SimCenter NHERI
Center for Computational Modeling and Simulation

Introduction to the **NHERI SimCenter**

Adam Zsarnóczay
Associate Director for Research Outreach

Research Engineer
Stanford University

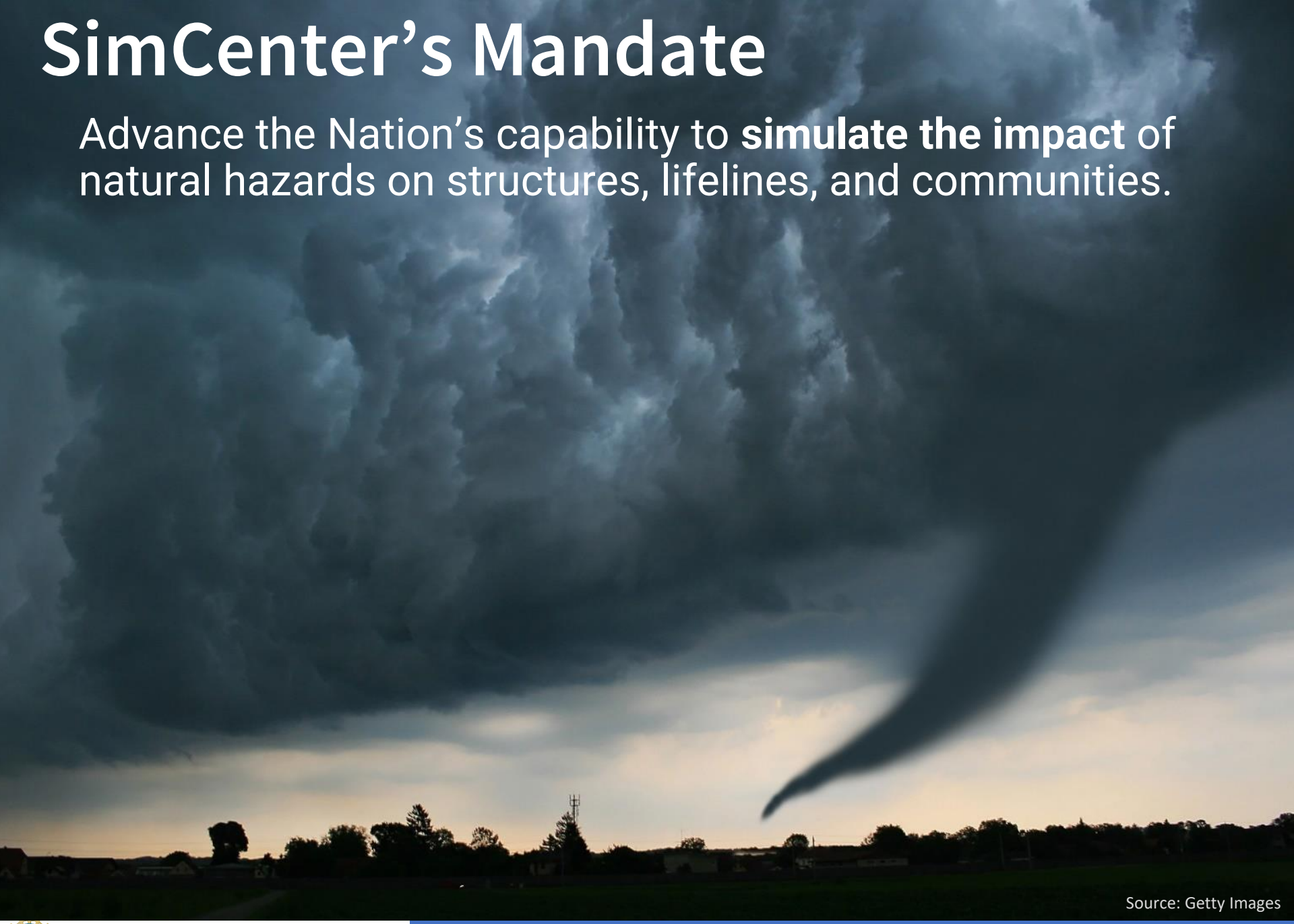
NSF awards: CMMI 1612843, 2131111

NSF NHERI

PURDUE UNIVERSITY
Network Coordination Office
NSF Award #1612144
UNIVERSITY OF COLORADO BOULDER
Extreme Event Reconnaissance Coordination
NSF Award #1841338
UC BERKELEY
Computational Simulation
NSF Award #1612843
UNIVERSITY OF WASHINGTON
Natural Hazards Reconnaissance Equipment
NSF Award # 1611820
UNIVERSITY OF TEXAS, AUSTIN
Community Cyberinfrastructure
NSF Award #1520817
NHERI
Natural Hazards
Engineering
Research
Infrastructure
OREGON STATE UNIVERSITY
Wave Basin and Flume
NSF Award # 1519679
FLORIDA INTERNATIONAL UNIVERSITY
Wind Simulation
NSF Award #1520853
UNIVERSITY OF TEXAS, AUSTIN
Mobile Field Shakers
NSF Award #1520808
UNIVERSITY OF FLORIDA
Wind Simulation
NSF Award #1520843
UC DAVIS
Geotechnical Centrifuges
NSF Award #1520581
LEHIGH UNIVERSITY
Hybrid Simulation
NSF Award #1520765
UC SAN DIEGO
Large Outdoor Shake Table
NSF Award #1520904

SimCenter's Mandate

Advance the Nation's capability to **simulate the impact** of natural hazards on structures, lifelines, and communities.



Source: Getty Images

SimCenter's Mandate

Advance the Nation's capability to **simulate the impact** of natural hazards on structures, lifelines, and communities.

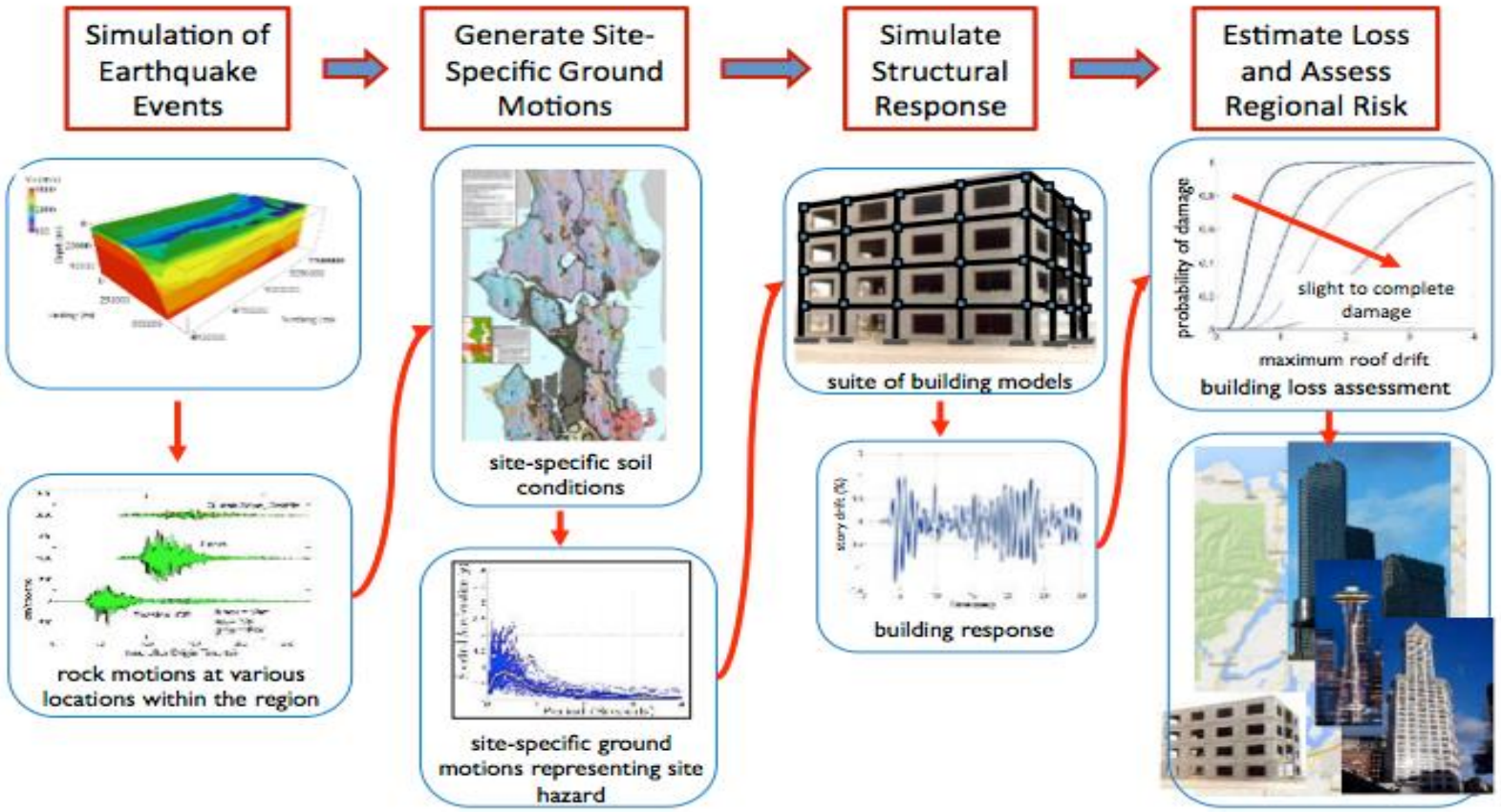
Source: Brandon Clement

Source: Reuters/Ralph Tedy Erol

Source: AP Photo/Gerald Herbert

SimCenter Application Framework

Create an open-source and extensible app. framework, integrate existing tools and data, and develop new software to provide the next-generation of disaster simulation solutions.



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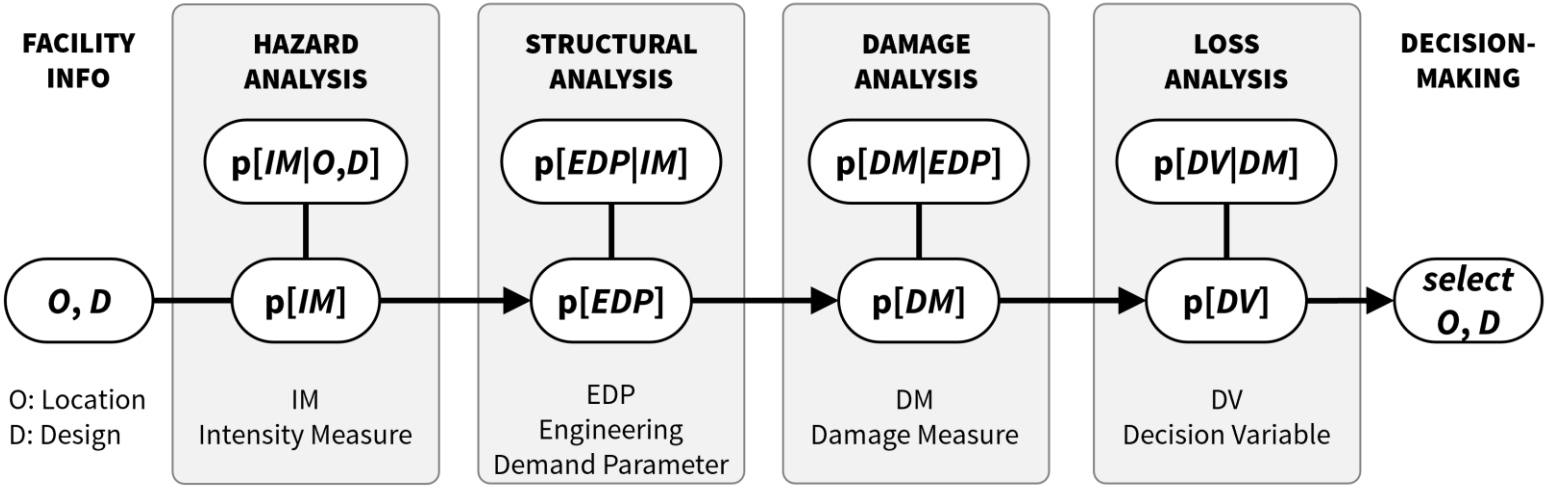
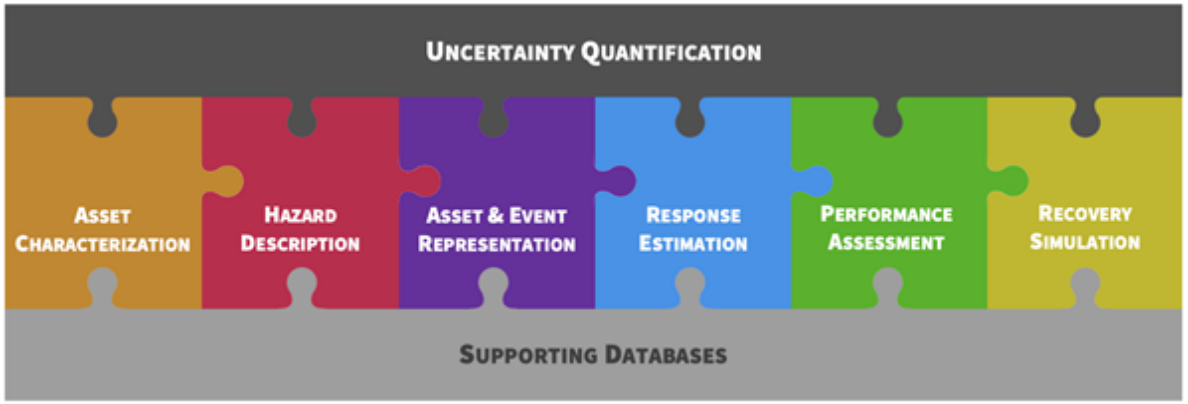
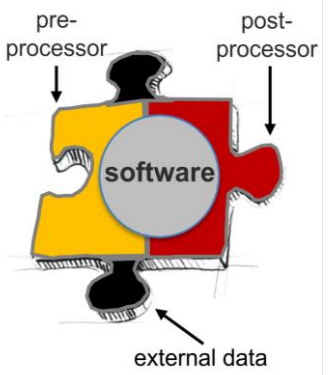
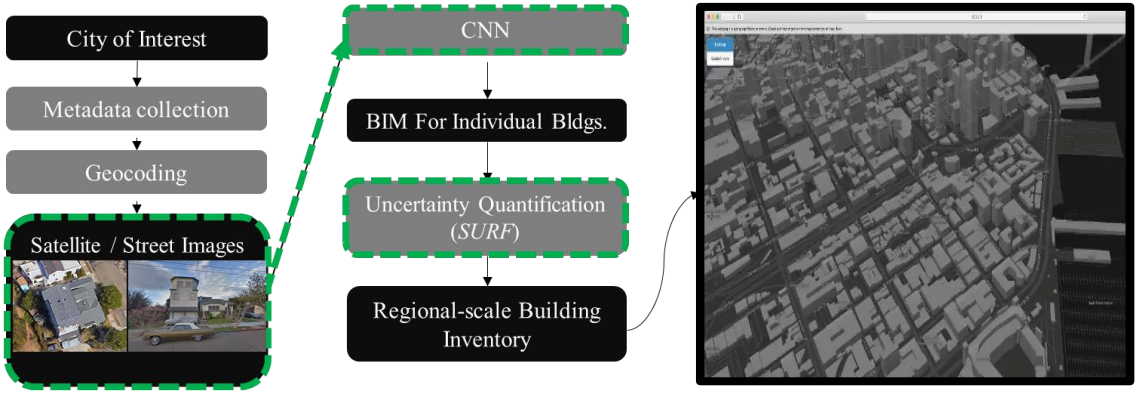


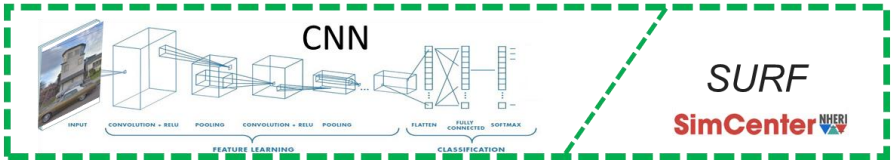


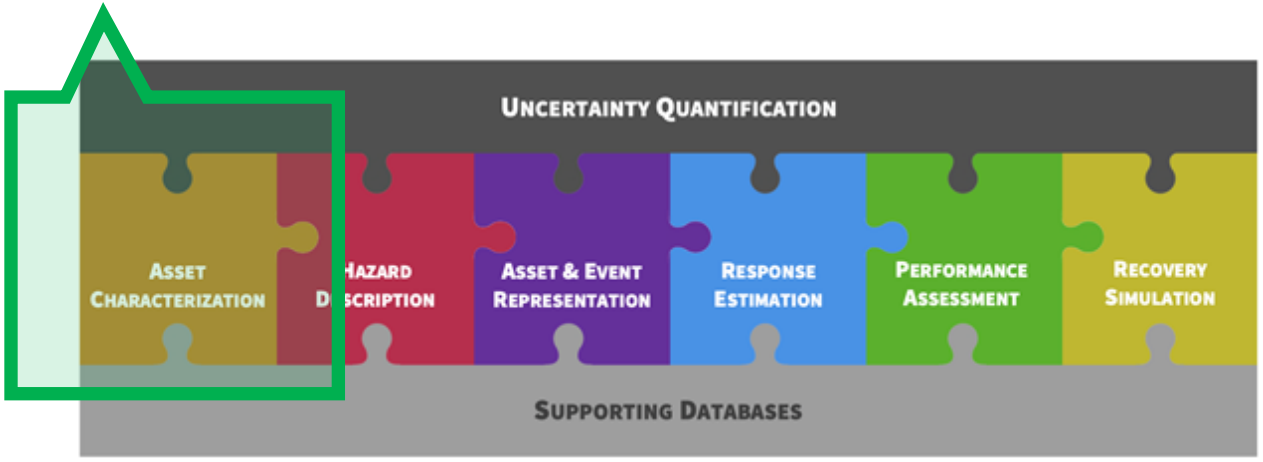


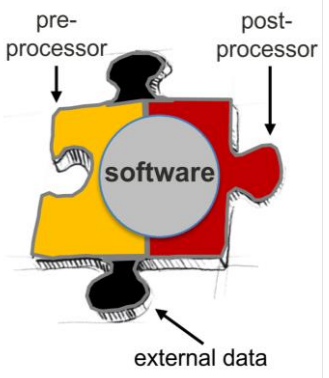
SimCenter Application Framework

Building Feature Identification using AI-enabled Evaluation of Images









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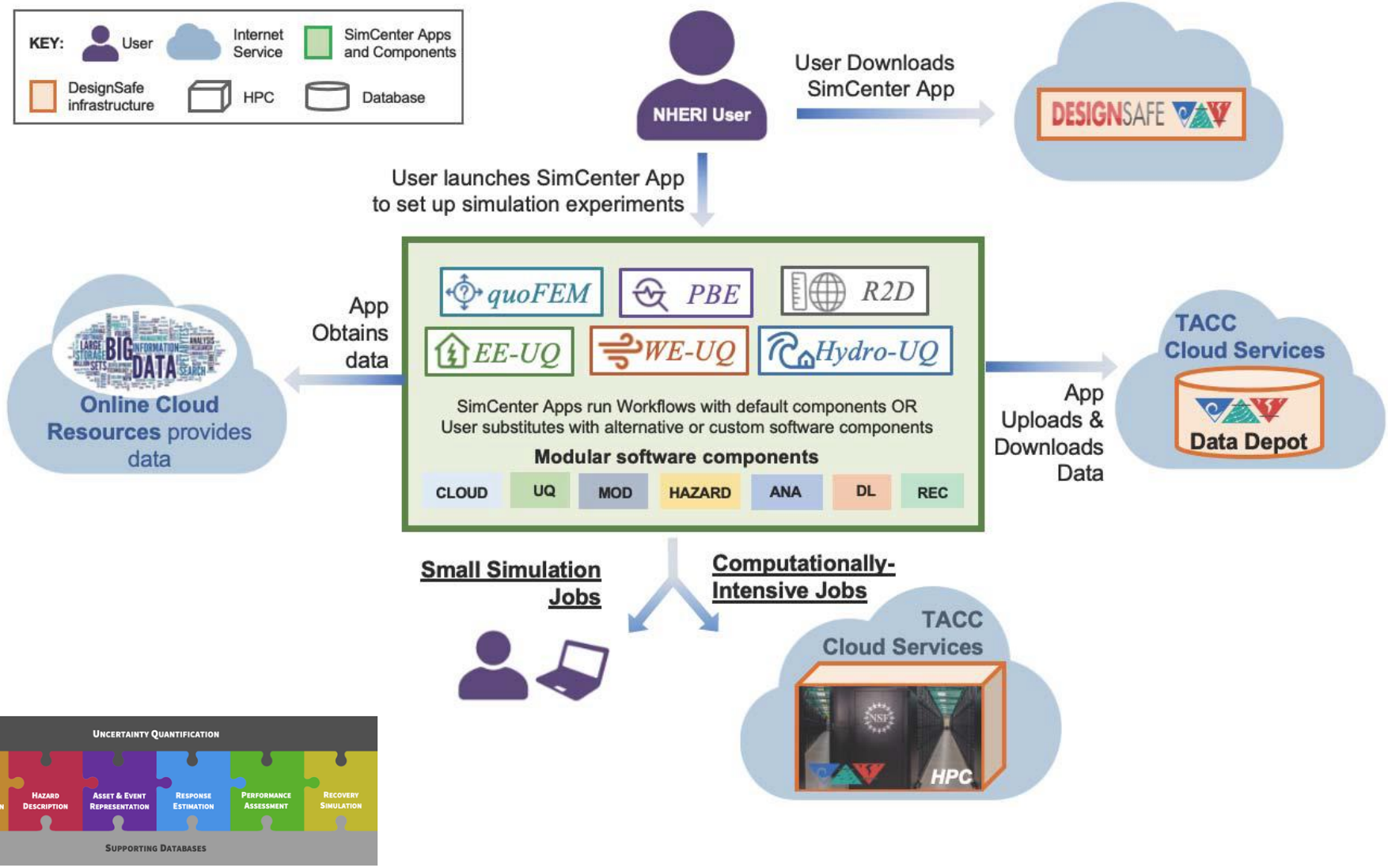
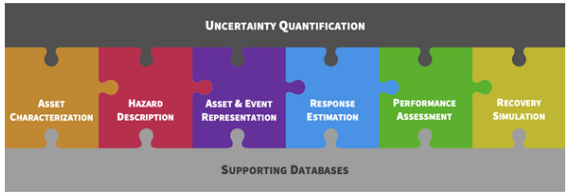
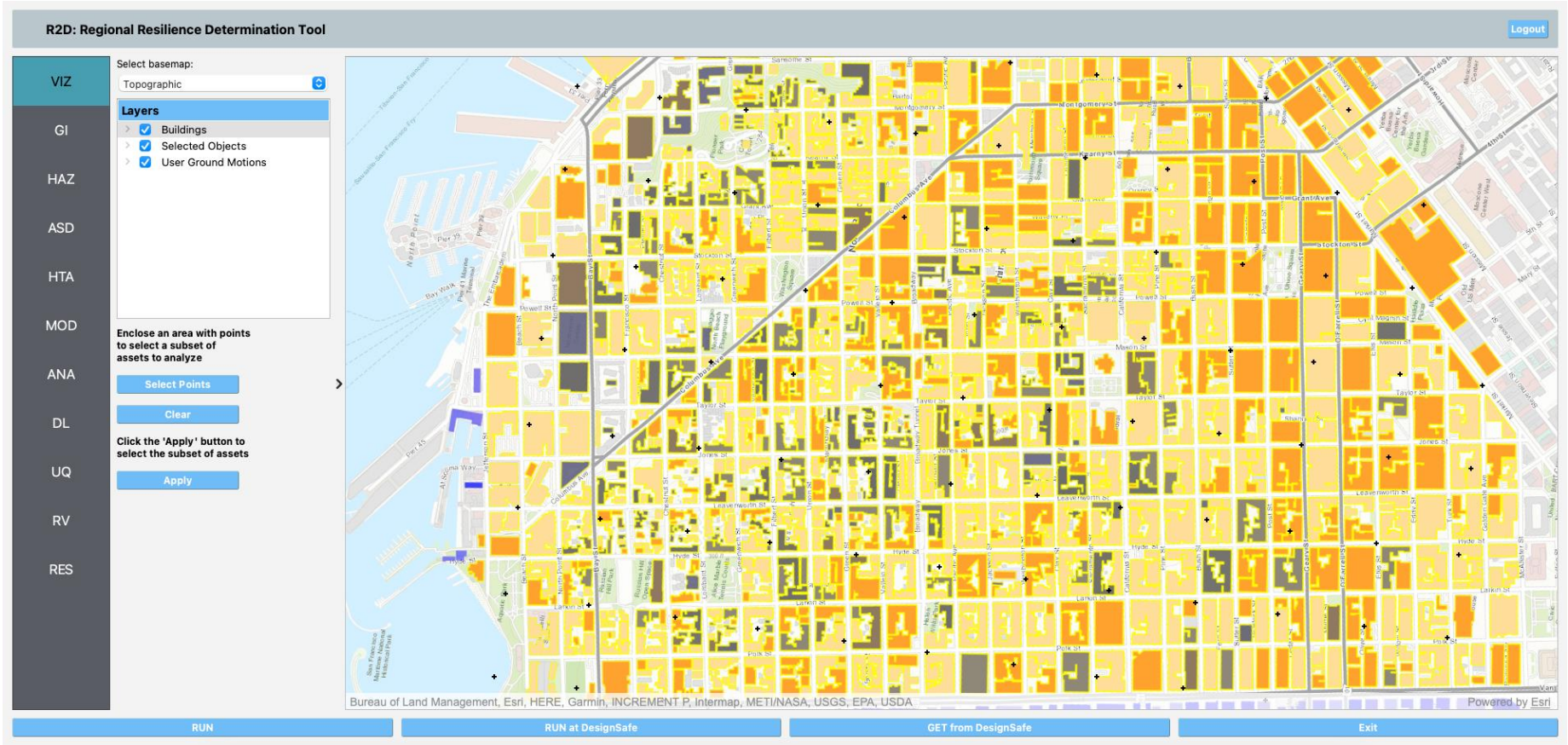




Desktop Applications: R2D Tool



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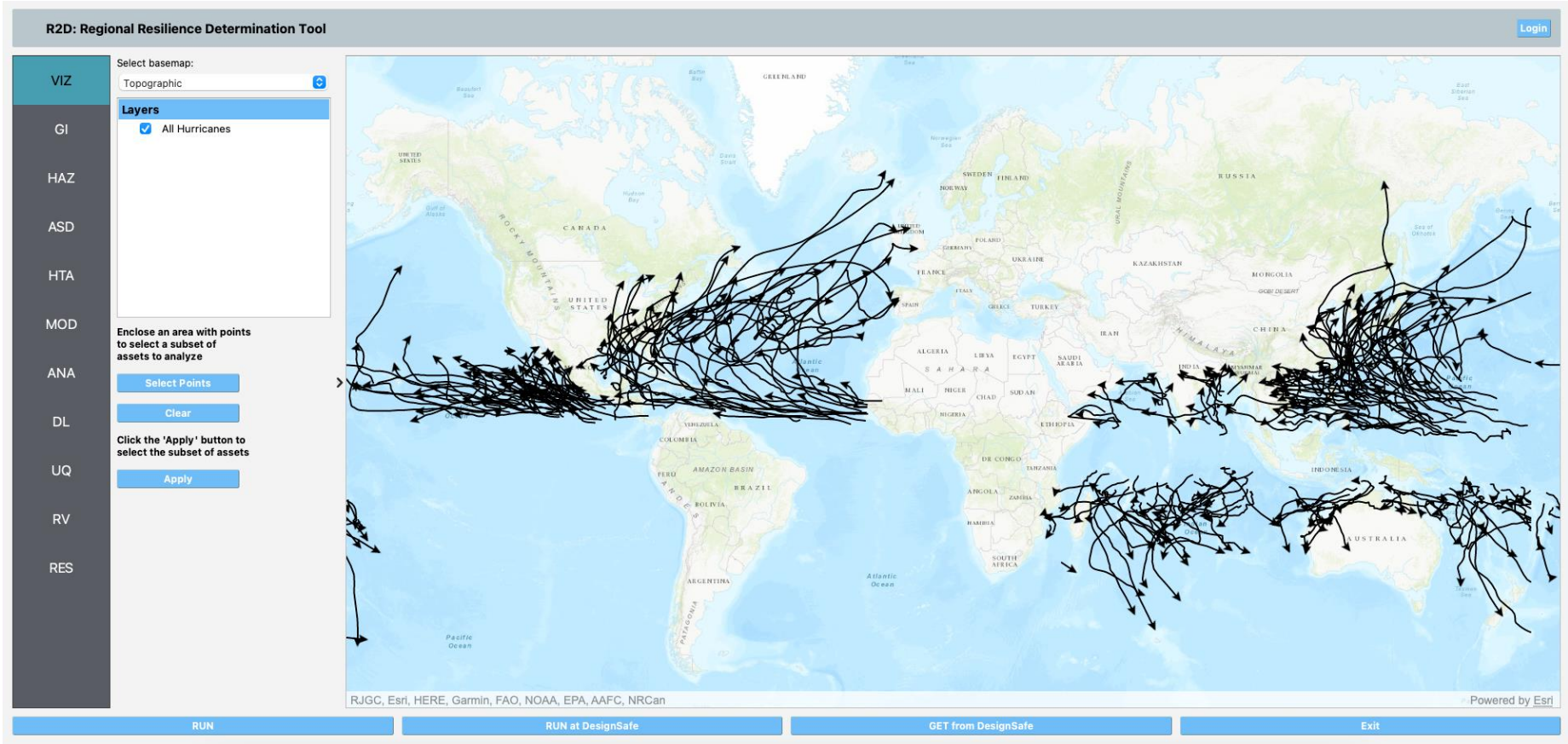
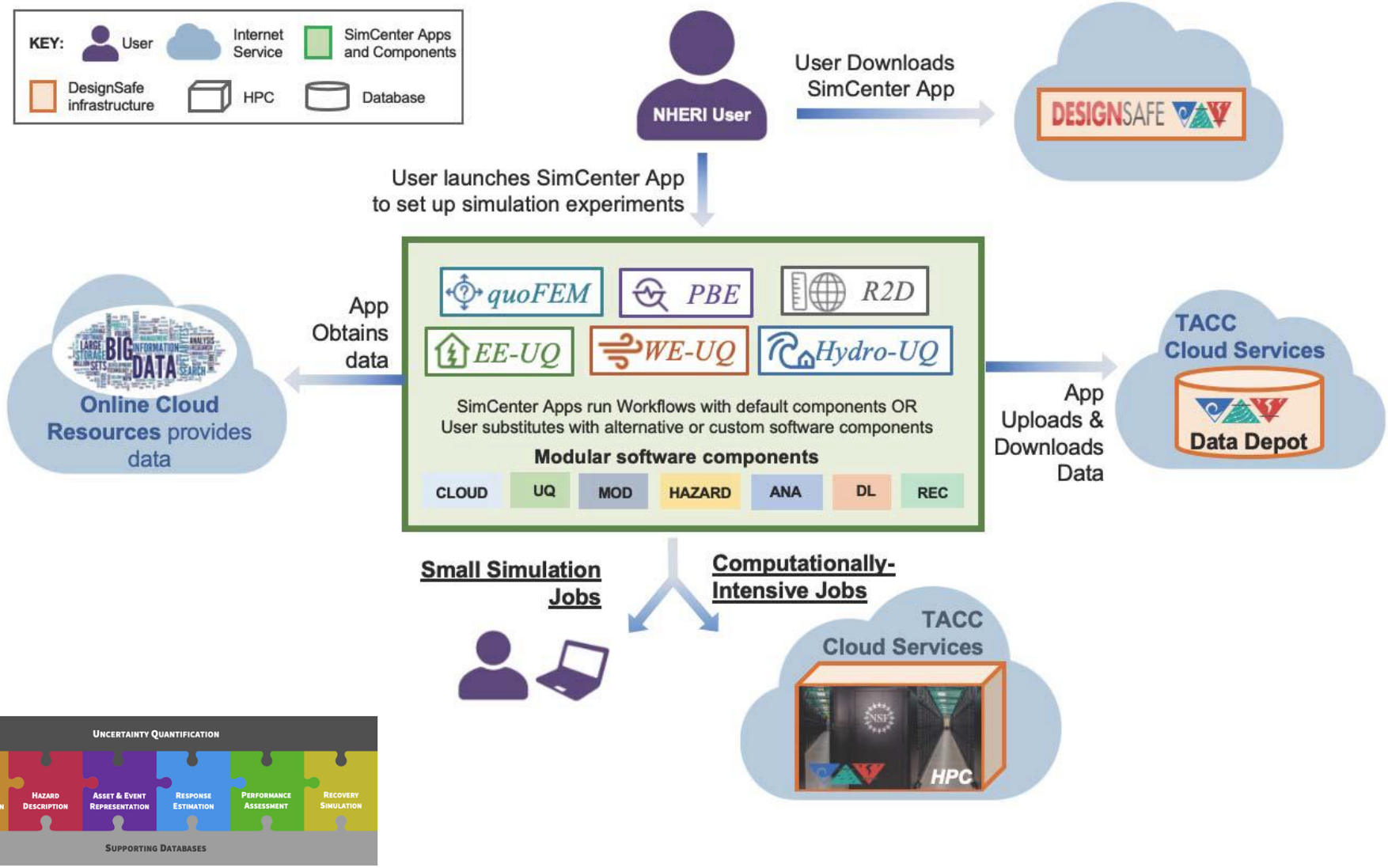
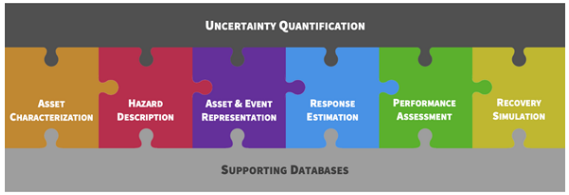


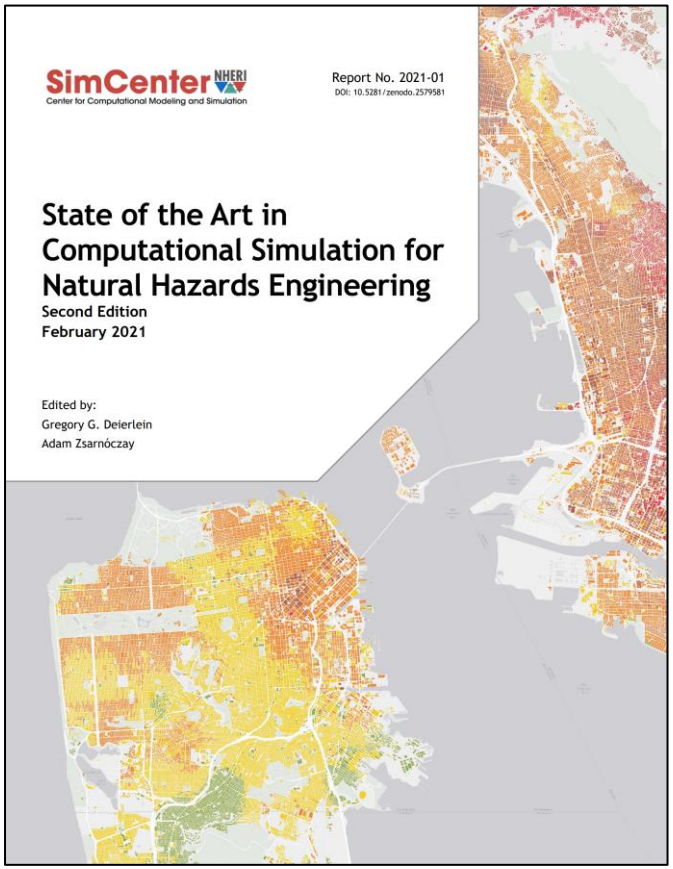
SimCenter Application Framework

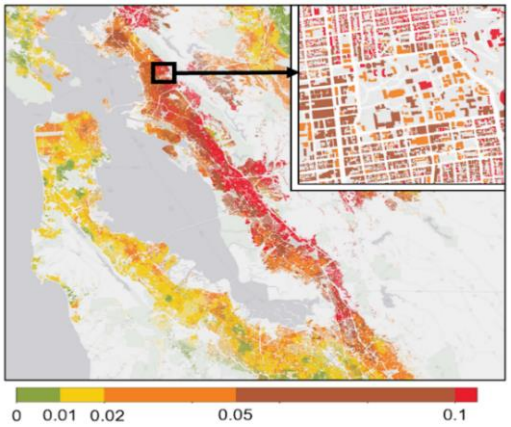




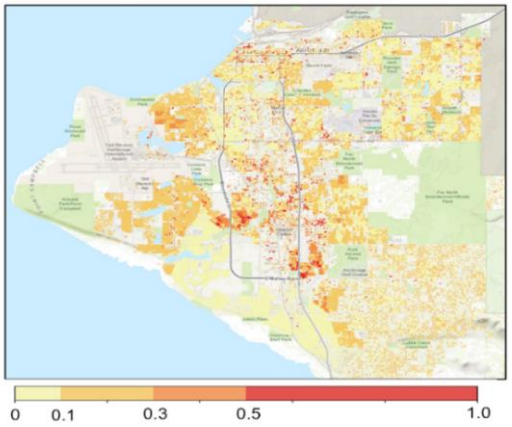
Education & Training

Support researchers and practitioners with education and training, and connect them with high-performance computing resources.

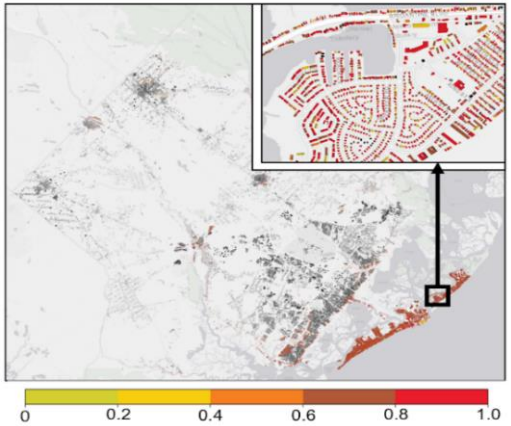




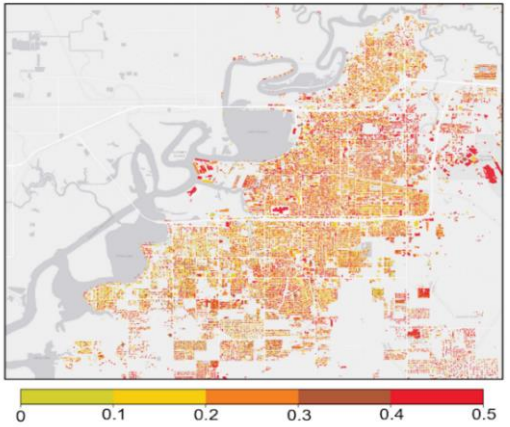
a) San Francisco, CA – Mw7.0 Earthquake Scenario



b) Anchorage, AK – 2018 Mw7.1 Earthquake Hindcast



c) Atlantic City, NJ – Category 4 Hurricane Scenario



d) Lake Charles, LA – 2020 Hurricane Laura Hindcast

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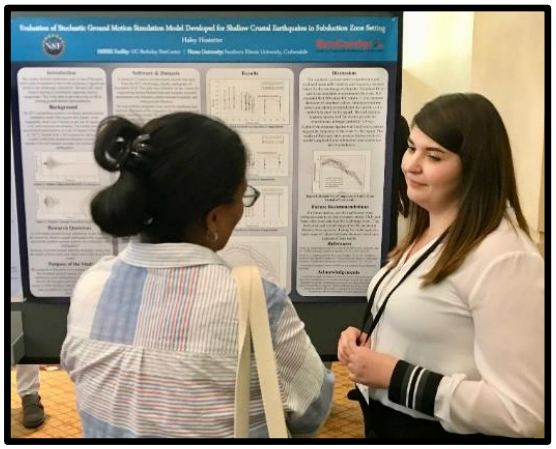

How to Get Started

SimCenter website: https://simcenter.designsafe-ci.org/

- Webinars & videos introduce tools and provide example simulations
- Download tools and access their documentation (e.g., R2D, quoFEM)
- Publications: testbeds, papers, reports
- Events: Programming bootcamp, tool training, hackathon, NHERI REU

YouTube:https://www.youtube.com/c/DesignSafe/search?query=SimCenter

GitHub: http://github.com/NHERI-SimCenter

Newsletter: https://simcenter.designsafe-ci.org/survey/