

Chapter 35

WiPo for SAR: Taking the Web in Your Pocket When Doing Search and Rescue in New Zealand

Karyn Rastrick

University of Waikato, New Zealand

Florian Stahl

University of Münster, Germany

Gottfried Vossen

University of Münster, Germany

Stuart Dillon

University of Waikato, New Zealand

ABSTRACT

WiPo (Web in your pocket) is a prototypical mobile information provisioning concept that can offer potential benefits to a range of situations where data sources are vast, dynamic and unvalidated and where continuous Internet connectivity cannot be assured. One such case is that of search and rescue (SAR), a unique case of emergency management characterized by the need for high-quality, accurate and time-sensitive information. This paper reports on empirical research undertaken to explore the potential for a real-world application of a mobile service such as WiPo which is based on the delivery of highly curated, multi-source data made available offline. Adopting an interpretive interview-based approach, the authors evaluate the potential usefulness of WiPo for search and rescue incidents in New Zealand. Upon learning of the core functionality of WiPo and the alignment of that with the typical search and rescue situation, study participants were unanimously positive about its potential for improving search and rescue management and outcomes.

DOI: 10.4018/978-1-5225-6195-8.ch035

INTRODUCTION

Disaster and emergency management in general and search and rescue (SAR) in particular have become increasingly technology-supported in recent years. Evidence of this can easily be found in the ISCRAM (Information Systems for Crisis Response and Management) series of annual conferences¹. Many of the approaches that have been reported there and elsewhere and that are in practice nowadays rely on uninterrupted Internet availability and reliable access to services on the Web, most notably involving search and social media (Rizza et al., 2013; Imran et al., 2013). However there are still many situations, especially in the case of land SAR² where the Internet is unavailable due to the remoteness of the location where a search and rescue operation is carried out. In this paper, we describe a potential solution for such situations: We study how WiPo, an approach to “take the Web in your pocket” originally proposed by Dillon et al. (2012), can be exploited for the particular case of search and rescue.

The past few decades have seen a significant change in the emergency management field, due to the broad and in-depth use of technology, in particular the Internet (Jennings et al., 2015). Recent examples of such technology utilization include the Shadow Lake fire in 2011 (St. Denis et al., 2012); the Haitian earthquakes in 2010 (Crowe, 2011); and the Deepwater Horizon oil spill in 2010 (Sutton et al., 2012), among many others. In general, emergency management occurs in response to natural or man-made events where property or life is threatened. SAR is a special case of emergency management where life is at risk and a timely response might be the determinant of human survival. Media reporting including citizen reports of such events are far greater in number than ever before, making the public increasingly aware of emergency situations. At the same time expectations of the public in dealing with such situations in all phases of an emergency have changed. The field is seen to have been professionalized and become technology-driven (Jennings et al., 2015; Comfort, 2012), resulting in increasing public expectations of emergency management professionals to help in, control and manage critical situations. It is not surprising then that a collaborative response which relies on various technologies is now seen as table stakes in emergency management situations.

Technological changes have enabled a variety of new capabilities and communication channels in the emergency management field. Smartphones, tablets and social media (e.g., Twitter, WhatsApp, Facebook, and Google+) are the most significant technological developments enabling new approaches to information collection and dissemination, in particular during a crises situation. Similarly, technologies which enable the likes of community warning systems are now commonplace and seen as essential tools for alerting the public to potential events (Bunker, 2010). Such changes to emergency management practice have meant that the volume of electronically generated and stored data has become superabundant (Dillon et al., 2013). This phenomenon, sometimes referred to as the *data deluge*, is widely discussed by many (e.g., Hey & Trefethen, 2003; Laudon & Traver, 2013; Ramirez, 2011). These significant technological changes are being seen to have a major impact across a range of real-world applications, many of which have not historically been big users of technology. In emergency management, recent research considers technology use such as the effective use of information from social media (Bunker et al., 2013) and the need for collaborative information management (Bunker, 2010). In addition, researchers as well as emergency management agencies have begun to explore the various phases of disaster management in order to determine which technology is most suited to each phase.

WiPo (“Web in your pocket”, see Dillon et al., 2012) is based on the recognition that information gathering, in particular when done for a very specific or highly specialized purpose, cannot simply be done via targeted search queries directed to one or more search engines. Instead, WiPo adopts a sophisticated

19 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:

www.igi-global.com/chapter/wipo-for-sar/207600

Related Content

Data Storages in Wireless Sensor Networks to Deal With Disaster Management

Mehdi Gheisariand Mehdi Esnaashari (2018). *Smart Technologies for Emergency Response and Disaster Management* (pp. 196-222).

www.irma-international.org/chapter/data-storages-in-wireless-sensor-networks-to-deal-with-disaster-management/183483

Detecting Individual-Level Deception in the Digital Age: The DETECT Model ©

Eugenie de Silva (2020). *Improving the Safety and Efficiency of Emergency Services: Emerging Tools and Technologies for First Responders* (pp. 271-292).

www.irma-international.org/chapter/detecting-individual-level-deception-in-the-digital-age/245167

A Restrictive Humanitarian Policy and the Wellbeing of the Disabled in Disasters in Kisumu County

Phitalis Were Masakhwe, Kennedy Onkwareand Susan Kilonzo (2020). *International Journal of Disaster Response and Emergency Management* (pp. 48-56).

www.irma-international.org/article/a-restrictive-humanitarian-policy-and-the-wellbeing-of-the-disabled-in-disasters-in-kisumu-county/258606

A Descriptive Approach for Power System Stability and Security Assessment

A. G. Tikdari, H. Bevraniand G. Ledwich (2014). *Crisis Management: Concepts, Methodologies, Tools, and Applications* (pp. 1527-1545).

www.irma-international.org/chapter/a-descriptive-approach-for-power-system-stability-and-security-assessment/90792

An Efficient GIS Concept for Disaster Management in Developing Countries Based on Virtual Globes

Gunter Zeug, Dominik Brunnerand Marco Scavazzon (2009). *International Journal of Information Systems for Crisis Response and Management* (pp. 15-32).

www.irma-international.org/article/efficient-gis-concept-disaster-management/37524