NATIONAL EARTHQUAKE CONFERENCE

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Partner Profile – Jon A. Heintz

Jon A. Heintz is the Executive Director of the Applied Technology Council (ATC). Heintz joined ATC in 2005, and is responsible for project management, oversight, and quality control on the development of ATC products and publications. He has managed more than 50 major ATC projects involving earthquake, wind, coastal inundation, and man-made hazard mitigation issues, including performance-based design, soil-structure interaction, and general structural design issues covering the spectrum between commercial and residential building construction.

Q: What is the background/history of your organization?

A: I am a former structural engineering design practitioner and current Executive Director of the Applied Technology Council (ATC) in Redwood City, California. I have a Bachelor's degree in Civil Engineering and a Master's degree in Structural Engineering from the University of California, Berkeley.

ATC is an applied research organization, founded by structural engineers in the early 1970s to transition the latest engineering research into cutting edge engineering practice for hazard mitigation. Initially focused on earthquake hazards, ATC's current work is multi-hazard, with products and reports addressing seismic, wind, flood, and terrorist attack. Over its 45-year history, ATC reports have helped define the evolution of structural engineering practice, and formed the basis of seismic and other structural design requirements in building codes and standards.

Q: How did you get interested in research/disaster safety/response and recovery/resilience?

A: Living in a region of high seismicity, my area of practice was dominated by seismic design of new buildings and seismic evaluation and retrofit of existing buildings. Like many engineers before me, this practice eventually grew to include participation in engineering organizations and committees, and the development of codes, standards, and policies at the local and national levels. I worked for organizations that placed a high value on looking at (and learning from) the impacts of disasters and had the opportunity to observe the results of past design and policy decisions, first-hand, in both earthquakes and hurricanes. These lessons have shaped my perspectives in research and policy discussions centered around resilience.

Q: What do you see to be the future of earthquake science/engineering/research/outreach/ response and recovery to increase resiliency? What do you think is moving the cause of resilience forward?

A: Among many lessons learned, the 1994 Northridge earthquake showed us that financial losses can be surprisingly large, and much more than expected or understood by the public. The engineering profession responded with the concept of performance-based design, which provides a framework for considering design objectives beyond basic life safety. Resilience is an evolving concept that means different things in different contexts, but as an engineer, resilience ultimately boils down to designing buildings and other infrastructure to meet performance targets that serve resilience goals. Performance-based design is a key tool for engineering resilience.

Traditional seismic design concepts centered on safety allow for a certain amount of damage in an earthquake, and this level of damage may or may not allow a building to be usable or repairable following an earthquake. More than 20 years after Northridge, resilience has placed a new context around public expectations for performance. If current seismic design concepts can result in buildings that are unusable or unrepairable, there is a disconnect between our current design paradigm and resilience. I think research currently being conducted in New Zealand, which is centered on repairability and repairable limits for design, offers a missing link between our traditional design approaches and future engineering for resilience.

Q: Can you tell us about a specific project your organization is working on in earthquake safety/science/engineering/research/resilience/outreach field?

A: Performance-based design has continued to evolve. With the completion of the 15-year, ATC-58 series of projects, and the publication of the FEMA P-58 *Methodology for Seismic Performance Assessment of Buildings*, the technology has been expanded to explicitly and quantitatively predict building-specific losses in terms of repair costs, repair times, casualties, and environmental impacts given the occurrence of an earthquake. We now have the capability to measure the effectiveness of current seismic design requirements, and to engineer specific buildings to meet quantitative measures of performance that serve resilience goals.

Q: Do you have any other comments or words of wisdom for our readers?

A: Historically, within the building code development process, engineers have made performance decisions on behalf of society and the public. The performance-based design concept places decision-making authority in the hands of stakeholders, but decisions on acceptable levels of loss (especially life loss) can be difficult, or even intractable, for most stakeholders. Although societal and public policy input is absolutely necessary, I think engineers and other design professionals may need to take a leadership role in helping to set performance expectations embedded in future design requirements serving resilience objectives.