The National Academies of
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The National Academies of Sciences, Engineering, and Medicine's
Resilient America Roundtable and the Board on Infrastructure and the Constructed Environment
In collaboration with the SEI/ASCE Advances in Information Technology Committee

The Role of Advanced Technologies in Structural Engineering for More Resilient Communities

September 26, 2017
Beckman Center
Irvine, Ca

Purpose: This workshop will bring together researchers, experts, practitioners, and noted leaders to explore the role of innovative technologies and smart infrastructure in building more resilient and sustainable communities; including:

- How can advanced technologies and structural performance data in structural engineering support the design of infrastructure and built systems that enhance resilience and promote faster recovery?
- What are today's most promising innovations in technology and how are communities benefiting?
- What is the future role of advanced technologies and design practice-- what does a resilient city's built infrastructure look like in the future?
- What are the research gaps or opportunities in development and use of advance technologies and design for building resilient infrastructure?

8:30 – 8:40 am **Welcome and Introductions**
Lauren Alexander Augustine, Director, Program on Risk, Resilience, and Extreme Events, National Academy of Sciences, Engineering and Medicine

8:40 – 9:00 am **Setting the Stage: From Resilient Infrastructure to Resilient Communities: how can emerging technologies support community efforts to become more resilient?**
Chris Poland, Consulting Engineer

9:00-10:15 am **Enabling Community Resilience: Innovative Technologies in the Built Environment:**
Moderator: Steve Moddemeyer, Principal, CollinsWoerman Architects

Panelist 1: Stephen A. Cauffman, Materials and Structural Systems Division Engineering Laboratory, National Institute of Standards and Technology

Panelist 2: Reggie DesRoches, Dean of Rice University's George R. Brown School of Engineering

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Panelist 3: Janice Barnes, Global Resilience Director, Perkins+Will

- *What roles or functions do technologies and infrastructure play in a resilient community?*
- *How can infrastructure investments today ensure resilience in communities in the future and across the design life of the infrastructure?*
- *How can technologies and infrastructure be integrated into current systems and planning to build resilience?*

10:15 – 10:45 am **Break**

10:45 – 12:30 pm **Innovative Technologies: What are they now, what could they be in the future?**

Moderator: Seymour Spence, Assistant Professor, Department of Civil and Environmental Engineering, University of Michigan

Speakers:

Dr. Maria Feng, Renwick Professor, Department of Civil Engineering and Engineering Mechanics, Columbia University

Daniel Hiller, Head of Strategic Management at Fraunhofer Institute for High-Speed Dynamics, Ernst-Mach-Institute EMI, Germany

Dr. Robert D. Moser, Senior Research Civil Engineer, Engineering Systems and Materials Division – Research Group, Geotechnical and Structures Laboratory, U.S. Army Engineer Research and Development Center (ERDC)

Dr. Oral Buyukozturk, Professor, Civil and Environmental Engineering, MIT

Dr. Jerome Lynch, Professor, Civil and Environmental Engineering, Electrical Engineering and Computer Science, University of Michigan

- *What is the vision for built infrastructure in resilient communities of the future? How can we better apply these technologies to benefit society?*
- *What is the "out of the box" thinking for the future? What does the next wave of research and design entail?*

12:30 – 1:45 pm **Lunch**

1:45 -2:15 pm **Featured Speaker – How are cities thinking about the role of technologies and structural engineering for the future?**

Paul Brown, President, Paul Redvers Brown, Inc.

2:15 – 3:30 pm **Visions of the Future: Enabling Design and Integration of Emerging Technologies**

Moderator: Ron Eguchi, President & CEO, ImageCat Inc.

Panelist 1: Peter Marx, Vice President of Advanced Concepts, GE Digital

Panelist 2: David Mar, President, Mar Structural Design (confirmed)

Panelist 3: Craig A. Davis, Water System Resilience Program Manager, Los Angeles Department of Water and Power

- *How could emerging technologies and innovations be integrated into the built environment? What are the potential challenges?*
- *How can decision makers build flexibility into their current decisions and initiatives to account for innovation and technological advances to come?*
- *How can decision makers, planners, and other stakeholders effectively use emerging technologies and innovations with current infrastructure projects and initiatives? And future ones?*

3:30 – 4:00 pm **Break**

4:00 – 4:30 pm **Where Are We & What's Next**

Farzad Naeim, President, Farzad Naeim, Inc.
Ting Lin, Assistant Professor, Marquette University

4:30 – 4:45 pm **Closing Remarks**

5:00 – 6:30 pm **Evening Reception**