ABOUT THIS PROJECT
This research was conducted as a PhD study: Volunteered geographic information, community engagement and bushfire preparation, which was part of the broader CRC project Out of uniform.

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SUMMARY
In recent years, information from community members contributed online has proved highly useful in emergencies. Information sharing activities by private citizens using social media, smartphones, and web mapping tools have been termed volunteered geographic information (VGI) or digital volunteering. This research examined the potential role of VGI in fostering community engagement in bushfire preparation.

Findings show that VGI is more than just technology – it is about people sharing their knowledge and mapping collaboratively as a social practice. It presents opportunities for citizen empowerment in line with shared responsibility, but also challenges with power moving away from the traditional command and control of emergency services. This research provides a clearer path for emergency service agencies to best-utilise these technologies.

CONTEXT
The Internet, social media and smartphones have enabled private citizens to create and share geographic information, dramatically increasing public participation in disaster response. While there are numerous documented benefits and challenges, this research examines the role of these technologies and practices in promoting community engagement in disaster risk reduction.

BACKGROUND
Practices of citizens creating, sharing and mapping their own information have been termed volunteered geographic information (VGI), and in emergency management digital volunteering or digital humanitarianism. VGI enables cost-effective, rapid sharing of diverse information from community members at all stages of disaster management. However, VGI also presents new challenges, including issues of trust and data quality, data management, liability, and the digital divide (or those without access to VGI technologies being excluded). Existing literature emphasised disaster response, but as preparing for disasters significantly reduces the likelihood of negative impacts, there is a need for increased community engagement in disaster risk reduction. VGI is one tool that can help to achieve this.

BUSHFIRE AND NATURAL HAZARDS CRC RESEARCH
This research assessed the usefulness of VGI in fostering community bushfire preparation engagement and increased disaster resilience in Tasmania. It also examined the broader impacts of VGI on traditional top-down disaster management.

The research had three main components. Firstly, surveys were completed with 154 residents of bushfire-risk communities. These examined bushfire preparedness and the uptake, usage, and limitations of VGI technologies like social media.

Following this, interviews with 13 emergency management professionals were conducted to evaluate how community VGI practices are impacting authoritative disaster management.

Lastly, workshops were conducted with 31 residents of bushfire-risk communities to assess participatory mapping activities, examining the user-experience of contributing VGI for bushfire preparation, and the value of sharing local knowledge and mapping together with other community members.

RESEARCH FINDINGS
Three key insights are presented in this Hazard Note. More information is available in the ‘further reading’ panel on page 2.

First, VGI is not just about technology, it is also about people – people sharing knowledge and mapping collaboratively as a social practice. Conceiving VGI as a social practice, rather than simply data, can lead to opportunities such as increased community connectedness, shared risk understanding and collective engagement in activities such as disaster preparation.

Second, VGI does not include everybody. Many people are excluded from contributing through lack of access to technology, skills, time, or the ‘right’ cultural/social circles. Worryingly, those marginalised for the reasons above are often the most vulnerable to disasters. On the other hand, VGI may disproportionately promote the views of those who can contribute.

Finally, VGI involves shifts in the control
of information and decentralisation of power away from emergency service agencies. This provides opportunities for citizen empowerment in line with notions of shared responsibility and resilience, but also challenges, where organisational adaption is required to effectively harness VGI.

HOW IS THIS RESEARCH BEING USED?

By revealing the opportunities, challenges, and implications of VGI in emergency management, the research provides a clearer path for emergency service agencies to best utilise these technologies for and with communities. While significant challenges remain, understanding of the benefits gained by valuing citizen knowledge, embracing change and harnessing the power of technological and communication innovation will contribute to more effective use of VGI to meet agency and community needs.

Insights gained through this research into VGI have contributed to the broader national understanding of the changing nature of emergency volunteering in Australia and internationally, with close links to other CRC projects. This research will influence local and national policy and sectoral change, with an enhanced understanding of digital volunteering contributing to goals of increasing volunteering sustainability, community engagement and national disaster resilience.

Working collaboratively with Tasmania Fire Service has resulted in research outcomes that can be directly applied in agency thinking on community development and the use of VGI in the future. The TFS Bushfire Ready Neighbourhoods Program has expressed interest in adopting participatory mapping into their community engagement activities. The findings, however, are not limited to Tasmania or bushfire, but are applicable to other natural hazards, social settings and regions across the globe, and questions right across the discipline of geography.

FUTURE DIRECTIONS

Strategies that seek to bridge the digital divide must continue to be investigated, including how to engage a wider variety of people in VGI, particularly those most vulnerable to emergencies.

Longitudinal studies would permit evaluation of ongoing outcomes associated with VGI use for community engagement. Studies of longer duration would also allow for better appraisal of methods for managing VGI data and initiatives. There is a need to develop effective ways of managing, verifying, and filtering community data for integration with other databases.

VGI should be examined in other emergency management contexts, such as disaster recovery, other geographic or political settings, and other hazards and crises.

PARTICIPATORY MAPPING

Participatory mapping involves providing skills and expertise for citizens to create maps themselves that represent their own spatial knowledge, including through VGI. This might be drawing freehand, using existing printed maps, or digitally via GIS or the Internet. Participatory mapping can facilitate shared decision-making, community advocacy and increased community empowerment.

END-USER STATEMENT

The Bushfire Ready Neighbourhoods program at the Tasmania Fire Service collaborated with this research to explore a different community engagement technique that can be utilised in the programs’ ‘one size doesn’t fit all’ approach to working with communities. Billy has provided an important evidence base for the use of participatory mapping in community engagement, and I’d encourage other agencies to use these findings to inform their approach. – Peter Middleton, A/Manager, Community Development & Education, Tasmania Fire Service

FURTHER READING

Haworth B (2016), Assessing the potential, application, and implications of volunteered geographic information in disaster risk reduction, PhD thesis, School of Geosciences, Faculty of Science, University of Sydney. Available at www.billyhaworth.com/publications/


Haworth B, Whittaker J and Bruce E (2016), Using participatory mapping to harness local knowledge and increase community connectedness in bushfire preparation, paper presented at AFAC16, Bushfire and Natural Hazards CRC.
