

NATIONAL
EARTHQUAKE
CONFERENCE



& 72nd EERI ANNUAL MEETING

CONFERENCE PROGRAM
March 4-6, 2020
San Diego, CA

PRESENTING SPONSOR:



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Welcome

On behalf of the Earthquake Engineering Research Institute (EERI), Federal Alliance for Safe Homes (FLASH), Presenting Sponsor California Earthquake Authority (CEA), Presenting Partner Agencies, and the planning committees, we are delighted to welcome you to the 2020 National Earthquake Conference (NEC2020) and 72nd EERI Annual Meeting.

We have designed the NEC2020 as a destination for multidisciplinary professionals to connect, network, and learn the latest earthquake science, policy, practice, and engineering. We hope you will find this gathering instructive, invaluable, and energizing too.

The conference will open with the first public release of results from a new earthquake scenario and risk study for the San Diego region. Developed by experts over the last five years, the initiative captures and projects the potential impacts and consequences of an M6.9 earthquake on the Rose Canyon Fault. The program will continue with sessions on emergency management, resilience planning, public policy, advocacy, seismic risk reduction, designing for functional recovery, advanced technology tools in engineering, and much more. We will showcase findings from the latest earthquakes in Puerto Rico, Anchorage, Alaska, and Ridgecrest, California as well.


You will hear from renowned national experts like Dr. Lucy Jones, founder of the Dr. Lucy Jones Center for Science and Society, and Dr. Julian J. Bommer, Senior Research Investigator at Imperial College London, structural engineer David Bonowitz, and David Maurstad, FEMA Deputy Associate Administrator for Insurance and Mitigation and chief executive of the National Flood Insurance Program. Drs. Bommer and Jones will explore how to frame conversations to stakeholders about considering and planning for earthquakes of various scales. Mr. Bonowitz will serve as EERI's Distinguished Lecturer, and Mr. Maurstad will deliver a call to action as our closing keynote speaker.

We will present one of the classic highlights of EERI Annual Meetings, the EERI Undergraduate Seismic Design Competition, showcasing nearly 50 teams from universities around the world. The teams have spent many months designing a scaled wood building based on a scenario in downtown San Diego, and on Wednesday, 400 students will see their projects evaluated and shake table tested. Be sure you make time to enjoy the live auction and exciting competition as this 17th annual event is a must-see.

We want to thank our *Presenting Partners* from the National Earthquake Hazards Reduction Program (NEHRP) agencies, including Federal Emergency Management Agency (FEMA), National Institute of Standards and Technology (NIST), and United States Geological Survey (USGS). We are grateful to their senior leaders, including Dr. Howard Harary and David Maurstad, who have made this conference and our community a priority for their agencies. The National Science Foundation (NSF) (Award #CMMI-2002617) and USGS (Award #G20AC00042) provided critical support for the sessions on Ridgecrest Earthquake Sequence. The NSF (Award #CMMI-1938428) and USGS (Award# G19AC00299) provided essential support for the Anchorage Earthquake session.

NEC2020 brings us together as a unique set of individuals from all aspects of the earthquake community—academics, emergency managers, engineers, first responders, insurance experts, practitioners, professionals, public officials, risk communicators, scientists, students, and more. Resourcing and organizing a conference of this magnitude is no small feat, so we would like to recognize and acknowledge CEA and all of our sponsors as well as the dedicated staff and committed volunteers who helped make it possible.

We are profoundly grateful for all the resources, talents, and time that went into making NEC2020 a reality. Welcome to San Diego, and we look forward to sharing this meaningful opportunity to advance our shared cause of seismic safety and resilience.



President and CEO, FLASH

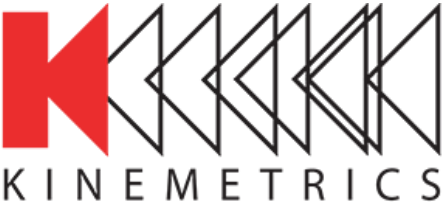


Executive Director, EERI

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NEC2020 is co-hosted by the Earthquake Engineering Research Institute (EERI), Federal Alliance for Safe Homes (FLASH), and *Presenting Partners* including the Federal Emergency Management Agency (FEMA), National Earthquake Hazards Reduction Program (NEHRP), National Institute of Standards and Technology (NIST), and United States Geological Survey (USGS).



FEMA





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Report on Occupant Impacts

Report on Non-Structural Impacts

Report on Structural Impacts

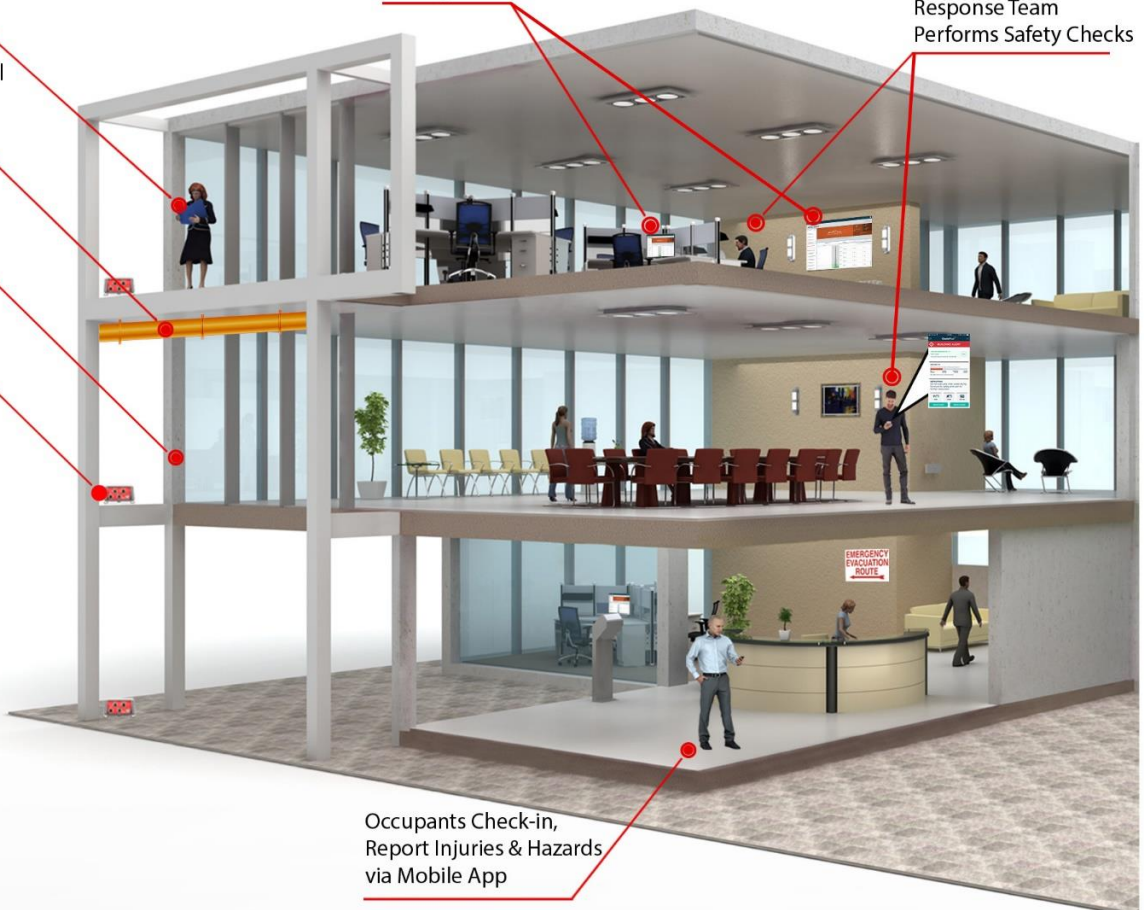
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Information Sessions Featuring Experts from Kinematics:

Session 1F - How Do Hospitals Respond to Earthquakes?

Mar 4 @ 2-3:30pm in Nautilus 5

Session 3B - ShakeMap for Buildings

Mar 5 @ 2-3:30pm in Nautilus 2

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www.kinematics.com





Howard H. Harary
Director, Engineering Laboratory
National Institute of Standards and Technology

Howard H. Harary is the director of the National Institute of Standards and Technology's (NIST's) Engineering Laboratory (EL), which promotes U.S. innovation and industrial competitiveness by advancing measurement science, standards, and technology for engineered systems in ways that enhance economic security and improve quality of life.

A physicist turned measurement scientist, Harary began at NIST in 1985 as a bench scientist and steadily rose through the NIST ranks, from project leader to group leader to deputy director of the NIST Manufacturing Engineering Laboratory in 2004, and to director of the Engineering Laboratory in 2014.

EL has a staff of nearly 400 people, including more than 100 guest researchers who are distributed among five major research divisions, including two divisions focused on one of EL's four major laboratory goals -- Disaster-resilient Buildings, Infrastructure, and Communities. The goal comprises programs in: Earthquake Risk Reduction in Buildings and Infrastructure; Structural Performance Under Multi-hazards; Community Resilience; Engineered Materials for Resilient Infrastructure; Fire Risk Reduction in Buildings; and Fire Risk Reduction in Communities.

EL is also the home of NIST's overall lead agency responsibility for the National Earthquake Hazards Reduction Program (NEHRP), a four-agency program, comprising: Federal Emergency Management Agency (FEMA); United States Geological Survey (USGS); National Science Foundation (NSF); and NIST. NEHRP, most recently reauthorized in 2018, was established by Congress to reduce the risks of life and property from future earthquakes in the United States. A New York native, Harary received his bachelor's degree in physics with honors from the State University of New York at Stony Brook in 1974, and a physics doctorate from Harvard University in 1983. He was a post-doctoral research fellow at Yale University from 1983 to 1985.

Harary currently serves on the visiting panel for the University of Maryland's Mechanical Engineering Department, is a member of the American Society for Mechanical Engineers (ASME) Council on Standards and Certification, a member of the ASME Board on Standardization and Testing, a member of the Governing Board of the Clean-Energy Smart Manufacturing Innovation Institute and is the government representative to the Board of PDES Inc., an industrial consortium working in the area of the digital exchange of manufacturing information. He also chairs an International Organization for Standardization (ISO) working group on general requirements for dimensional measuring equipment.

Code of Conduct

EERI and FLASH are committed to fostering the exchange of ideas by providing a safe, productive, and welcoming environment for all meeting participants, including attendees, staff, volunteers and vendors. We value the participation of every member of the community and want all participants to have an enjoyable and fulfilling experience.

All participants at the NEC are expected to be considerate and collaborative, communicating openly with respect for others, and critiquing ideas rather than individuals. Behavior that is acceptable to one person may not be acceptable to another, so use discretion to be sure that respect is communicated.

By accepting an invitation to participate in the NEC, by email or online registration, participants agree to abide by the Code of Conduct.

Expected Behavior

Acknowledging that the most valuable exchange of information sometimes occurs outside of formal meeting events, all participants are expected to maintain the following behaviors during all official and unofficial/social activities:

- Treat all participants, attendees, EERI and FLASH staff, venue staff, and guests with respect and consideration at all times.
- Be collaborative, recognizing the value of a diversity of experiences, views, and opinions.
- Communicate openly with respect for others, critiquing ideas rather than individuals.
- Be mindful of your surroundings and of your fellow participants. Alert EERI or FLASH staff if you notice a dangerous situation or someone in distress.
- Follow the policies of the meeting venue, hotel, contracted facility, or any other location where your Conference affiliation is likely to be displayed.

Unacceptable Behavior

- Harassment, intimidation, or discrimination in any form.
- Offensive comments, either verbally or through any other communication channel, related to gender, gender identity, sexual orientation, disability, physical appearance, medical condition, body size, race, marital status, religion, national origin or any other protected characteristic.
- Threats (implied or real) of physical, professional or financial harm.
- Intentional, uninvited physical contact of any form.
- Behavior that is in violation of the established ethics policies of one's home institution, or of the NEC'S sponsoring organizations, including FEMA, EERI, and FLASH.

Consequences and Reporting

- Anyone requested to stop unacceptable behavior is expected to comply immediately.
- If you are the subject of unacceptable behavior or have witnessed any such behavior, please report it to EERI or FLASH staff.
- If you experience or witness behavior that constitutes an immediate or serious threat to public safety, or a crime, call 911 immediately. Take actions necessary to maintain your own personal safety first.
- EERI or FLASH staff (or their designee) or venue security may take actions deemed necessary and appropriate, including immediate removal from the Conference without warning. EERI and FLASH reserve the right to report the circumstances to the appropriate authorities, including but not limited to the police and/or the involved party's home institution(s).

Wednesday, March 4

| | |
|---|--|
| Continental Breakfast | Nautilus Foyer |
| Morning Plenary Sessions | Grande Ballroom B&C |
| Networking Breaks | Exhibit Hall (Grande Foyer & Nautilus Foyer) |
| Lunch Session | Grande Ballroom B&C |
| Concurrent Sessions | Nautilus 1-5 & Marina 6 |
| Welcome & Networking Reception | Exhibit Hall (Grande Foyer & Nautilus Foyer) |

Thursday, March 5

| | |
|---------------------------------------|--|
| Continental Breakfast | Nautilus Foyer |
| Morning Plenary Sessions | Grande Ballroom B&C |
| Networking Breaks | Exhibit Hall (Grande Foyer & Nautilus Foyer) |
| Lunch Session | Grande Ballroom B&C |
| Concurrent Sessions | Nautilus 1-5 |
| Lightning Sessions | Nautilus 3-5 |
| Poster Session & Reception | Grande Ballroom A |

Friday, March 6

| | |
|---|--|
| Continental Breakfast | Nautilus Foyer |
| Morning Breakout Sessions | Nautilus 1-5 |
| Networking Breaks | Exhibit Hall (Grande Foyer & Nautilus Foyer) |
| Concluding Plenary Session | Grande Ballroom B&C |
| Lunch Session (Advance Ticket Required) & SDC Award Ceremony | Grande Ballroom B&C |

Exhibitor Information

Exhibit Hours

| | |
|--------------------|------------------------|
| Tuesday, March 3 | 5:00 p.m. – 7:00 p.m. |
| Wednesday, March 4 | 7:30 a.m. – 7:00 p.m. |
| Thursday, March 5 | 7:30 a.m. – 7:00 p.m. |
| Friday, March 6 | 8:00 a.m. – 10:30 a.m. |

Nautilus Foyer

| | |
|--|----|
| ITT Enidine | 3 |
| Applied Technology Council (ATC) | 4 |
| Nanometrics | 5 |
| Maurer USA | 6 |
| California Governor's Office of Emergency Services (Cal OES) | 7 |
| SENSEQUAKE | 8 |
| BRACELOK | 9 |
| QuakeCare/Emergency Ready | 10 |
| Waterfull Inc. | 11 |
| Natural Hazards Engineering Research Infrastructure - Purdue | 12 |
| SAFE-T-PROOF | 13 |
| Central US Earthquake Consortium (CUSEC), Northeast States Emergency Consortium (NESEC), and Western States Seismic Policy Council (WSSPC) | 14 |
| Southern California Earthquake Center (SCEC) | 15 |
| Haselton Baker Risk Group | 16 |
| Keller | 17 |
| ImageCat | 18 |
| Cascadia Region Earthquake Workgroup (CREW) | 19 |
| Taylor Devices | 20 |

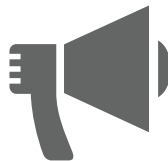
Grande Foyer

| | |
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| Kinematics | 21 & 22 |
| Federal Emergency Management Agency (FEMA) | 23 |
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| Earthquake Engineering Research Institute & <i>Earthquake Spectra</i> | 26 |
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| International Code Council (ICC) | 30 |



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Join the Conversation!
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Keynote Speaker Biographies



Julian Bommer

Faculty of Engineering, Department of Civil and Environmental Engineering
Imperial College London
2020EERI/SSA Joyner Lecturer

Julian Bommer has worked for more than 30 years at the interface between seismology and earthquake engineering as both a researcher and practitioner. A Fellow of the UK Institution of Civil Engineering, he obtained a Ph.D. in Engineering Seismology under the supervision of Professor Nick Ambraseys, who encouraged him to undertake field investigations of earthquakes. Dr. Bommer's first field reconnaissance was of the earthquake that struck the capital of El Salvador in October 1986, and he has since participated in fieldwork in Armenia, Colombia, Italy, Greece, Japan, Mozambique, Peru and Turkey.

From 1993 to 1994, Dr. Bommer returned to live in El Salvador where he worked at two universities, introducing engineering seismology into the civil engineering curriculum and installing an accelerograph network funded by the European Union. He returned to the United Kingdom to take up a faculty position at Imperial College London where he became Professor of Earthquake Risk Assessment. His research has focused on ground-motion prediction and seismic hazard and risk assessment, topics on which he has published more than 130 journal papers that have been widely cited.



David Bonowitz

Consultant
2020 EERI Distinguished Lecturer

David Bonowitz is a structural engineer and a consultant on disaster risk reduction policy. His work links what engineers know to what policy-makers, decision-makers, and stakeholders need, consulting to city, state, federal, and international agencies. David is an appointed member of the new Federal Emergency Management Agency-National Institute of Standards and Technology working group on Functional Recovery of the Built Environment and Critical Infrastructure. He is a co-author of "Functional Recovery: A Conceptual Framework," an EERI white paper, and lead author of "Resilience-based Design and the NEHRP Provisions," now in review by the National Earthquake Hazards Reduction Program Provisions Update Committee. Bonowitz is also a Fellow Member of Structural Engineers Association of Northern California and Structural Engineers Association of California, and past chair of the National Council of Structural Engineers Association Existing Buildings and Resilience committees.

He is a graduate of Princeton University and holds a Master's Degree in Structural Engineering from U.C. Berkeley.



Lucy Jones

Founder

Dr. Lucy Jones Center for Science and Society

Dr. Lucy Jones is the founder of the Dr. Lucy Jones Center for Science and Society, with a mission to foster the understanding and application of scientific information in the creation of more resilient communities. She is the author of the book, *The Big Ones* (Doubleday, April 2018) and is also a Research Associate at the Seismological Laboratory of Caltech, a post she has held since 1984. Working with both the public and private sectors, Dr. Jones seeks to increase communities' ability to adapt and be resilient to the dynamic changes of the world around them. The aim is to understand and communicate where the greatest vulnerabilities lie and what actions can be taken to reduce the risk that are the most cost-effective. With a Bachelor of Arts in Chinese Language and Literature from Brown University and a Ph.D. in Geophysics from MIT, Dr. Jones has been active in earthquake research for decades, furthering earthquake risk reduction through seismological research and integrated disaster scenarios.



David I. Maurstad

FEMA Deputy Associate Administrator for Insurance and Mitigation
chief executive of the National Flood Insurance Program

David Maurstad is a veteran emergency manager and staunch advocate of building a culture of preparedness across the nation. Forty years of experience in disaster resilience and the insurance industry suit his position as the head of FEMA's Insurance and Mitigation Administration, where he guides transformative efforts to communicate risk, increase flood insurance coverage and incentivize mitigation against natural hazards. As chief executive of the NFIP, he leads the largest single-peril insurance operation in the world providing more than \$1.3 trillion in flood coverage to more than 5 million U.S. policyholders. During his tenure with FEMA, David has held leading positions for 637 major disaster operations, including Hurricanes Katrina, Matthew, Irma, Maria and Michael, tropical storm Harvey and countless catastrophic flooding and wildfire events. David's expertise in disaster recovery and strategic risk management stems from extensive experience in local government as a Nebraska mayor, state Senator and Lt. Governor. David continues to drive the conversation around resilience with his bold call to action to reduce disaster suffering in our lifetime and for generations to come.

David earned his MBA from the University of Nebraska. He's a former board member of the National Academy of Science, Water, & Technology and was a senior federal official during the XIX Olympic Winter Games in Salt Lake City, Utah.



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EERI Subscribing Membership provides a unique opportunity for companies and organizations to publicly demonstrate their support for earthquake risk reduction. Members also enjoy valuable benefits, such as industry-wide recognition, increased visibility among leaders and professionals in the field, and exclusive professional development opportunities for their staff.

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BRONZE





George W. Housner Medal: Jack P. Moehle

Ed and Diane Wilson Presidential Professor of Structural Engineering, University of California, Berkeley

The most prestigious award of the Earthquake Engineering Research Institute, the George W. Housner Medal recognizes members of the Institute and others who have made extraordinary and lasting contributions to public earthquake safety through the development and application of earthquake hazard reduction practices and policies.

Jack Moehle received his Ph.D. from the University of Illinois and joined the U.C. Berkeley faculty in 1980. From 1991 to 2001, he was the director of the Earthquake Engineering Research Center at Berkeley, and in 1996 he became the founding director of the Pacific Earthquake Engineering Research Center, where he served until 2008.

His teaching and research include topics in structural engineering, earthquake engineering, and reinforced concrete, with research covering both analytical and experimental methods; buildings, bridges, and infrastructure; materials, components, and complete structural systems, seismic retrofitting and design of new structures, including performance-based earthquake engineering.

He has played a leading role in the development of building codes and professional engineering guidelines for the design of new construction and the assessment and rehabilitation of seismically vulnerable existing construction, including Guidelines for Evaluation and Repair of Masonry and Concrete Walls (FEMA 306); Guidelines for Seismic Rehabilitation of Buildings (FEMA 273 and ASCE 356); Development of Next-Generation Performance-Based Seismic Design Procedures for New and Existing Buildings (FEMA P-58); and Guidelines for Performance-Based Seismic Design of Tall Buildings (Tall Buildings Initiative, PEER). He has been a member of the ACI 318 Building Code Committee since 1989, Chair of the Seismic Provisions subcommittee from 1995-2014, and currently serves as the ACI 318 Chair.

A licensed Civil Engineer in California, Dr. Moehle provides engineering consultation and expert peer review on highway systems (Caltrans, Works Consultancy New Zealand), mass transit systems (Bay Area Rapid Transit, Transbay Transit Center), water distribution systems (San Francisco Public Utilities Commission, New York City Aqueducts), existing construction (Stanford, UC Berkeley, US Army Corps of Engineers), and high-rise building consulting and peer review (Los Angeles, Reno, San Diego, San Francisco, Seattle).

EERI Alfred E. Alquist Special Recognition Medal



Alfred E. Alquist Special Recognition Medal: Anthony F. Shakal

Director of the California Strong Motion Instrumentation Program (SMIP), California Geological Survey (retired)

The Alfred E. Alquist Special Recognition Medal is presented to an individual, company, or organization that has made substantial contributions to the field of seismic safety and earthquake risk reduction, having directly affected the seismic safety of the general population.

Before his retirement this year, Anthony F. Shakal was the Director of the California Strong Motion Instrumentation Program (SMIP) at the California Geological Survey. He served SMIP for 34 years, and successfully grew and led the program for 29 years. Under his direct supervision and innovative management, SMIP became the largest and most advanced strong-motion network in the United States.

The SMIP also became the largest strong-motion component in the U.S. Geological Survey's Advanced National Seismic System. In 2006 at the commemoration of the Great 1906 San Francisco Earthquake, SMIP received the Applied Technology Council/Engineering News Record joint award as the Best Seismic Program of the Twentieth Century.

Under Dr. Shakal's leadership, SMIP installed over 5,000 accelerometers at nearly 1,200 stations around the State. These seismic monitors were placed in over 850 free-field ground stations, on more than 80 bridges, and more than 240 buildings. Ground motion and structural response data gathered from this network are directly employed in the California Building Code to make structures more earthquake-resilient.

He also promoted the educational and communication links between the structural engineering and seismological communities through financially supporting an annual conference in which SMIP-sponsored research papers are presented. He was an active member of the standards setting committee at Consortium of Organizations for Strong Motion Observation Systems (COSMOS), and worked closely with Caltrans, and the Office of Statewide Health Planning and Development on projects related to earthquake engineering for hospitals.

Dr. Shakal received his B.S. and M.S. degrees in engineering from the University of Wisconsin, Milwaukee and his Ph.D. in seismology from the Massachusetts Institute of Technology.



EERI 2020 Distinguished Lecturer: David Bonowitz

The Distinguished Lecture Award recognizes EERI members who have made outstanding contributions to earthquake risk reduction. The award encourages communications and dialogue on important and timely topics.

The 2020 Distinguished Lecture will focus on the emerging concept of functional recovery as a basis for earthquake-resistant design. Designing buildings and infrastructure for limited downtime – or an acceptably quick functional recovery – is not new, but it is receiving new attention through state and federal legislation, and showing new feasibility through research and technology. Most intriguing is the recognition that designing for functional recovery is a necessary tool for achieving community-wide earthquake resilience. And if progress is to be measured at the community level, functional recovery will also be a matter of public policy. The lecture will look at the roles EERI members can play in shaping this thinking into design practice with four sets of questions: definitional, technical, policy, and implementation.

David Bonowitz is an appointed member of the new Federal Emergency Management Agency-National Institute of Standards and Technology working group on Functional Recovery of the Built Environment and Critical Infrastructure. He is a co-author of "Functional Recovery: A Conceptual Framework," an EERI white paper, and lead author of "Resilience-based Design and the NEHRP Provisions," now in review by the National Earthquake Hazards Reduction Program Provisions Update Committee. Bonowitz is also a Fellow Member of Structural Engineers Association of Northern California and Structural Engineers Association of California, and past chair of the National Council of Structural Engineers Association Existing Buildings and Resilience committees.



William B. Joyner Lecture Award: Julian Bommer

Senior Research Investigator, Imperial College London

The Seismological Society of America (SSA), in cooperation with EERI, has established the William B. Joyner Memorial Lectures to be given at the annual meetings of SSA and EERI. The lectures honor Joyner's distinguished career at the U.S. Geological Survey and his abiding commitment to continuing communication and education at the interface between research findings of earthquake science and the practical realities of earthquake engineering. The purpose of the Joyner Lectures is to continue and generalize communication at this interface.

Julian Bommer has worked for more than 30 years at the interface between seismology and earthquake engineering as both a researcher and practitioner. A Fellow of the UK Institution of Civil Engineering, he obtained a Ph.D. in Engineering Seismology under the supervision of Professor Nick Ambraseys, who encouraged him to undertake field investigations of earthquakes. Dr. Bommer's first field reconnaissance was of the earthquake that struck the capital of El Salvador in October 1986, and he has since participated in fieldwork in Armenia, Colombia, Italy, Greece, Japan, Mozambique, Peru and Turkey.

From 1993 to 1994, Dr. Bommer returned to live in El Salvador where he worked at two universities, introducing engineering seismology into the civil engineering curriculum and installing an accelerograph network funded by the European Union. He returned to the United Kingdom to take up a faculty position at Imperial College London where he became Professor of Earthquake Risk Assessment. His research has focused on ground-motion prediction and seismic hazard and risk assessment, topics on which he has published more than 130 journal papers that have been widely cited.

In 2011 Dr. Bommer moved to a part-time appointment as a Senior Research Investigator at Imperial College London in order to focus more time on consultancy. He has worked on seismic hazard and design inputs for major engineering projects worldwide, including dams, bridges and pipelines, as well as serving on the Seismic Advisory Board for the Panama Canal expansion. A major focus of his work has been seismic hazard assessments for nuclear facilities, working for the Office for Nuclear Regulation in the UK as well as contributing to the Senior Seismic Hazard Analysis Committee (SSHAC) implementation guidelines for the U.S. Nuclear Regulatory Commission. He has consulted on projects for nuclear sites in Abu Dhabi, Brazil, Romania, South Africa, Spain, Switzerland and the United States. Bommer also works extensively on hazard and risk assessments for induced seismicity in Europe and the Americas, as well as advising the Oil & Gas Authority in the United Kingdom.

EERI Honorary Membership is awarded to recognize members who have made sustained and outstanding contributions to the field of earthquake engineering and/or to EERI and its mission.



William J. Hall

Professor Emeritus, University of Illinois at Urbana-Champaign

William J. Hall is Professor Emeritus of Civil Engineering at the University of Illinois at Urbana-Champaign, and a consulting engineer. Dr. Hall served on the EERI Board of Directors from 1979 to 1981 and was a recipient of the prestigious Housner Medal. He joined the UIUC faculty of the Department of Civil Engineering in 1954 and served as Head of the Department from 1984-91. There he specialized in structures, materials and structural dynamics and engaged in research and instruction. His research centered on earthquake engineering and military structures.

Dr. Hall was also involved with many large engineering projects, including being part of the design team for the Trans-Alaska petroleum pipeline, many nuclear power plants, and major projects of agencies of the U.S. government. He received a B.S. degree in civil engineering from the University of Kansas and his M.S. and Ph.D. degrees from the University of Illinois at Urbana-Champaign.



Anne Kiremidjian

Professor of Civil and Environmental Engineering, Stanford University

Anne S. Kiremidjian is a Professor in the Department of Civil and Environmental Engineering at Stanford University. From 1987 to 2002, she served as the Co-Director and Director of the John A. Blume Earthquake Engineering Center at Stanford University. At Stanford, she teaches courses in structural analysis, earthquake hazard and risk analysis, structural reliability and decision theory.

Dr. Kiremidjian's research over the years has focused on all aspects of earthquake hazard and loss estimation, regional risk assessment, risk analysis of transportation systems, wireless sensor and sensing system development for structural performance evaluation, and the development of damage detection algorithms using sensor measurements. She received her B.S. degree from Columbia University in Civil Engineering and her M.S. and Ph. D. degrees from Stanford University in Structural Engineering.

EERI Younger Member Award

The EERI Younger Member Award is awarded to early-career members who have made outstanding contributions to the Institute and the pursuit of its objectives — especially contributions that have improved opportunities for and increased the impact of younger members.



Guillermo Diaz-Fanas

Senior Technical Principal in Multi-Hazard Resilience, WSP USA

Guillermo Diaz-Fanas is a licensed engineer in California, New York, and the Dominican Republic, and serves as a Senior Technical Principal in Multi-Hazard Resilience with the GT-TEC of WSP USA. Diaz-Fanas earned his bachelor's degree in civil engineering from the Pontificia Universidad Católica Madre y Maestra (PUCMM) in his hometown of Santiago, Dominican Republic. As a Fulbright Fellow, he received his master's degree in structural engineering from the University of Illinois at Urbana-Champaign.

His main areas of expertise include disaster risk management and community resilience, performance- and risk-based design, seismic hazard analysis, and multi-hazard engineering. He has worked on global infrastructure, transportation, and building projects, and has participated in reconnaissance and recovery missions after extreme events around the world.

Diaz-Fanas has held several positions of leadership locally and nationally with the Earthquake Engineering Research Institute, the American Society of Civil Engineers, the Geo-Institute, the Deep Foundations Institute, and other professional societies. He is also the founding President of the first non-profit organization for LGBTQIA+ students and professionals to pursue professional careers in the built environment.

Diaz-Fanas has been awarded multiple recognitions including the 2019 ASCE Metropolitan Section Younger Member Award, 2019 ENR New York Top 20 under 40, 2019 LGBTQ+ Business Leaders under 40, 2019 University of Illinois Young Distinguished Alumni Award, 2018 ASCE New Faces of Civil Engineering, and 2017 WSP Research and Innovation Fellowship.

The EERI Younger Member Award is awarded to early-career members who have made outstanding contributions to the Institute and the pursuit of its objectives — especially contributions that have improved opportunities for and increased the impact of younger members.



Erica Fischer

Assistant Professor of Civil & Construction Engineering, Oregon State University

Erica Fischer is an assistant professor of structural engineering at Oregon State University. She received a B.S. from Cornell University and a Ph.D. from Purdue University. Prior to Oregon State, she worked as a structural engineer in New York and Seattle where she focused on renovations and retrofits of existing buildings.

Dr. Fischer's technical capabilities revolve around innovative approaches to improve the resilience and robustness of structural systems affected by natural and man-made hazards. This includes performance-based design approaches of structural systems to decrease the environmental impact of the built environment on the natural environment. Her focus is on steel, composite systems, mass timber construction, and connections. These research interests are implemented through both large-scale experimental testing and numerical modeling approaches. She has been a member of a number of post-earthquake reconnaissance team missions including Haiti (2010), Napa (2014), and Italy (2016), and Mexico City (2017) in addition to post-wildland fire investigations after the California Camp Fire.

Dr. Fischer has served in a number of positions throughout EERI. As a graduate student, she was president of the Purdue EERI student chapter and co-chair of the Student Leadership Council. She is one of the founding members of the EERI Younger Members Committee and Virtual Earthquake Reconnaissance Team. She is part of the LFE Executive Committee and a current member of the EERI Board of Directors.

EERI Shah Family Innovation Prize

This cash prize rewards younger professionals and academics for creativity, innovation and entrepreneurial spirit in the field of earthquake risk mitigation and management. The intent of the prize is to stimulate further creativity and leadership in the earthquake risk mitigation community and EERI.



Shah Family Innovation Prize: Carlos Molina-Hutt

Assistant Professor of Structural and Earthquake Engineering, University Of British Columbia

Dr. Carlos Molina Hutt has been awarded the 2019 EERI Shah Family Innovation Prize. Dr. Hutt is an Assistant Professor of Structural and Earthquake Engineering in the Civil Engineering Department at the University of British Columbia (UBC) in Canada. Prior to UBC, he was a Lecturer at University College London (UCL) in the United Kingdom from 2013 to 2017. His strong academic background is mixed with significant high-level industry experience, which he gained as a structural engineer at Arup from 2009 to 2013, as well as through a number of consulting projects for city governments, the (re)insurance sector, and the humanitarian sector.

The work of Dr. Hutt's research group at UBC focuses on the development of methodological approaches to assess seismic risk in buildings and its implications on urban resilience, and on the translation of this knowledge into tools and information for use by practicing engineers, seismic planners, and policymakers. His goal is to enable seismic policy decision-making with explicit consideration of the societal and economic impacts of the performance of the built environment during major earthquakes. Among other activities, Dr. Hutt is leading an interdisciplinary research project aimed at reducing the catastrophic risk of a Cascadia megathrust earthquake in southwest British Columbia. To keep his research work relevant to practice, and to maximize its impact, he actively participates in technology transfer projects, such as the recently completed Applied Technology Council's San Francisco Tall Buildings Study and the United States Geological Survey's HayWired Earthquake Scenario.

Dr. Hutt has participated in the design and delivery of seismic risk mitigation programs such as Save the Children's Safer School Construction Program in Haiti following the 2010 earthquake. In 2016, he was nominated as a Structural Engineering Expert by the UK Cabinet office. As part of this role, he served on numerous post-earthquake disaster response missions as a member of the European Union Civil Protection and the United Nations Disaster Assessment and Coordination teams, including recent earthquakes in Ecuador (2016) and Mexico (2017). Since his relocation to Canada, Dr. Hutt became a board committee member of EERI's British Columbia Chapter and is an active member of the City of Vancouver's Seismic Policy Advisory Committee.

The one-year fellowship, underwritten with funds provided by the Federal Emergency Management Agency, is designed to foster the participation of capable individuals in working toward goals and activities of the National Earthquake Hazards Reduction Program.



Andrew J. Makdisi

Ph.D. Student, University of Washington

Andrew Makdisi's research focuses on soil liquefaction during earthquakes and the ensuing ground failure that often results. The project, which is funded through the NIST Disaster Resilience Research Grants Program, seeks to develop a predictive framework that separates the lateral spreading problem into components that occur before and after the onset of liquefaction, and utilizes different, optimal ground motion intensity measures to describe the mechanics of each component. The goal is to account for the timing of liquefaction in the development of a more efficient semi-empirical method for performance-based prediction of lateral spreading displacements. Makdisi serves as vice-president of the EERI student chapter at UW and is on the Board of Directors for the Washington professional chapter. He participated in the Learning from Earthquakes Travel Study Program in New Zealand earlier this year. Makdisi received a B.S. in Civil Engineering from the University of California, Davis in 2012 and an M.S. in Civil Engineering from the University of Washington in 2016.



Sarah Wichman

Ph.D. Student, University of Washington

Sarah Wichman is working to develop a resilient-based seismic design methodology for tall timber buildings with the NHERI TallWood Project. Her research focuses on the performance of using cross-laminated timber panels in post-tensioned rocking wall systems to create a reliable, cost-effective, and rapidly constructible, ductile seismic load resisting system. She works to develop and validate numerical models from large scale dynamic tests and sub-assembly tests to contribute to the development of seismic design recommendations for tall timber buildings.

Wichman serves as president of the EERI UW student chapter and seeks to increase the involvement of a multidisciplinary group of students. She also participated in the Learning from Earthquakes Travel Study Program in New Zealand earlier this year. Wichman received a B.S. in Civil Engineering from the University of Wisconsin-Madison in 2016.

Outstanding Paper Award for *Earthquake Spectra*

Outstanding Paper Awards for Earthquake Spectra are awarded to authors of papers judged to be outstanding contributions to earthquake hazard mitigation. Selected papers must have made a significant impact on the profession or provided a significant advance in the state-of-the-art or understanding of a particular topic. Papers can also be selected on exceptional technical quality with concise and informative illustrations reaching a broad audience.



Anastasios Sextos

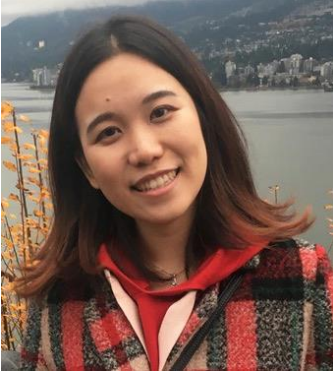
Professor of Earthquake Engineering, University of Bristol

“Local Site Effects and Incremental Damage of Buildings During the 2016 Central Italy Earthquake Sequence”, *Earthquake Spectra*: November 2018, Vol. 34, No. 4, pp. 1639-1669.

The paper is authored by Anastasios Sextos, Raffaele De Risi, Alessandro Pagliaroli, Sebastiano Foti, Federico Passeri, Ernesto Ausilio, Roberto Cairo, Maria Chiara Capatti, Filiberto Chiabrando, Anna Chiaradonna, Shideh Dashti, Filomena De Silva, Francesca Dezi, Maria Giovanna Durante, Silvia Giallini, Giuseppe Lanzo, Stefania Sica, Armando L. Simonelli, Paolo Zimmaro.

Anastasios Sextos is a Professor of Earthquake Engineering at the University of Bristol, UK. He is the Head of the Earthquake and Geotechnical Engineering Research Group, the Academic Lead for the design and delivery of the new Soil-Foundation-Structure Interaction (SoFSI) Facility in Bristol, a Member of the Board of the UK Collaboratorium for Research on Infrastructure and Cities (UKCRIC) and the President of the Hellenic Association for Earthquake Engineering.

This paper is the collective outcome of a large team of academics from UK, Italy, San Marino and USA with both structural and geotechnical engineering background who visited the affected region twice. They worked under the auspices of the Geotechnical Extreme Events Reconnaissance (GEER) and EERI to interpret the effect of multiple earthquake events on the cumulative damage of different structural typologies.



Graduate Student Paper Competition: Ganyu Teng

Ph.D. Student, Stanford University

“Evaluation of SCEC CyberShake Ground Motions for Engineering Practice” *Earthquake Spectra*: November 2019, Vol. 35, No. 3, pp. 1311-1328.

The paper is authored by Ganyu Teng and Jack Baker.

Ganyu Teng is a third-year Ph.D. student in Civil Engineering and a part of the Stanford Center for Induced and Triggered Seismicity. Her research focuses on short-term probabilistic hazard assessment for regions of induced seismicity, specifically on hydraulic-fracturing-related earthquakes. Teng received her B.E. in Civil Engineering at Nanyang Technological University, Singapore. During her M.S. at Stanford, she worked on the evaluation of CyberShake ground motions for potential application to high-rise building design in the Los Angeles region.



Undergraduate Student Paper Competition: Omar Issa

Student, University of California, Los Angeles

“Comparing the Seismic Collapse Performance of Cantilever Column and Moment Frame Retrofits for Wood Frame Structures Using Los Angeles Soft-Story Basic Ordinance Guidelines.”

Omar Issa is an undergraduate student in engineering at UCLA and serves as the president of the EERI Student Chapter. As a researcher in the Burton Research Group & the Garrick Institute for the Risk Sciences, he is passionate about improving the resilience of urban regions to natural disasters. Along with his research, Issa credits his reconnaissance work following the 2019 Ridgecrest Earthquake for motivating him to pursue further education in Structural/Earthquake Engineering.

COME CHEER THEM ON!

Show your support for EERI's student members by attending the Seismic Design Competition on **Tuesday, March 3** and **Wednesday, March 4** in Grande Ballroom A. Forty-nine teams from universities across the United States and around the globe will convene to present their frame building models and compete to find the most stable structure.

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The 2020 National Earthquake Conference and the 17th Annual Undergraduate Seismic Design Competition



EERI Seismic Design Competition Schedule

Monday, March 2

| Event | Time | Location |
|-----------------------------------|-----------------------|-------------------|
| Model & Display Set-Up | 8:00 a.m. – 6:00 p.m. | Grande Ballroom A |
| SDC Welcome Event | 5:00 p.m. – 5:30 p.m. | Nautilus 1 & 2 |
| Preliminary Judging | 6:00 p.m. – 9:00 p.m. | Grande Ballroom A |

Tuesday, March 3

| Event | Time | Location |
|--|-------------------------|--------------------|
| Team Presentations | 10:00 a.m. – 4:00 p.m. | Nautilus 1, 2, & 3 |
| Session A (14 Teams) | 10:00 a.m. – 11:30 a.m. | Nautilus 1, 2, & 3 |
| Session B (12 Teams) | 11:45 a.m. – 1:00 p.m. | Nautilus 1, 2, & 3 |
| Session C (12 Teams) | 1:15 p.m. – 2:30 p.m. | Nautilus 1, 2, & 3 |
| Session D (12 Teams) | 2:45 p.m. – 4:00 p.m. | Nautilus 1, 2, & 3 |
| Architectural & Poster Judging Session | 12:00 p.m. – 6:00 p.m. | Grande Ballroom A |
| Calcutta Auction <i>All Conference Attendees are Invited to Attend</i> | 6:00 p.m. – 8:00 p.m. | Grande Ballroom A |

EERI Seismic Design Competition Schedule

Wednesday, March 4

| Event | Time | Location |
|------------------------------------|------------------------|-------------------|
| Model Shaking | 8:30 a.m. – 5:20 p.m. | Grande Ballroom A |
| Session I | 8:30 a.m. – 10:40 a.m. | Grande Ballroom A |
| Session II | 10:50 a.m. – 1:00 p.m. | Grande Ballroom A |
| Session III | 1:10 p.m. – 3:10 p.m. | Grande Ballroom A |
| Session IV | 3:20 p.m. – 5:20 p.m. | Grande Ballroom A |
| CSI Reception/Wrap Up Event | 6:00 p.m. – 10:00 p.m. | Pavilion |

Thursday, March 5

| Event | Time | Location |
|--|------------------------|-------------|
| Post-Earthquake Reconnaissance Workshop | 9:00 a.m. – 12:00 p.m. | Marina 6 |
| Student Walking Tours | 1:30 p.m. – 5:30 p.m. | Hotel Lobby |
| SESI Workshop | 2:00 p.m. – 3:30 p.m. | Marina 6 |

Friday, March 6

| Event | Time | Location |
|------------------------|-----------------------|-----------------------|
| Awards Ceremony | 1:00 p.m. – 2:30 p.m. | Grande Ballroom B & C |

EERI Seismic Design Competition Teams

Nearly 50 student teams from eight countries around the world have designed complex tall buildings out of balsa wood that will be tested on several metrics, including their performance on a shake table. EERI Student Leadership Council plans and executes the Seismic Design Competition.

17th Annual Undergraduate Seismic Design Competition Teams

- Ain Shams University
- Brigham Young University
- Cal Polytechnic State University, San Luis Obispo
- California State Polytechnic University, Pomona
- California State University, Chico
- California State University, Fullerton
- California State University, Los Angeles
- California State University, Sacramento
- Cornell University
- Helwan University
- Lehigh University
- McMaster University
- New York University Tandon School of Engineering
- North Carolina State University
- Oregon State University
- Ozyegin University
- Pontificia Universidad Católica Madre y Maestra
- Portland State University
- Purdue University
- Stanford University
- Technical University of Civil Engineering Bucharest
- Technical University of Cluj-Napoca
- Universidad de las Fuerzas Armadas
- Universidad Iberoamericana
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EERI Student Leadership Council Officers

The EERI Student Leadership Council (SLC) is made up of 20 members from around the world charged with planning and executing the annual Seismic Design Competition (SDC). EERI would like to thank this year's SLC Officers for their leadership and dedication to the profession.

- Polly Murray, Co-President - University of Colorado, Boulder
- Tyler Oathes, Co-President - University of California, Davis
- Gabriela Petrut, Secretary - Technical University of Cluj-Napoca
- Preetish Kakoty, Treasurer - University of British Columbia
- Jenna Williams, Lead SDC Chair - California Polytechnic State University, San Luis Obispo
- Michael Morano, SDC Chair - University of California, San Diego
- Ahmad Hassan, SDC Chair - University of California, Davis
- Stephanie Chausow, SDC Chair - University of Michigan
- Mohamed Altameemi, SDC Chair - University of Wisconsin, Madison
- Khalid Saifullah, Post-Earthquake Reconnaissance Workshop Chair - University Of Nebraska, Lincoln
- Melissa Preciado, Post-Earthquake Reconnaissance Workshop Chair - Portland State University
- Soham Vaze, Post-Earthquake Reconnaissance Workshop Chair - University of British Columbia
- Jessi Thangjitham, SESI Chair - North Carolina State University
- Jiachen Zhang, SESI Chair - University of California, Berkeley
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- Maria Camila Lopez, Outreach Chair - University of California, Berkeley
- Nima Nazemi, Webmaster - University of Memphis
- Patrick Bassal, Shake Table Operator - University of California, Davis
- Laura Hernandez-Bassal, Shake Table Operator - University of California, Davis

EERI Learning from Earthquakes Endowment Fund

At our 2019 annual meeting in Vancouver, EERI officially launched a landmark campaign to raise \$4 million to ensure the continuation of a robust and dynamic Learning from Earthquakes (LFE) program for years to come. The endowment campaign will enable the program to become financially sustainable, expand earthquake reconnaissance efforts, develop innovative programming, and invest in the next generation of leaders.

As of February 1, we've received \$1,047,495 in cash pledges and \$845,000 in planned giving from a total of 148 donors! In total, we've raised more than \$1.8 million. We're halfway there, and with your help, together we can reach this ambitious milestone and secure LFE's future. We hope that you will consider giving to the LFE endowment fund as part of annual charitable giving. Please visit LearningFromEarthquakes.org to learn more about the fund and how you can give.

ELITE SUSTAINER (\$250,000+)

David A. Friedman & Paulette J. Meyer**

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Our Mission

The Earthquake Engineering Research Institute is the leading non-profit membership organization that connects those dedicated to reducing earthquake risk. Our multidisciplinary members include engineers, geoscientists, social scientists, architects, planners, emergency managers, academics, students, and other like-minded professionals. EERI has been bringing people and disciplines together since 1948.

Mission Statement

The objective of the Earthquake Engineering Research Institute is to reduce earthquake risk by (1) advancing the science and practice of earthquake engineering, (2) improving understanding of the impact of earthquakes on the physical, social, economic, political, and cultural environment, and (3) advocating comprehensive and realistic measures for reducing the harmful effects of earthquakes.

Vision and Role

EERI's Vision: A world in which potential earthquake losses are widely understood and for which prudent steps have been taken to address those risks.

EERI's Role: EERI is a leader in earthquake investigations and in the dissemination of earthquake risk reduction information both in the US and globally in cooperation with its international partners.

EERI will fulfill its role through the following activities:

- Fostering a sense of shared commitment among the diverse communities dedicated to earthquake risk management
- Promoting research
- Facilitating the exchange of information among members and others, and
- Forging a consensus and speaking with a common voice to public forums and legislative bodies on behalf of the diverse risk management community.



About FLASH

Established in 1998, the award-winning Federal Alliance for Safe Homes (FLASH)[®] is the country's leading nonprofit education organization dedicated to strengthening homes and safeguarding families from natural and manmade disasters. FLASH strategic objectives are listed below.

- Create market demand for disaster safety and mitigation. FLASH initiatives are designed to promote a culture of disaster resilience where consumers understand and desire safer, better-built homes. Innovative initiatives help drive understanding of the economic and social value of mitigation, and one example is the landmark *StormStruck: A Tale of Two Homes* “edu-tainment” experience in Epcot[®] at the Walt Disney World Resort from 2008 to 2016.
- Inform, educate, and engage the professional community. FLASH collects and synthesizes accurate, relevant, and useful mitigation information and delivers it through briefings, conferences, and education programs for a variety of professional audiences. Through these efforts, mitigation knowledge is spread and shared with builders, code officials, design professionals, elected officials, emergency managers, engineers, insurers, realtors, and thought leaders.
- Provide mitigation leadership. FLASH operates as an independent, consumer-focused, trusted voice and subject matter expert on mitigation. The organization develops and articulates best practices and serves as the preeminent convener to bring diverse interests and entities together in support of safe, strong, and resilient building.

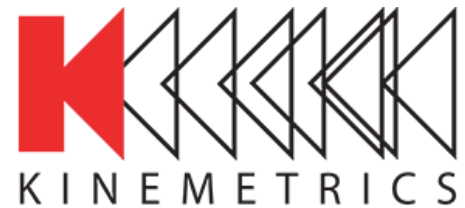
FLASH draws on expertise and shared interests of the *FLASH Partnership* to achieve its strategic objectives. The *FLASH Partnership* includes more than 100 public, private, and nonprofit companies and organizations that share a vision of making America a more disaster-resilient nation. Leading partners represent BASF Corporation, FEMA, Huber Engineered Woods, International Code Council, ISO-Verisk Analytics, Lowe's, NOAA/National Weather Service, Portland Cement Association, Simpson Strong-Tie, State Farm Insurance Companies, USAA, and Walt Disney World. FLASH sustains an invitation-only *Leadership Partner Program* comprised of broadcasters, celebrities, chief executives, leaders, regulators, television personalities, and other leading voices who bring the resilience message to their audiences, constituents, and the public.



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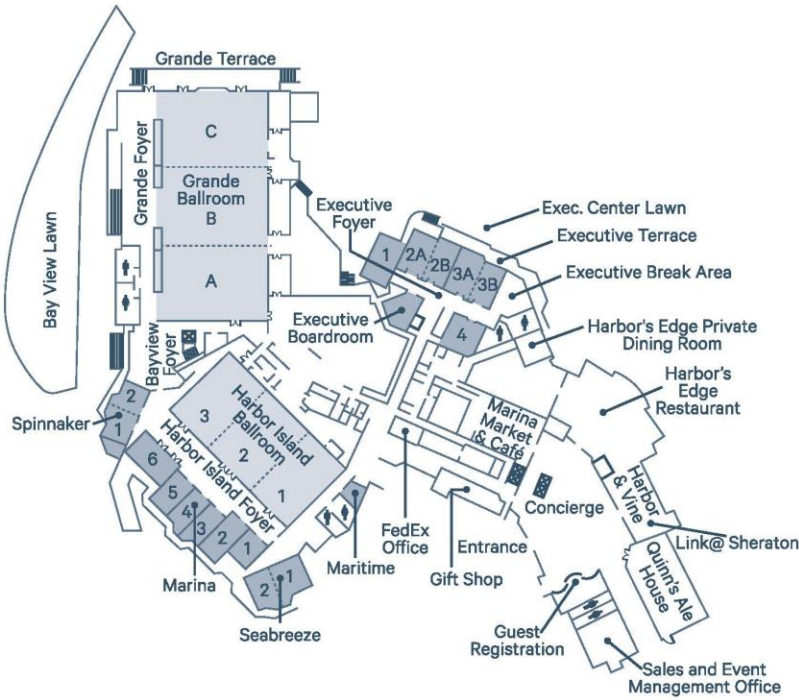
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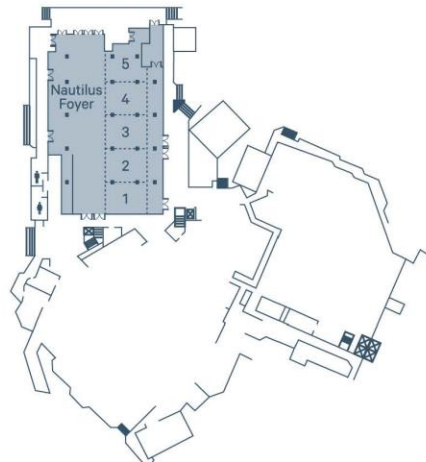
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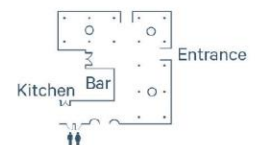
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