

The Role of Engineering in the Face of Conflict and Disaster

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Significant humanitarian crises are increasingly prevalent in the world today – from natural disasters to refugee crises to prolonged drought and famine, these events make headlines on a routine basis. With increased effects from global warming and ongoing conflict around the world, incidents like these will affect the lives of billions of people and continue to present engineering challenges both at home and abroad.

Humanitarian crises present numerous opportunities for the use of life-saving and community restoring technologies, from digital and networking technologies to mapping technologies to technologies for the delivery of basic human services. However, despite the significant role technology is able to play, there is a large and critical list of challenges that technology providers must overcome to ensure that their solution is playing a beneficial role for the affected society. Technologies in these environments must deliver impactful benefits with timely results, be easy to use, adapt to the existing structures and communities, oftentimes be of low cost and compact form factor, and perhaps most importantly be responsive to the needs of the community. It is critically important for engineers to understand how technology may be used for good, but also how it may contribute to conflict. Overcoming these hurdles can be a momentous task, particularly for state-of-the-art concepts and start-up companies. In addition, from the perspective of the responders to these crises, choosing the correct technologies in a fast paced and complex situation can be a significant challenge.

This session will address the role of the engineer in technology implementation within crisis and post-conflict environments, as well as discuss some of the particular technologies being explored today for humanitarian assistance and disaster relief. Julia Moline (FEMA) will begin the session by discussing the role of technology from the federal perspective, with a focus on recent hurricanes Harvey and Maria. Darshan Karwat (Arizona State University) will then examine the role of the engineer within society and in the advancement of peace and social justice. The high-level perspective of technology implementation in disasters, with a focus on digital assistance, will be discussed by Willow Brugh (Truss). In the final talk, Marissa Jablonski will discuss the USAID approach to development engineering and disaster relief. Throughout all sections, discussion is welcome on ideas for new and novel solutions for this challenging space, as well as questions on how the role of technology should evolve in today's crises and conflicts.