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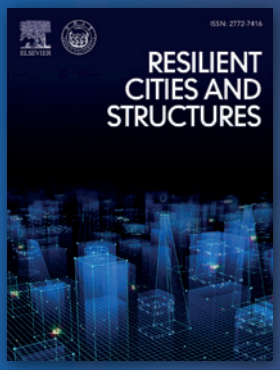

RESILIENT CITIES AND STRUCTURES

Academic Forum Series

The College of Civil Engineering, Tongji University and Elsevier invite you to join their free *Resilient Cities and Structures (RCS)* Webinar Series. Each talk is associated with an *RCS* journal paper (or within the journal's scope) which includes fundamental research, innovative technologies, and engineering applications in resilient cities, infrastructure, structures, and resilience–based management by an eminent scholar selected by the editorial board.

PRESENTATION

Thursday
14th December
2023

Time:

08:30-09:30
EST (New York)

13:30-14:30
GMT (London)

21:30-22:30
CST (Shanghai)

This webinar series is co-supported by **International Joint Research Laboratory of Earthquake Engineering** and the **Earthquake Resiliency Committee, Seismological Society of China**

Measuring the Resilience of a Community Based on Four Areas of Community Stability: An Interdisciplinary Approach to Measurement Science

Professor John W. van de Lindt
Colorado State University, USA

Organiser:
Prof. Ying Zhou, *Tongji University*, Editor-in-Chief of RCS Journal

Biography

Dr. John W. van de Lindt is the Harold H. Short Endowed Chair Professor in the Department of Civil and Environmental Engineering at Colorado State University. Over the last two decades van de Lindt's research program has focused on performance-based engineering and test bed applications of buildings and other systems for earthquakes, hurricanes, tsunamis, tornadoes and floods. He has led data collection efforts following hurricanes, earthquakes, floods, and tornadoes with the most recent being the December 2021 Midwest tornado outbreak. Professor van de Lindt is the Co-director for the National Institute of Standards and Technology-funded Center of Excellence (COE) for Risk-Based Community Resilience Planning headquartered at Colorado State University in its ninth year. A major portion of the COE is to develop a computational platform IN-CORE to enable communities to measure their resilience to natural hazards. He serves as the Past Chair of the Executive Committee for the American Society of Civil Engineer's (ASCE) Infrastructure Resilience Division, current Chair of the ASCE Technical Administrative Committee of the Structural Engineering Institute and has published more than 450 technical articles and reports, including 230 journal articles. He currently serves on a number of journal editorial boards including *Resilient Cities and Structures*, and is the Editor-in-Chief for the ASCE *Journal of Structural Engineering*.

Abstract

Resilience is the ability to prepare for, adapt to, and recover rapidly from hazards such as earthquakes, hurricanes, tornadoes, or floods. The ability to model a community necessitates combining models from different disciplines including the interfaces, propagation of uncertainty, and ultimately the measurement of resilience metrics across physical systems, households, social institutions, and the economy. This presentation will begin with a brief overview of a recent Resilient Cities and Structures Special Issue entitled "Integrated Modeling of Cities to Improve Natural Hazards Resilience" guest co-edited by John W. van de Lindt, Andre R. Barbosa, and You Dong. This will be followed by a brief summary of the state of the research in interdisciplinary resilience modeling of communities and cities developed by the U.S. National Institute of Standards and Technology-funded Center for Risk-Based Community Resilience Planning. The computational environment IN-CORE enables researchers to set up complex interdependent models of an entire city consisting of buildings, transportation networks, water and electric power networks, and to include social science data-driven household and business models as well as a computable general equilibrium (CGE) models to predict the level and distributional economic effects of a natural hazard on the economy. The focus of this presentation will be on explaining the use of four community stability areas which each contain multiple community resilience metrics. These areas are physical services stability, social services stability, economic stability, and population stability. An illustrative example for an entire community will be provided to demonstrate how to measure the resilience of an entire city.

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