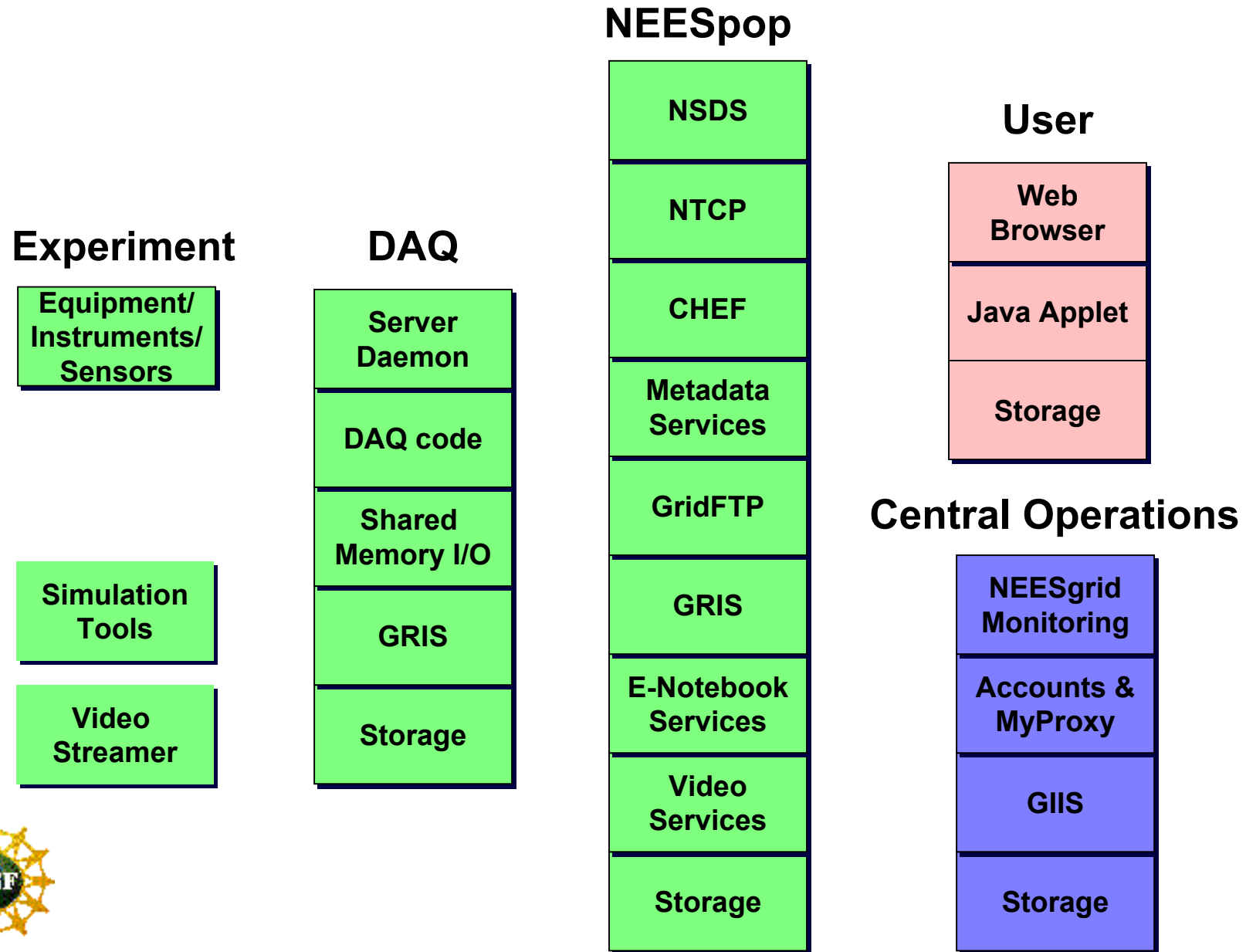


Goals of NEESgrid Architecture


- Create shared infrastructure for the earthquake engineering community
- Facilitate interoperability between facilities
- Facilitate exchange of information among community members (including practitioners)
- Provide platform for application development
- Define common tools for different sectors of the earthquake engineering community
- Permit use of distributed system as an integrated whole instead of as a collection of distributed sites



NEESgrid Cyberinfrastructure



Collaborating via NEES (mock-up)

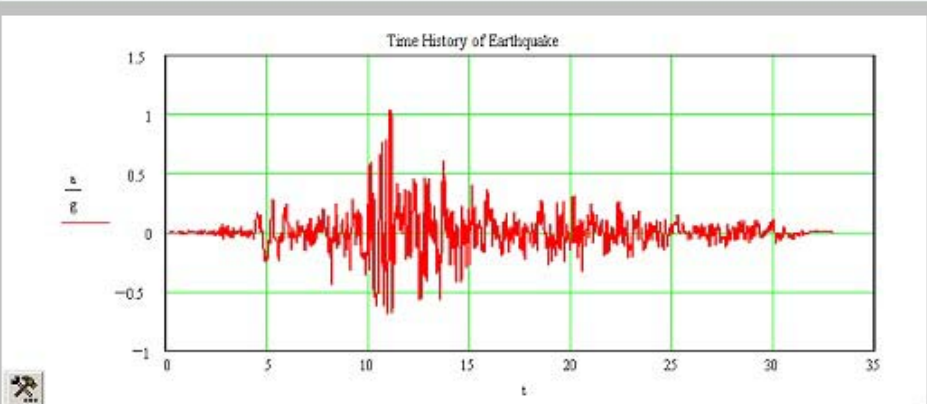


My NEES | NEES Consortium | State Institute of Technolog | Sullivan Composite LR Test

Home | Announcements | Resources | Discussion | Chat | Meeting | Data Viewer | E-Notebook | Schedule | Logout


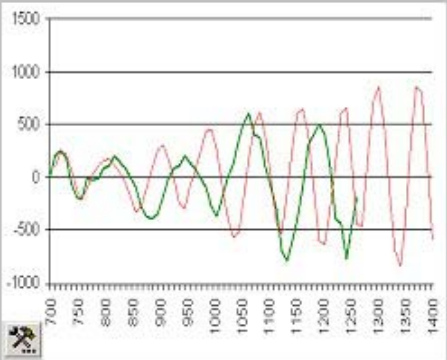
Users Present
Harish Gupta
Elliot Sullivan
Erica Granger
Eduardo Ruiz
Hideo Ishii

Time History of Earthquake



$\frac{a}{g}$

t



[Camera 2] - Wide Angle View

Erica Granger: I checked the connections on those gauges. Everything should be working.

Elliot Sullivan: Great.

Eduardo Ruiz: I think we're ready to start the test

Elliot Sullivan: Harish, is everything working on your end?

Harish Gupta: Looks good. We're ready.

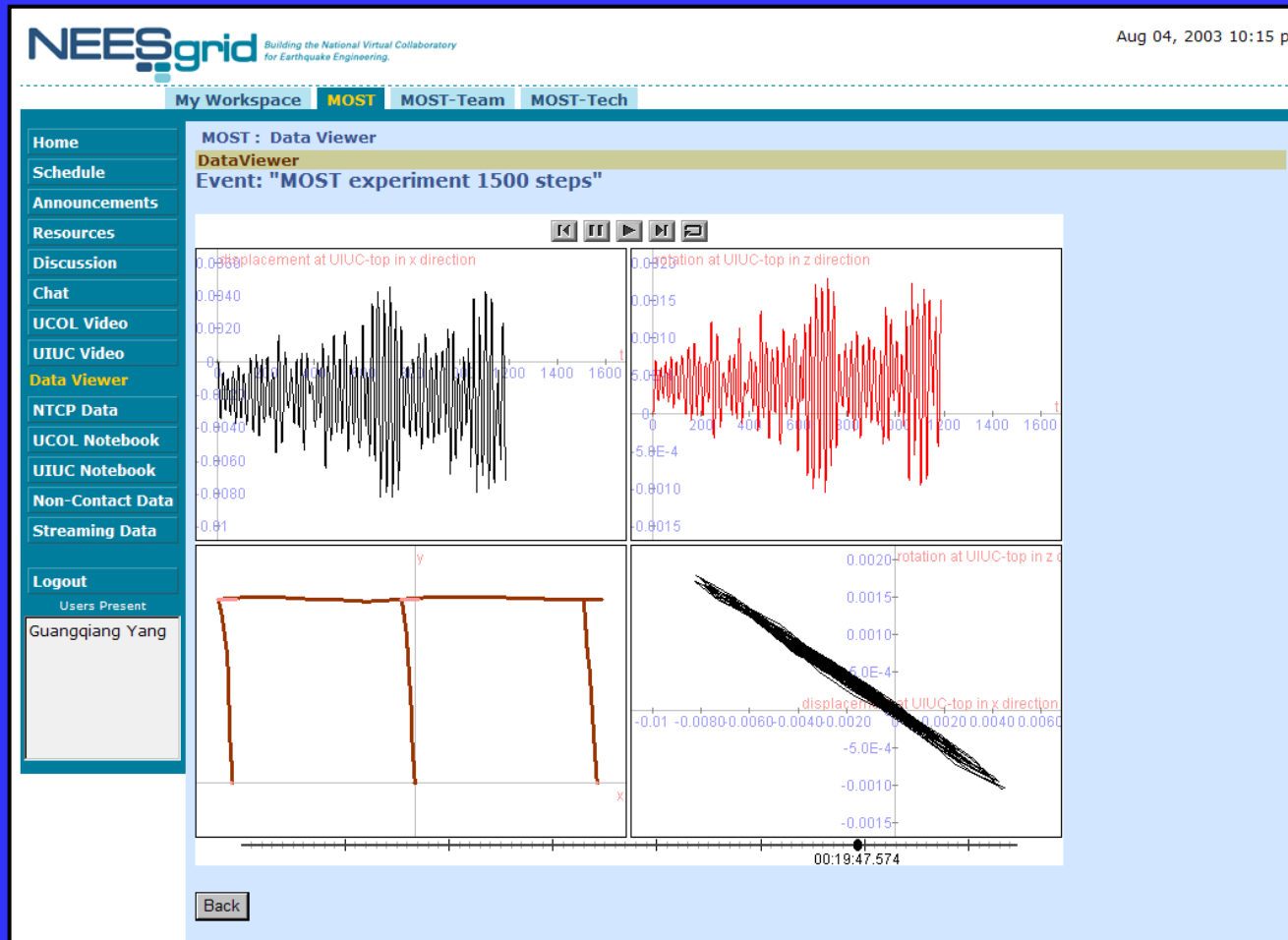
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Data Viewer

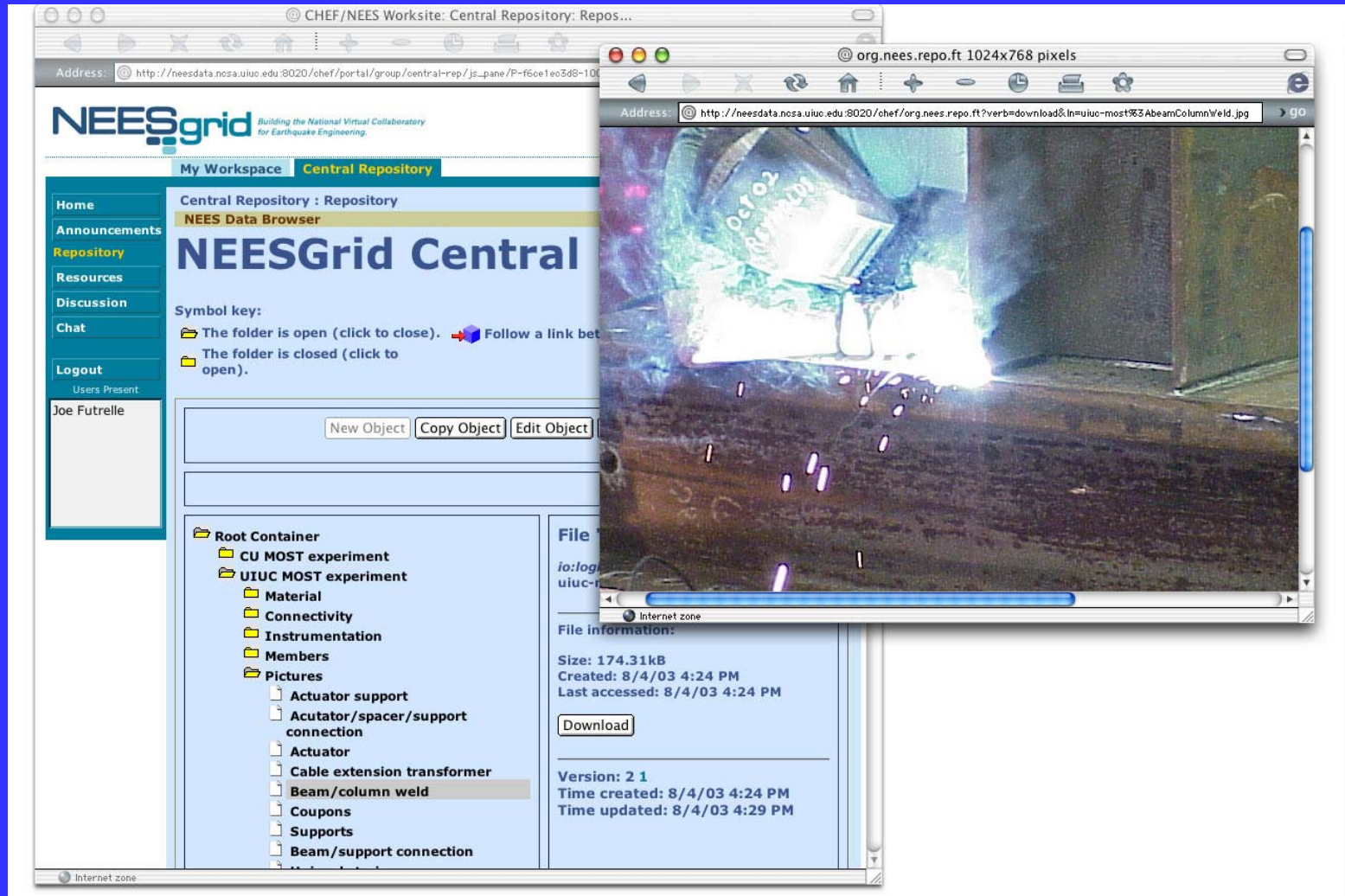
CHEF Environment



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NEESgrid Central Repository

CHEF Environment



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NEES International Partnerships

- Joint research funding partnerships

Partnership is between NSF and funding agency in other country, e.g., MEXT in Japan; EC in Europe,...

- Facility/data partnerships

Partnership with NEES Consortium and facilities/resources in other countries

- Researcher to researcher partnerships

Through funded projects or other arrangements



More Information

- NEES Consortium, Inc./Equipment Sites
<http://www.nees.org>
- NEESgrid
<http://www.neesgrid.org>
- NSF NEES Construction
<http://www.eng.nsf.gov/nees>
- NSF NEES Research (*under construction*)
<http://www.eng.nsf.gov/nees/neesresearch>

