



# NATIONAL ACADEMY OF ENGINEERING

## FORUM ON COMPLEX UNIFIABLE SYSTEMS

### INTEGRATING EVOLUTIONARY AND ENGINEERING APPROACHES TO FAILURE ANALYSES

#### A VIRTUAL COLLOQUIUM

**MONDAY, DECEMBER 5, 2022**

- 11:30 am**                    **Welcome, Alton Romig**, National Academy of Engineering
- 11: 35 am**                    **Framing Remarks, Guru Madhavan**, National Academy of Engineering
- 11:45 am**                    *Block I: How can evolutionary analyses for disease vulnerabilities be useful for engineering?*  
*Moderated by: Rita Colwell*, University of Maryland  
**Randolph Nesse**, University of Michigan and Arizona State University  
**Hiroaki Kitano**, Sony, Japan
- 12:45 pm**                    *Block II: How can engineering analyses for systemic vulnerabilities be useful for health?*  
*Moderated by: William Stead*, Vanderbilt University  
**Roger McCarthy**, Exponent, Inc. (retired); NAE Treasurer  
**Steve Frank**, University of California, Irvine
- 1:45 pm**                      **Break**
- 2:00 pm**                      *Block III: Evolutionary and engineering approaches to failure analyses*  
*Moderated by: Barbara Natterson-Horowitz*, University of California, Los Angeles and Harvard University  
**Stephanie Forrest**, Arizona State University and Santa Fe Institute  
**Bernard Crespi**, Simon Fraser University
- 3:00 pm**                      **Reflections on Guiding Practice**  
**Norman Augustine**, Lockheed Martin Corp (retired)
- 3:15 pm**                      **Synthesis and Closing**  
*Moderated by: Guru Madhavan*, National Academy of Engineering
- 3:30 pm**                      **Adjourn**

## **TUESDAY, DECEMBER 6, 2022**

- 11:30 am** **Welcome and Recap, Guru Madhavan**, National Academy of Engineering
- 11:35 am** *Block IV: What next steps can further develop synergies between evolutionary and engineering analyses of systemic vulnerabilities? Part I*  
*Moderated by: Joon Yun*, Palo Alto Fund  
**Christine Ortiz**, MIT  
**Joanna Masel**, University of Arizona  
**Fred Nijhout**, Duke University  
**Denis Cortese**, Mayo Clinic (retired)  
**Susan Blumenthal**, New America
- 12:55 pm** **Break**
- 1:10 pm** *Block V: What next steps can further develop synergies between evolutionary and engineering analyses of systemic vulnerabilities? Part II*  
*Moderated by: Jay Labov*, National Academy of Engineering  
**Paul Turner**, Yale University  
**James Collins**, Arizona State University  
**Yannis Androulakis**, Rutgers University  
**Joseph Graves**, North Carolina A&T University  
**Carl Carlson**, GM (retired)
- 2:30 pm** **Reflections on Guiding Organizational Design**  
**William Rouse**, Georgetown University
- 2:45 pm** **Synthesis and Closing**  
**Guru Madhavan**, National Academy of Engineering
- 3:00 pm** **Adjourn**