DEFINING RESILIENCE FOR EMERGING TECHNOLOGIES

Igor Linkov, Cate Fox-Lent, Zach Collier
US Army Engineer Research and Development Center
Igor.Linkov@usace.army.mil

ABSTRACT: Recent calls from the US White House for enhanced resilience of our critical infrastructure in the face of persistent threats, (both natural and manmade), underscores the importance of developing and adopting a resilience-focused approach within the Nation. However, the concept of resilience is still not well understood and varies across disciplines. This discusses resilience in the context of emerging technologies that have potential for disrupting critical functionality of the systems. This paper proposes a decision making framework that integrates the event management cycle defined by the National Academy of Sciences into a resilience matrix that accounts for the physical, information, and social domains were disruptions associated with emerging technologies can take place. This systems-based approach can be used to comparatively assess the relative resilience of different systems and the contributions of individual responses or safeguards to overall system resilience. In addition to defining resilience through decision analytical framework, definition of resilience as network property of the system will be discussed. Applications to managing emerging technologies will be discussed.