Introduction to Resilience Engineering

Webinar series on Resilience Engineering

June 24th, 2025
Time: 11:00 UTC
Duration: 90 mins

Brief summary of content:

This webinar will explore how Resilience Engineering equips organizations to navigate today's unprecedented levels of complexity and uncertainty. Drawing on the Theory of Graceful Extensibility, the webinar will examine how systems prepare for resilient performance, featuring cross-industry case studies, real-world analyses of current events, and cutting-edge organizational practices.

Webinars Chair:

Riccardo Patriarca, Ph.D.
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Presentation

Introduction to Resilience Engineering

The world is sending us increasingly clear and dire signals that uncertainty and complexity are on the rise, and that the strategies and tactics that allowed progress in the last 100 years or greater will not be those that allow us to manage these new challenges. Whereas practices that explicitly addressed complexity, uncertainty and adaptation were fairly contained to a small number of safety-critical industries only 20 years ago, the complexities that they faced then are far less than what virtually all consequential industries face today. Resilience Engineering, which was founded to respond to those early challenges, is well poised to help organizations address that more turbulent new world.

In this webinar, we will focus on how to engineer a system for resilient performance. We will begin learning how systems prime themselves for resilient performance, walking through case studies in multiple industries and focusing on the most general theory of resilient performance: the Theory of Graceful Extensibility. We will discuss current events, debating how certain decisions or events are harbingers of resilience or brittleness. We will finish with how organizations are engineering for resilient performance, connecting the theories with practice. We will learn industry-leading methods and techniques and then push the envelope on new thinking that only a handful or organizations worldwide are using.

Dr. Mike Rayo, Ph.D.
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Dr. Rayo works on equipping complex systems with the resilience needed to operate effectively amid both known and unforeseen challenges. His research focuses on enabling adaptive, joint human-machine performance across a range of settings, from small teams to large organizations, while promoting proactive safety practices that engage all organizational members in maintaining safe and efficient operations. He also advances the concept of societal-scale resilience by reimagining community collaborations as inclusive and balanced forms of teamwork.

Dr. Rayo is an Associate Professor in the Department of Integrated Systems Engineering at The Ohio State University. He also serves as Core Faculty at the Translational Data Analytics Institute and directs both the Cognitive Systems Engineering Laboratory and the CoEngage Laboratory. In addition, he is a scientific advisor on patient safety at OSU's Wexner Medical Center.

His work has received support from prominent organizations such as the Air Force Research Laboratory, FAA, AHRQ, Eurocontrol, and others, and he has authored numerous publications on human-machine systems and patient safety. Dr. Rayo plays active roles in professional societies, currently serving as Chair-Elect of the Cognitive Engineering and Decision-Making Technical Group, Outreach Chair for the BIPOC Affinity Group of HFES, and Secretary of the Resilience Engineering Association. He is also a former Case Western Reserve University Dance Champion.