

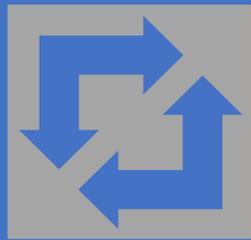
A Research Coordination Network (RCN):  
**Multi-hazard Engineering  
Collaboratory in Hybrid Simulation**

# **Breaking Barriers & Building Capacity**

*1st Workshop, December 12-13, 2017  
Univ. California, San Diego*

*Supported by the*  
US National Science Foundation





# A Research Coordination Network (RCN): Multi-hazard Engineering Collaboratory in Hybrid Simulation



*This research coordination network aims to facilitate the scientific advances needed to establish the theory of and expand the capacity for hybrid simulation as it applies to multi-hazard engineering.*



Pre Earth

## 2020 Vision

for Earthquake Engineering Research

Report on an OpenSpace Technology on the Future of Earthquake Engineering Research

GRAND CHALLENGE FOR EARTHQUAKE ENGINEERING RESEARCH

A Community Vision

NATURAL HAZARDS ENGINEERING RESEARCH INFRASTRUCTURE

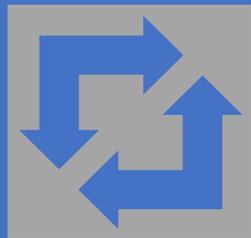
## FIVE-YEAR SCIENCE PLAN

MULTI-HAZARD RESEARCH TO MAKE A MORE RESILIENT WORLD

JULY 2017

NHERI Natural Hazards Engineering Research Infrastructure



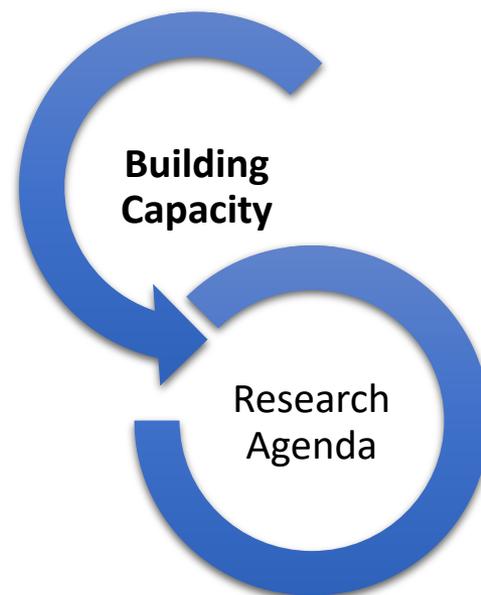


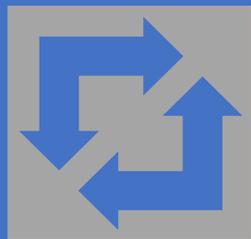
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Help  
Control Lessons  
earthquake  
tsunami  
Benchmark  
coastal  
Actuators  
Learning  
Simulation  
Uncertainty  
Testbed  
Multihazard  
Workflow  
Advise  
Computation  
wind  
Action

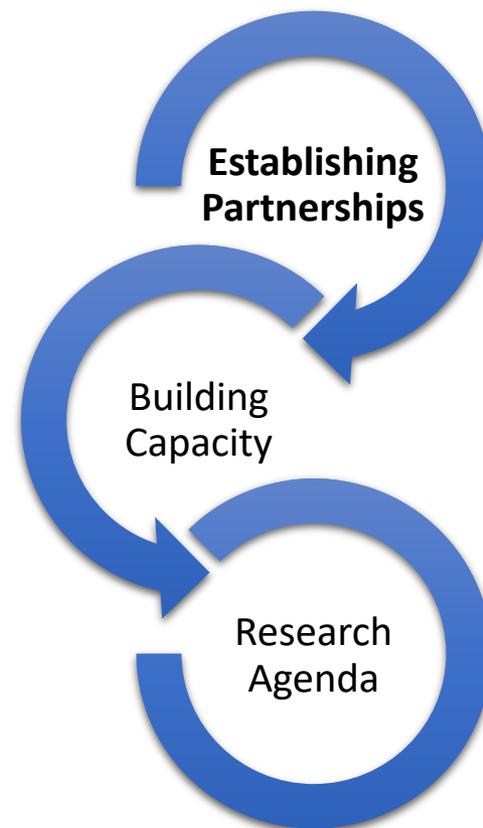




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## MULTIHAZARD ENGINEERING COLLABORATORY ON HYBRID SIMULATION

A RESEARCH COORDINATION NETWORK



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### MECHS OVERVIEW

Hybrid Simulation is a cyber-physical technique used to examine the behavior of structural systems that may be too large or complex to test in the laboratory. Physical specimens are linked with computational models. A challenge is to ensure that this combined system is tested under realistic conditions. Thus, boundary conditions at the interface between the physical and computational portions must be enforced, and hydraulic actuators are frequently used (see figure below).

**AIM:** The MECHS research coordination network aims to facilitate the scientific advances needed to establish the theory of and expand the capacity for hybrid simulation as it applies to multi-hazard engineering.

The main objectives are to:

- Diversify the community of researchers using hybrid simulation
- Build capacity for hybrid simulation in existing laboratories
- Develop a research agenda for hybrid simulation
- Foster peer-to-peer and institute-to-institute partnerships
- Share relevant resources and digital artifacts
- Cultivate international collaborations

