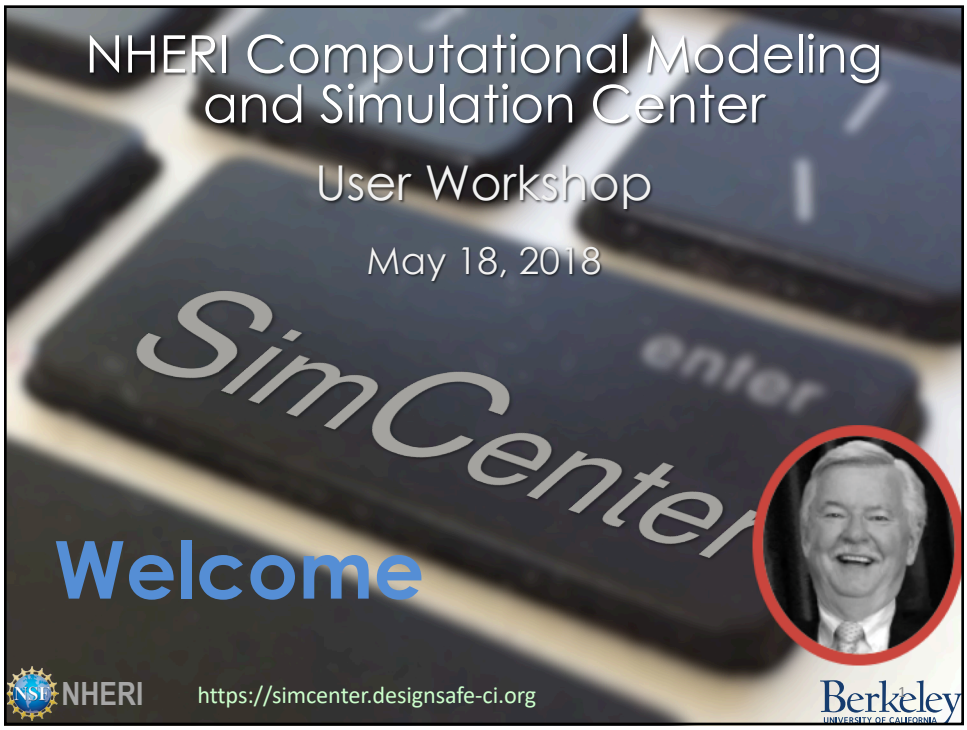

Morning Agenda

Time	Duration	Topic
8:00 am	30 min	Registration *(with continental breakfast)*
8:30 am	20 min	Welcome and Introductions Overview of Agenda and Workshop Objectives Overview of SimCenter Plan *Sanjay Govindjee*
8:50 am	40 min	Research Tools: Plan, current tools and release dates *Frank McKenna* *Ahsan Kareem*
9:30 am	10 min	Educational Tools: Plan, current tools and release dates Laura Lowes
9:40 am	10 min	PBE Workflow Testbeds Frank McKenna Greg Deierlein
9:50 am	10 min	Implementation plans and goals for workshop discussion *Sanjay Govindjee*
10:00 am	30 min	Discussion
10:30 am	15 min	Break
10:45 am	1 hr 15 min	Parallel Breakout Sessions **AI / Knowledge Bases** *(Room 242)* — *Greg Deierlein*, *Frank McKenna*, Wael Elhaddad **Computational FEM Tools** *(Room 630)* — *Sanjay Govindjee*, *Matt Schoettler*, Nikhil Padhye **Computational CFD: Wind, Storm Surge, and Tsunami Tools** *(Room 254)* — *Ahsan Kareem*, *Peter Helnwein*, Grace Kang
12:00 pm	1 hr 15 min	Roundtable lunch discussions (Boxed lunches)

2

Afternoon Agenda

Time	Duration	Topic
12:00 pm	1 hr 15 min	Roundtable lunch discussions (Boxed lunches)
1:15 pm	1 hr 15 min	Parallel Breakout Sessions **Regional PBE Testbeds** *(Room 242)* — *Greg Deierlein, Laura Lowes*, Matt Schoettler **Uncertainty Quantification** *(Room 254)* — *Sanjay Govindjee, Alex Taflanidis*, Nikhil Padhye
2:30 pm	15 min	Break (Reconvene in the auditorium; Room 310)
2:45 pm	10 min	NHERI Vision and Goals — Joy Pauschke
2:55 pm	20 min	Questions
3:15 pm	25 min	Summary and Feedback from Breakout Groups — Sanjay Govindjee
3:40 pm	20 min	Discussion
4:00 pm	25 min	ECO Engagement of Research and Educational Tools — Laura Lowes
4:25 pm	20 min	Future Tool Development and Deployment Plans — Greg Deierlein
4:45 pm	15 min	Wrap up — Sanjay Govindjee
5:00 pm		Adjourn
6:00 pm		Optional, no-host dinner & discussions for those not traveling immediately *(Faculty Club)*

3

Leadership Group

Ahsan Kareem
Notre Dame

Laura Lowes
Washington

Greg Deierlein
Stanford

Sanjay Govindjee
UC Berkeley

Camille Crittenden
UC Berkeley

Frank McKenna
UC Berkeley

Matt Schoettler
UC Berkeley

4

Postdoctoral Team

Nikhil Padhye
UC Berkeley

Chaofeng "Charles" Wang
UC Berkeley

Wael Elhaddad
UC Berkeley

Adam Zsarnoczay
Stanford

Michael Gardner
UC Berkeley

Peter Sempolinski
Notre Dame

5

Faculty Participants

- UW — Pedro Arduino, Patrick Lynett, P. Helnwein, Michael Motley
- UCB — Jonathan Bray, Filip Filippou, Paul Waddell
- UCSD — Joel Conte
- USC — Ewa Deelman
- GSU — Ann-Margaret Esnard
- JHU — Judy Mitrani-Reiser
- ND — Tracy Kijewski-Correa, Alex Taflanidis
- Stanford — Kincho Law, Eduardo Miranda
- U Memphis — Ricardo Taborda
- UCLA — Ertugrul Taciroglu
- CSU L. Beach — Vesna Terzic
- GT — Iris Tien
- Columbia — George Deodatis

6

SimCenter Goals

- **Develop a computational framework** to support decision-making to enhance community resilience to natural hazards in the face of uncertainty;
- **Seed the framework** with enough data and connectivity to **existing simulation tools** so that it can be employed in the near-term and thus improve as users identify weaknesses and new needs;
- **Create a framework** that is sufficiently **flexible**, **extensible**, and **scalable** so that any component of it can be enhanced to improve the analysis and thereby better meet the needs of a user group; and
- **Provide an ecosystem** that fosters collaboration between scientists, engineers, urban planners, public officials, and others who seek to improve community resilience to natural hazards.

7

Software Products

- **Make available production quality tools** to enable NHE researchers to advance knowledge and contribute tools
- Currently in progress
  - uqFEM: : To enhance FEM applications with UQ & Optimization
  - EE-UQ: To provide response of buildings to earthquake events
  - CWE-UQ: To provide response of buildings to wind events
  - PBE: EE-UQ + CWE-UQ plus Downtime and Loss estimation
  - RDT: *To estimate* Regional Resiliency given Multiple Hazards

8

Research Tools Release Schedule

uqFEM

- V1.0 (June 2018)
- V2.0 (2019)
- V3.0 (2020)
- V4.0 (2021)

CWE-UQ

- V1.0 (June 2018) Bluff Body
- V2.0 (Sept 2018) Building
- V3.0 (2019) UQ

AI

EE-UQ

- V1.0 (June 2018) Uniform
- V2.0 (Sept 2018) Rock Outcrop
- V3.0 (2019) Soil Box

AI

PBE

- V1.0 (Sept 2018) Earthquake
- V2.0 (2019) Wind
- V3.0 (2020) Water

AI

Workflow Testbeds Release Schedule

RDT

- V1.0 (2019) Earthquake
- V2.0 (2020) Wind
- V3.0 (2021) Water

Regional Earthquake

- V1.0 (June 2018)
- V2.0 (2019)
- V3.0 (2020)

Water

- V1.0 (Sept 2018)
- V2.0 (2020)
- V3.0 (2021)

Hurricane

- V1.0 (2020)
- V2.0 (2021)

MultiHazard

- V1.0 (2021)

Education Activities

- Education and community outreach
  - **Advance the use and quality** of simulation in NHE
  - Educate users on NHE and simulation methods
  - Provide educational applications
    - Pile tool, MDOF tool, Base Isolation tool, Wind v EQ tool
  - Webinar series
  - Professional outreach
- Session devoted to these aspects in the afternoon

11

Educational Tools Release Schedule

MDOF

- V1.0 (Oct 2017)
- V1.1 (Feb 2018)

Pile Group

- V1.0 (Oct 2017)
- V2.0 (May 2018)

EvW

- V1.0 (June 2018)
- V2.0 (Sept 2019)

BI

- V1.0 (Sept 2018)
- V2.0 (2019)

We Are a Virtual EF

- We have a starting set of tools: you can contribute
- We have a starting set of capabilities: you can help expand them
- The system is designed to be flexible and extensible to meet community needs as they evolve

13

Goals for workshop

- Generate feedback on the SimCenter's direction
- Engage and brainstorm on needed features for current and future products
- The SimCenter is a user facility. Let us know what you want to see
- Get you involved

14

Agenda for the rest of the morning

- 30 minute Discussion
- 15 minute Break
- 1.25 hr Parallel break out groups
  - Knowledge base tools
  - Computational FEM tools
  - Computational CFD tools
    - Please see your pre-assignment

15