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### Abstract

A world-first nation-wide community website scheme was established in Australia in 2006 to enhance existing, and build new, social networks within geographic communities. By doing so, it sought to promote geographic community engagement. Initially, this paper presents an overview of the scheme since its inception and review the current geographic community groups participating in the scheme. To date the scheme has had limited success in attracting a critical mass of communities that value the promoted benefits of social networks in this format, with only 154 community websites across Australia. While it has not achieved the expected level of uptake, the scheme has shown some potential in developing community engagement online. One example of these websites harnessing offline experiences and using shared bonds to establish and enhance social networks occurred during the Victorian bushfires in January/February 2009. Geography-specific community websites allowed individuals to connect during this tragic event – sharing experiences and coordinating re-building efforts. Six months on from the bushfires, many of the community websites based in affected areas showed high levels, when ‘owned’ by the community, of activity and interaction between community members, demonstrating effective and meaningful social networks in action.

### Keywords

Bonding, over, bushfires, Social, networks, action

### Disciplines

Physical Sciences and Mathematics

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# Bonding over bushfires: Social networks in action

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## Abstract

*A world-first nation-wide community website scheme was established in Australia in 2006 to enhance existing, and build new, social networks within geographic communities. By doing so, it sought to promote geographic community engagement. Initially, this paper presents an overview of the scheme since its inception and review the current geographic community groups participating in the scheme. To date the scheme has had limited success in attracting a critical mass of communities that value the promoted benefits of social networks in this format, with only 154 community websites across Australia. While it has not achieved the expected level of uptake, the scheme has shown some potential in developing community engagement online.*

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## 1. Introduction

Websites created around a geographic community have great potential to increase the social capital of members in that geographic location. The Community Geographic Domain Name (CGDN) initiative in Australia is one such example. This paper presents this scheme and how it has attempted to increase community interaction in the aftermath of the Victorian bushfires in January/February 2009 (bushfires are also known as wildfires in the United States and Canada).

This paper initially reviews how social networking sites (SNS) were used during the bushfires to link members of the geographic communities, disseminate critical information and discuss potential arsonist court

proceedings. Following this the CDGN scheme attempt at reuniting geographic communities during the rebuilding phase is discussed.

## 2. History of the CGDN scheme

In 2006, Community Geographic Domain Names (CGDNs) were publicly launched in Australia. These new domain names were created to provide a space for community members to develop websites that benefited the entire local community, by linking members of geographic communities and encouraging community participation. Each CGDN conforms to a suburb.state/territory.au format (for example wollongong.nsw.au for the suburb of Wollongong in the state of New South Wales) as opposed to the traditional suffixes to which Australian Internet users are accustomed (such as .com.au, .net.au and .gov.au). The format provides a clear and direct relationship between the geography of the community and its associated domain name.

The idea of ‘community only’ domains was developed from the desire for a facility for communities to identify themselves on the Internet and to alleviate concerns about commercial organisations effectively controlling geographic domains in Australia. The CGDN concept was officially proposed to the Australian Domain Name Administrators (auDA) by two community groups in 2002. In 2003, auDA permitted a trial of these community domain names. This trial was promoted as an opportunity to test the policy, gather feedback from participating groups and the community more broadly, and implement modifications based on experiences and feedback. However, from its inception to the national CGDN launch, numerous modifications were made to the policy, guidelines and associated processes without the necessary consideration of community feedback. Community feedback was marginalised and in some cases the changes made were in direct contrast to community advice.

While the initial proposals for ‘community only’ domains received wide community support, there was slow uptake of the CGDNs after the national launch in August 2006.

There are varied definitions of community, typically based on geography, an interest or a combination of the

two. While there is no agreed definition of a 'community' [1, 2] it has been established that the term refers to a group of individuals. When the term is considered in the context of 'online' communities, the only common concept throughout all definitions is people [3].

When proposing the 'community only' domain names, the concept of community was based on geography. Members of geographic communities are classified as such based on their shared geographical location, or physical proximity to one another [1]. While the term 'community' has often been used to describe a group of individuals within a specific geographical area, use of the term implies (often inaccurately [1]) that these individuals have a shared social base simply because they reside in a similar location. The CGDN Scheme attempts to develop a shared social base for the community based around geography.

Gurstein advises that, while technology projects can be used to enhance community interaction and prosperity, they can also lead to division among community members. To be successful, an online community requires close links to the existing offline economic community, as well as strong leadership able to unite the community as a whole [4]. Achieving this success in the CGDN Scheme requires consideration of the role and concerns of the communities involved in the CGDN trial.

### 3. Community Informatics

The field of Community Informatics (CI) is relatively young, with the first hard copy CI literature published in 2000 [5], the Community Informatics Research Network (CIRN) founded in 2003 [6], and the Journal of Community Informatics launched in 2004 [7]. The majority of advances in using technology to support community, as opposed to supporting business activities, have been made since the year 2000 [8]. The term 'Community Informatics' was initially coined by Michael Gurstein, and despite widespread use in the literature there is no agreed definition of the term or the field it seeks to describe [5]. CI literature covers a range of topics, including social capital, the digital divide, virtual communities, and community technology centres. CI research may also be designed to improve the effectiveness of a community using technology. To date, no methodological approaches have been agreed upon by CI researchers [5].

The two main elements in CI are information and communication technologies (ICTs), and 'community' [4, 5, 9]. CI is a strategy or approach that seeks to use ICTs to serve communities [5], links community development efforts (such as social and economic development) with the emerging opportunities presented by ICTs [4, 10], and considers how ICTs are used by geographic communities

[4]. It is essential that ICT initiatives are based on the needs of the local community [9]. Two distinct areas of CI have been identified by authors seeking to define the field: the practical application of ICTs to facilitate community processes and assist in the achievement of community objectives, and the scholarly research and practice of "systematically approaching Information Systems from a 'community' perspective" [5]. Many instances of CI projects seek to include elements of both practical community facilitation and scholarly research.

The suggestion has been made that CI can "contribute to empowered communities – communities that are politically, culturally, and economically strong enough to negotiate agreements with corporations and higher level governments that bring them more benefits than costs" [5 p.21]. This implies that all information technology projects implemented in a community will provide benefits to the community. This research will consider the benefits provided to communities affected by the Victorian bushfires, but will also consider whether *all* communities with websites experienced some benefit.

## 4. Methodology

This research used a triangulation of different qualitative methods to draw conclusions on the usage, advantages and disadvantages of technologies during and after natural disasters. It also considered the role of the media in reporting these events and the media's perspective on the use of technologies in such situations.

### 4.2. Data Collection

Qualitative methods were "developed in the social sciences to enable researchers to study social and cultural phenomena" [11], and allow researchers to use varied data sources to study social and cultural phenomena. The advantages of using qualitative research methods is that they allow the individuals and situation to be understood within their social and institutional contexts [11], as opposed to quantitative methods which when used in these types of studies can only record the facts.

Primary sources are those gathered from the individual or organisation directly, and these are typically unpublished [12]. Secondary sources are previously published materials [12]. This research relies heavily on secondary sources to collect the data that is being reported by the media about the experiences and usage of technologies of the communities affected by the bushfires.

The role of media in contemporary society is significant. McLuhan [13], Markova and Farr [14], Gouldner [15] and Marshall and Kingsbury [16] all note that the mass media has the ability to create and influence the perception of the public through its publications.

McLuhan [13] stated that the individualistic role of the press is dedicated to “shaping and revealing group attitudes”. This coupled with the modern concept that information is power has lead Marshal and Kingsbury [16] and McLuhan [13] to believe that the media is simply a reflection of what society wants and needs to hear.

Given the power contained within mass media and its relationship with society’s needs and wants, an examination of mass media articles can be seen as a fundamental examination of public sentiment [15]. Gouldner also noted that newsprint was an especially valuable form of media for these examinations stating “the information they (newspapers) provide enables the reader to view issues from a wider cosmopolitan view, adding perspective that is outside of any local shaping factors”.

Qualitative context analysis was used to ‘read’ the documents with an understanding of their context [17], with the researcher identifying what is relevant and piecing this together to create patterns [18]. Categories used across all data sources were used as the basis for recording the documentary analysis. Where necessary, categories were extended to accurately record the documentary analysis. When conducting this type of analysis, researchers have emphasised that “Full coverage [of the data] is impossible, equal attention to all data is not a civil right” [12]. The identification of issues and grouping of these issues into categories is in a search for meaning, rather than an attempt to describe every element of the data being summarised.

Documentary research “covers a wide variety of sources, including official statistics, photographs, texts and visual data” [17 p.175]. Each document “represents a reflection of reality” [17 p.182] and provides “material upon which to base further investigations” [17 p.175]. Documents tell the reader “about the way in which events are constructed” [17], and may be classified as ‘public’ or ‘private’ [17]. Documents produced by government departments are usually public documents, as are the CGDN Policy documents. Documents can also be classified as ‘solicited’ and ‘unsolicited’ [19], based on whether they were produced for the purpose of further research. The reports completed by the CGDN Projects were solicited documents, written with a known audience. This context influences the style and content of the documents, and requires consideration of the requirements under which they were developed [17]. While recognizing that the “ways in which documents are used is clearly a methodological and theoretical question” [17 p.177] influenced by historical and social perspectives, when compared to formally established research methods, documentary research is “not a clear cut and well-recognized category, like survey research or participant observation... It can hardly be regarded as constituting a

method, since to say that one will use documents is to say nothing about *how* one will use them.” [20]

### 4.3. Data Analysis

The documentary analysis conducted in this research was based on ‘practical reasoning’ where the expectations, experiences and perceptions of those producing the documents was considered as ‘fact’, while recognizing that the understanding of these documents was open to negotiation [17]. Documents were considered in terms of their authenticity, representativeness, credibility and meaning.

A standard process for data analysis in qualitative research was used as the basis for data analysis in this research [12]. The collected data was organised and prepared for analysis, and all data was read to develop a general sense of the available information. General notes were written and patterns in the data recorded [12, 21, 22]. Prior to reading the data, a list of general terms was developed based on previous research and experiences of the CGDN Scheme and CGDN Projects, as recommended by Miles and Huberman [23]. These terms were used as the basis for recording notes, and allowed for a more efficient analysis. Overall ideas, depth and credibility were considered.

### 4.3. Technology Approach

One of the issues that will be assessed in both the CGDN approach and the usage of SNSs is how the community involvement was initiated. There are two broad approaches that can be taken; these approaches are from the top-down and from the bottom-up [25, 26]. A top-down approach is one where an overarching policy effort (e.g. National) is used to assist and make the decisions about how the technology can be used by the community. In contrast, a bottom-up approach is driven by the community and needs active community participation from the start [25, 26].

## 5. Case Study – Victoria bushfires

During the period of January and February 2009, there were a large number of bushfires that were burning throughout the state of Victoria in Australia. On 7 February 2009, extreme weather conditions were recorded in most of the state, with the media and the Country Fire Authority (CFA) Victoria reporting up to 400 separate blazes. These fires led to the death of 173 people and 414 people were injured. This was Australia’s highest ever toll from a bushfire.

## 6. Social Networking Sites (SNS)

Social Networking Sites (SNS) have gained popularity over the past decade with the number of users of these sites increasing at a rapid rate. In the news about the Victorian bushfires three main sites were referred to: Twitter, Facebook and Flickr. SNSs were used in a variety of ways during and after the bushfires from being used during the bushfires to link members of the geographic communities, disseminate critical information and post bushfires, to the discussion of potential arsonist court proceedings and ways to be more prepared in the future. SNSs use a bottom-up approach to community engagement, with no overarching body directing how the technology is to be used. The content that is being delivered to the community through these sites stems entirely from community members wanting to engage with other members of their community.

### 6.1. SNSs during the bushfires

During the bushfires, SNSs were discussed in the media. A number of articles such as ‘How tweet it is in this fight to the Twittering end’ [26] and ‘Twitterers aflutter as the social media comes alive’ [27] discuss how conventional media embraced SNS technologies (especially Twitter) in an effort to disseminate as much coverage as possible about the bushfires to the general public. These messages came from an Australian Broadcasting Authority (ABC) radio station ‘774 Melbourne’ which not only provided a large number of fire related updates during the bushfires but also increased their following from 250 followers to 1200 in the days of the event but was also one of the top three re-tweeted accounts in the world [26]. Another traditional media reporter was Caroline Overton from The Australian newspaper, who tweeted 197 times whilst in the bushfire affected areas. These examples show how traditional media are using SNS technologies to increase the access of information to people living in or near a geographic area affected by a natural disaster, such as the Victorian bushfires. Newmatilda.com [28] reported that SNSs had information about the bushfires before the traditional media, with Twitter user “@cfa\_updates” providing (unauthorised) RSS feeds from the Country Fire Association of Victoria’s website.

Hobbs [29] and Clayfield [30] discussed how SNS users reported the events of the bushfires with the use of wireless internet, keeping friends and families up-to-date with what they were experiencing.

### 6.2. SNSs after the Bushfires

In the months following the bushfires, SNSs were discussed in the media, mainly in relation to two issues: how these technologies could be better utilized in the future, and the court proceedings of one of the arson suspects. In the articles ‘Fire alerts on Twitter’ [31], ‘Lives before properties in stay-or-go policy changes’ [32] and ‘Tall order to fix fire policy soon’ [33] there were discussions on how SNS such as Twitter and Facebook could be used to give people early warning of bushfires in Victoria for similar situations in the future. The Premier of Victoria John Brumby stated, “We’ll be providing more information to the community, like Twitter and Facebook, alternative means of communication to get the information out to the public” [31]. On the negative side of SNSs, a number of articles reported of the creating of ‘hate groups’ when arrests were made [34, 35].

## 7. CGDN scheme initiative

The CGDN Scheme management modified its rules to allow the domain names to be used to support communities in need during the 2009 bushfires. This modification to approved policy was explained on its website as:

*“auDA has agreed to temporarily waive the Policy Rules and Guidelines for CGDNs until 30/6/10 to provide this communication facility for Victorian Bushfire affected communities. If the CGDN cannot be transferred to an eligible entity within the local community on or before 30th June, 2010, then the CGDN will be deleted.”* [36]

The affected geographic communities were given access to Community Sites in a Box (CSIAB), which is a self contained website system setup to operate with a CGDN domain name. The CSIAB is similar to most CMS systems (such as Joomla! and Drupal) except it has been specialised for community interaction. There are many features available, including news, events, directories, contact us and contact us.

Compared with SNSs, the CGDN scheme is a top-down approach attempting to generate community engagement. The managing body (auCD) is responsible for providing services to the community groups so they can use the technology to deliver content to other members of their community.

### 7.1. Review of the CGDN initiative

The purpose of the release of provisional CGDNs was to allow communities affected by the 2009 Victorian bushfires to create an environment where community members could share stories, remember those affected by the bushfires including the dead and injured, share emergency and coping strategies, acknowledge those who

had provided assistance during such a difficult time, and provide links to relevant information [36].

Table 1 (below) provides details of all CGDNs related to areas that were impacted by the 2009 Victorian bushfires. The Table shows who managed the CGDN (i.e. the community itself or the CGDN management group) and provides an indication of each site's usage by listing the number of content items in specific categories. Content in Table 1 is a snapshot of the relevant CGDNs and was accurate in November 2009.

Community Website	Management	News	Last	Events	Last	Directory
<a href="http://www.callignee.vic.au">www.callignee.vic.au</a>	Self	54	11-Nov	39	+	2
<a href="http://www.marysville.vic.au">www.marysville.vic.au</a>	Self	100+	12-Nov	234	+	5
<a href="http://www.mudgegonga.vic.au">www.mudgegonga.vic.au</a>	Self	8	25-Jun	21	8-Nov	-
<a href="http://www.upperplenty.vic.au">www.upperplenty.vic.au</a>	Self	11	17-Nov	7	+	0
<a href="http://www.strathewen.vic.au">www.strathewen.vic.au</a>	Self	-	-	2	+	-
<a href="http://www.woodbourne.vic.au">www.woodbourne.vic.au</a>	Self	8	16-Oct	5	15-Nov	-
<a href="http://www.barwidgee.vic.au">www.barwidgee.vic.au</a>	auCD	1	2-Oct	0	-	0
<a href="http://www.beechworth.vic.au">www.beechworth.vic.au</a>	auCD	0	-	1	30-Oct	0
<a href="http://www.chumcreek.vic.au">www.chumcreek.vic.au</a>	auCD	0	-	0	-	0
<a href="http://www.coldstream.vic.au">www.coldstream.vic.au</a>	auCD	1	2-Oct	0	-	0
<a href="http://www.clonbinane.vic.au">www.clonbinane.vic.au</a>	auCD	7	4-Nov	15	+	0
<a href="http://www.dixonscreek.vic.au">www.dixonscreek.vic.au</a>	auCD	1	2-Oct	0	-	0
<a href="http://www.flowerdale.vic.au">www.flowerdale.vic.au</a>	auCD	3	2-Oct	4	8-Nov	1
<a href="http://www.healesville.vic.au">www.healesville.vic.au</a>	auCD	1	2-Oct	1	+	0
<a href="http://www.humevale.vic.au">www.humevale.vic.au</a>	auCD	1	2-Oct	0	-	0
<a href="http://www.kinglake.vic.au">www.kinglake.vic.au</a>	auCD	3	2-Oct	7	2-Oct	4
<a href="http://www.kinglakewest.vic.au">www.kinglakewest.vic.au</a>	auCD	2	2-Oct	3	27-Sep	2
<a href="http://www.longgully.vic.au">www.longgully.vic.au</a>	auCD	1	2-Oct	1	2-Apr	0
<a href="http://www.pheasantcreek.vic.au">www.pheasantcreek.vic.au</a>	auCD	1	2-Oct	0	-	1
<a href="http://www.narbethong.vic.au">www.narbethong.vic.au</a>	auCD	3	2-Oct	8	+	1
<a href="http://www.reedycreek.vic.au">www.reedycreek.vic.au</a>	auCD	5	2-Oct	12	+	-
<a href="http://www.saintandrews.vic.au">www.saintandrews.vic.au</a>	auCD	3	2-Oct	2	2-Oct	0
<a href="http://www.steelscreek.vic.au">www.steelscreek.vic.au</a>	auCD	1	2-Oct	1	18-Oct	0
<a href="http://www.toolangi.vic.au">www.toolangi.vic.au</a>	auCD	1	2-Oct	0	-	1
<a href="http://www.wandong.vic.au">www.wandong.vic.au</a>	auCD	5	2-Oct	14	+	0
<a href="http://www.whittlesea.vic.au">www.whittlesea.vic.au</a>	auCD	1	2-Oct	0	-	0
<a href="http://www.varraglen.vic.au">www.varraglen.vic.au</a>	auCD	1	2-Oct	0	-	0

Table 1: Usage of Bushfire Affected CGDNs

The CDGN initiative can also be reviewed from a management perspective by reviewing the minutes of board meetings of auCD. During this period there were three board meetings that took place: 20 April 2009, 20 July 2009 and 15 October 2009. [37, 38, 39]

At the initial board meeting [37], discussions were concerned with identifying other authorities to which auCD could link with to assist in the dissemination of information in the case of an emergency. During the second board meeting [38], members were updated on the progress of the CGDN sites and their increased use as the communities were entering the rebuilding phase. These discussions are in contrast to the results presented above (Table 1) showing the amount of content on the sites.

By the third board meeting [39], discussions were concerned with how Glenburn had applied to take over their domain name, rather than auCD managing the domain name for the community. The board planned to use Glenburn's success as encouragement to other communities.

### 7.1.1. Bushfire affected communities given a voice online

The auCD website discusses how these websites have the potential to encourage community interaction during the rebuilding phase by:

- Informing community members about local news and events
- Keeping people connected
- Providing a facility for the wider community to contribute donations of money and/or services
- Allowing community members to share stories and experiences
- Providing links to important information [40]

Content on the following websites is now being managed by community members: Glenburn, Marysville, Callignee, Mudgegonga, Upper Plenty and Strathewen. These community groups that are managing their own content are the ones that are successful, as can be seen in Table 1 when considering the level of content posted on these sites. These groups have now taken over the top-down management of the sites, and they are now being managed using a bottom-up philosophy with community members providing the information being displayed.

### 7.2. [www.mirboonorth.vic.au](http://www.mirboonorth.vic.au) – Example

Mirboo North is a small town in Victoria, two hours drive east of Melbourne. This community established their CGDN in September 2007. The community has been using it since this time for promoting community events. During the initial fire outbreak in January 2009 the community members who maintained the CGDN ensured that the site was up to date with emergency details and other vital information. On the auCD website [41] it was noted that “*During the week of the fires, hits to the local website increased seven fold, this explosion of web visits shows how important the Mirboo North website is as a local source of news and information.*” This quote shows the importance of a CGDN displaying current information, and reinforces the belief that currency of information is possible when the website is run and maintained by passionate local community members. The Mirboo North CGDN is a unique example in this study as the site was already in existence before the bushfires occurred. This example shows the usage of a top-down scheme (CGDNs) with a bottom-up approach driven by the community.

## 8. Discussion

Top-down and bottom-up approaches both have the potential to increase community engagement allowing

community members to share information about disaster events such as bushfires.

One issue with the information being posted on SNSs is that it is generated by members of the community outside the control of government bodies (such as police, fire, emergency services and rescue units). This poses issues of reliability. National ICT Australia (NICTA) has a focus on e-government research and developing means to coordinate the dissemination of information through ICT in a coordinated means [42]. On his website, Worthington [43] discusses how official authority for the issue of safety information occurs, discussing SEWS Guidelines (Victorian State Emergency Service – Standard Emergency Warning Signal). These approaches to providing information to individuals affected by emergency disasters are the official means that community members should use for information in critical situations (e.g. evacuations). However, SNSs can provide information beyond these official statements, such as knowing where friends and relatives in your community are after the official evacuation notices have been issued.

## 9. Conclusion

This paper presented how SNSs, such as Twitter and Facebook, were used during and after the bushfires in Victoria. The findings from the research, which was conducted on CGDNs established in response to a national disaster, were that technologies such as SNSs can both add benefit to a geographic community (e.g. providing fire alerts and support networks) and have a negative impact (e.g. hate groups formed in response to the suspected arsonist). With this initial discovery, further work can be conducted to establish the extent to which these technologies can provide a service to the community beyond the traditional interactions with government bodies and the media.

In an attempt to support the communities worst affected by the 2009 Victorian bushfires, the CGDN management authority waived their policies to develop community websites by establishing and managing CSIAB (websites) on their behalf during the rebuilding phase. Some of these communities are now managing the sites themselves and these are the successful examples of this approach.

However, this top-down approach to technology usage in communities can be seen to be less beneficial than the grass-roots approaches of the SNS technologies, with limited active community usage on auCD-managed websites (where community members may view sites but are not actively putting up content), unlike the messages posted on Facebook and Twitter.

The bottom-up community approach appears to be successful when the project is championed by committed

community members. When the systems are forced upon society they do not get the traction and community support. Evidence to support this finding has been presented in this paper through the various management styles: self managed versus auCD managed.

One of the major issues that the researchers noticed was that the sites that are developed through the use of CSIAB did not function like the SNS that some of the community members are used to using and do not have the same synchronous features of allowing direct updates of content as the content in CSIAB had to go through a moderator. This approach could also be an area of further research.

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