Chapter 32
Scaling 911 Texting for Large-Scale Disasters:
Developing Practical Technical Innovations for Emergency Management at Public Universities

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ABSTRACT

In a mass crisis event, Emergency Operation Centers (EOC) cannot meet the demand of thousands of individuals trying to alert or request emergency services. However, new technology, driven by the right policy and tested for strengths and weaknesses in a data rich, semi-predictable environment, can help to address current PSAP limitations. In this paper the authors present a system that aims to provide real-time data to emergency managers during a crisis event in such an environment – a college town during a football game or similarly attended event. The system is designed to accept, sort, triage and deliver hundreds of direct text messages from populations engaged in a crisis to emergency management staff who can respond. They posit that when a municipal or county-level EOC is cross-housed with a University EOC, multiple opportunities for development and funding occur. Universities can provide the technical expertise, funding, staffing, development and testing for systems that serve the EOC. Most importantly, Universities also provide disaster-like events that can be used as proxies for unpredictable mass crises during which more valid and reliable testing can occur. The authors present preliminary findings from a text-to-emergency service currently in use by Penn State University Athletics.

DOI: 10.4018/978-1-5225-6195-8.ch032

INTRODUCTION

In the near future, anyone will be able to send a text message to emergency services through the existing 911 infrastructure. This is due to the U.S. Federal Communications Commission (FCC) tasking cellular service providers and 911 call centers or Public Service Answering Points (PSAPs) with developing the capability to receive and act on text messages. This initiative is progressive in its orientation toward common communication trends as more people are using text messaging over using the telephone and this trend does not seem to be slowing down. While the U.S. is making strides to include communication other than voice during emergency service response, everyday emergencies are what drives this movement and this is problematic. During an everyday event, only a few individuals contact emergency services. While this service does need text messaging support, planning should involve mass events through which hundreds to hundreds of thousands of victims and bystanders may try to engage emergency channels via multiple mediums. At current and for the foreseeable future, 911 cell centers or Public Service Answering Points (PSAPs) cannot meet the demand of this type of event.

During large events, Emergency Operations Centers (EOCs) are created and are tasked with coordinating response, logistics and communications. We believe that EOCs will play a key role in gathering, processing, and delivering information during these mass crises though there is significant amounts of work to be done in order to bring the EOC fully online (Militello, et al. 2007). However, EOCs are often funded by municipal, county, state, and federal funding mechanisms that have cross-jurisdictional and heterogeneous responsibilities. This funding mechanism makes it difficult to fully develop an EOC despite their growing importance during crises. County and local EOCs often find themselves underfunded, under-staffed, and under-developed technologically. What's more confounding is that historically, crisis preparedness and response infrastructure has revolved around reaction to previous crises instead of forward thinking planning. This has resulted in piecemeal development that is beginning to crumble under its own bureaucratic weight (Jensen and Waugh, 2014).

Despite this bureaucratic weight and piecemeal development, it is difficult to imagine EOC development taking a different route. Even now, changes continue to be piecemeal given that prediction of future crises is impossible and technological change is often light-speed when compared to bureaucracy. Additionally, it is nearly impossible to test crisis response concepts due to the inability to obtain realistic experiment data (Glantz, 2004). Testing systems meant for crisis response requires a crisis. Our approach attempts to correct this issue. What we hope is that this could mean a less piecemeal, reactionary approach to EOC development.

To wit, we posit that in the rare occurrence a municipal or county-level EOC is cross-housed or shared with a College or University EOC, multiple opportunities for development, experimentation, and funding appear. Universities can provide the technical expertise, funding, staffing, development, and testing for systems that serve the EOC. Most importantly, Universities can also provide proxies for crisis management events that emulate the unpredictable nature of mass crises (e.g. a college football game or other types of events like a football game). During these events, valid and reliable testing can occur. We believe this unique setting allows for the public EOC-Public university partnership to serve as a testbed for technical innovations that can then be shared with other EOCs experiencing the same environmental pressures.