LOCAL E-GOVERNMENT IN NEW ZEALAND: DIGITAL STRATEGY, SOCIAL INCLUSION AND LIVEABILITY

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ABSTRACT

In 2006, 98 percent of New Zealand residents lived in households with telephones - either landline or cell phone or both. In 2006 New Zealand's population was just over 4 million people. Therefore, in the order of 80,000 (2% of 4 million) did not have telephone access. If we consider that dialup access is the minimum internet standard required to be part of a digital world, these people are less likely to be served by the New Zealand government's digital strategy.

The questions addressed in this paper are: (i) What issues arise for those people who live in the margins of society when considering New Zealand Government's national digital strategy; and (ii) How does the New Zealand Government's national digital strategy address issues that arise for those people who live in the margins of society.

These issues will be explored by considering four hypothetical cases:

Psychological disability. In this case subject A, who has bipolar disorder but has the intellectual capacity, the knowledge and skills to access the internet is considered. This particular psychological disorder places A in a lower socioeconomic status as A can only work during the small personal windows of opportunity between mood swings.

Impaired intellectual ability. In this case subject B has family support, but learning disabilities, lack of life skills, and lives in the family home with financial support.

Homelessness. Subject C is considered to belong to the invisible homeless population – moving between temporary accommodation and living – but not sleeping on the street.

The elderly. Subject D has never even used an ATM, owned a cell phone, or operated a computer and lives on a pension.

These four hypothetical cases will be analysed systemically using a Sustainability to Liveability model (STLM) that incorporates core systems properties: communication, control, emergence and structure (Checkland, 1984); and four other properties: whole system, socioeconomic status, ICT access and personal coping mechanisms.

Results from this study suggest that both sustainability and liveability have different meanings for each subject studied.

Keywords: Human activity systems, e-Government, Social inclusion

INTRODUCTION

In this paper a return to core systems principles of structure, control, communication and emergence (Checkland, 1984) provides the basis for the development of a new systems model: Sustainability to Liveability model (STLM). In order to address issues for marginalised people as the New Zealand government moves to meet its digital strategy goals four additional characteristics of whole system, socioeconomic status, ICT access and personal coping mechanisms are also considered. Checkland describes structure as 'those elements in a problem situation which are either permanent or change only slowly or occasionally' (p. 317). Control is described 'as the process by means of which a whole entity retains its identity' (p. 313). Communication is described as 'the transfer of information' (p. 313) and emergence as 'properties of a whole entity that are only meaningful when attributed to the whole' (p. 314).

STML has been applied to four hypothetical cases: psychological disability, impaired intellectual ability, homelessness and the elderly to consider both sociological and information communication technology (ICT) issues that arise for marginalised people as the government moves towards its goal of 24/7 internet delivered services.

The structure of the paper is as follows: first, a sample of literature exploring (a) how ICT affects the lives of people is explored, particularly with respect to e-government services; (b) the New Zealand government's digital strategy is presented (Table 1); (c) the composition of New Zealand's marginalised population is described; and finally, (d) what the digital divide means in this context. Next, the STML model is presented. This is followed by a description of the method utilised for the hypothetical case studies presented. Findings from the application of STML to these hypothetical cases are discussed. The paper concludes by suggesting that there needs to be further consideration for the diverse ways the lives of marginalised people will be affected by a move to internet delivered government information services and democratic processes.

LITERATURE REVIEW

Bradley (2005, 2006) suggests that networked ICT has resulted in the integration and blurring of boundaries in many walks of life. She also suggests that ubiquitous ICT makes this convergence process less visible. This convergence is experienced globally, no matter where we are and what we are doing. Bradley believes that ICT can provide tools for promoting sustainability (environmental, economic, and social sustainability) but it can also be a threat for sustainability. Sustainability as a guiding principle involves system perspective, holism, human aspects, bottom up approach, common good, and equality. A change in focus regarding research and development is taking place. Analysis and design increasingly address both the work process and management connected to the sphere of production life and people's life environment.

Table 1. New Zealand Government Digital Strategy Targets (State Services Commission, (2003)

	Targets		
Strategy	June 2004 Internet main channel for government information	June 2007 Internet main deliver channel for information, services and processes	2010 Internet means of transforming operation of government
Outcome: 24/7 effective service provision	**Goal:** Information on government services available on Internet	**Goal:** Services delivered (in part) over Internet **Goal:** Traditional service delivery(counter, post, telephone, etc) enhanced by use of Internet	**Goal:** More proactive service delivery Push services to citizens (reminders, entitlements) **Goal:** Internet main service deliverer **Goal:** Range of service providers over Internet
Outcome: Integrated, customer-centred efficient services	**Goal:** Start of integrated e-government – policy, standards, technology **Goal:** Agencies more citizen-centric and results oriented in service design	**Goal:** Bundled services and frontline integration **Goal:** Back office integration advanced through use and implementation of e-government interoperability framework	**Goal:** Cross agency service integration Stand alone services the exception **Goal:** Targeted individual services More flexible service delivery **Goal:** Back office widely shared Less investment in agency-specific technology
Outcome: Participation in government	**Goal:** Internet as information provider on government	**Goal:** Increasing online participation for policy development and service delivery	**Goal:** Online participation the norm **Goal:** Open and consultative

	processes and citizen involvement **Goal:** Internet as consultation tool for policy development and service design	**Goal:** Electronic delivery of democratic processes	policy processes Customised service delivery **Goal:** Significant change in democratic and political processes

New Zealand Government Digital Strategy

For the New Zealand government's digital strategy (Table 1, State Services Commission, (2003)) there are three outcomes: (i) 24/7 effective service provision in which the internet becomes the main delivery platform; (ii) integrated customer-centric efficient services and (iii) citizen participation in government. It is the first outcome – the internet as the main service provider that is central to issues discussed in this paper. The second and third outcomes are more about the way in which government services will be delivered from a government centric point of view.

Marginalised New Zealanders

It was estimated that in 2001 (Statistics New Zealand, 2003) that approximately 1% of New Zealand's total population was reported as having intellectual disability. In the same report approximately 4% (104,500) of the adult population had a psychiatric or psychological disability. The results from the 2001 statistics New Zealand survey on disability showed that: one in five New Zealanders had a disability; disability increases with age; the majority of disabled people have more than one disability; and the number of people with disabilities living in intellectual disability units and mental health facilities has decreased.

Leggatt-Clark (2007) suggests that it is very difficult to estimate how many people are homeless in New Zealand. He also suggests that government policies do not address the complete picture of the homeless. For instance, in his report he suggests that in 2004 it was estimated that there were of the order of 1000 homeless people in Auckland. Leggatt-Cook has developed a framework that considers three classes of homeless people. These are: primary (rough sleepers), secondary (temporary or emergency accommodation) and tertiary (boarding house residents). In hypothetical case 3, an example of secondary homelessness is discussed.

In 2004, (Statistics New Zealand, 2004) New Zealand Census figures suggest that 12% of New Zealand's total population was 65 years of age or older.

It is difficult to estimate the total number of marginalised people in New Zealand, as many of these people have multiple disabilities, and may belong to more than one category. However, it can be seen that this marginalised minority is a significant number.

Internet access

In 2006, 98% of New Zealand residents (Statistics New Zealand, 2006) lived in households with telephones. It is estimated therefore that in the order of 80,000 people do not have the basic requirement for an internet connection in their home.

Digital Divide

Crang, Crosbie and Graham (2006) believe that ICT unevenly affects the pace of life for people in urban life. There is an urban digital divide: – the affluent, professional where ICT is ubiquitous; and uneven patterns of access for the underprivileged where electronic access is episodic. In the four hypothetical cases considered in this paper, there is a further class of digital divide: those who never use the internet which could be either for lack of money, preference or life priority.

Asgarkhani (2007) in exploring social inclusion and digital government considers citizens' views for digital government in enhancing public access to information at the local government level. However, Asgarkhani did not differentiate marginalised groups in this sample. Whilst Dahlberg (2007) suggests that there are strongly structured power differentials in e-society that further exclude marginalised people, both Asgarkhani and Dahlberg assume that the population is the majority who have access to the internet.

E-government and user issues for marginalised New Zealanders

Cushman and McLean (2008) suggest that e-government initiatives ignore the costs placed on users in moving to the internet as the main government service delivery platform. Cushman and Mclean also suggest that there has been no recognition of the impact or cost in attempting to include marginalised users. They also maintain that digital engagement brings both a cost and a responsibility shift to citizens of the e-society who do not necessarily have the resources or skills with which to engage with government on the internet. Letch and Carroll (2008) also suggest that online government service provision will increase social exclusion for people in the margins.

Much of the research on egovernment and older users has focussed on accessibility issues for older users (Arch, (2008); Rubaii-Barrett & Wise, (2008); Hill, Beynon-Davies, & Williams, (2008)).

In a large internet usage report (Bell, Crothers, Kripalani, Sherman, & Smith, July, 2008) on the internet in New Zealand (1120 participants) found that in this sample: 47% of users access information about government – both national and local; 33% obtain

information on government policy online; 15% looked for information about politics; 21% paid online and13% knew about the government digital strategy. This was a sample of residents or ratepayers drawn from the majority of New Zealanders in which older respondents are far less likely to be broadband users and tend to rate their ability to use the Internet far lower. Bell et al did not consider the other marginalised groups: intellectual disability; mental illness; and the homeless.

Local Government

Studies to date suggest that local government websites have a way to go in complying with the New Zealand national government digital strategy ((Dawson, 2008); (Local Government New Zealand, 2008b)). Other factors affecting the delivery of e-government services are: patchy broad brand coverage especially to rural areas; lack of local government digital strategy and vision; lack of resources to upgrade existing websites (especially for local governments in rural areas with a small population base). Larger councils are significantly more likely to have a competency framework in place for training ICT staff and to provide support for formal training at tertiary level. These reports suggest that e-government is not main stream. While there is widespread agreement that technology is important, very few local governments have formal strategies to build e-government services and ICT functionality is limited.

SUSTAINABILITY TO LIVEABILITY MODEL

As can be seen from Table 1 the move from government focussed to citizen centric strategy requires major mind shifts even for the majority of citizens. The citizen-centric perspective is mentioned only once in Table 1 (under integrated customer service). This appears to be from the point of view of providing an e-government portal that is focussed on service delivery, rather than eliciting citizen's views. In Table 2, each of the eight characteristics is further defined from both a government focussed and a citizen-centric view. No differentiation is made at the model level for marginalised people, but rather a general citizen-centric view is presented.

Table 2: Government centric (Sustainable) to Citizen centric (Liveable) e-Government services model (STLM)

Structure		***Communication***	
Govt focussed =>	**Citizen-centric**	**Govt focussed =>**	**Citizen-centric**
Rigid government imposed structure	Allow structural input from citizens (social networking facilities feeding into government)	Provide feedback loops Make information available to citizens	- Work on communication processes & relationships - Provide double feedback loops - Think about organisations as processes emerging as relationships between stakeholders develop
Control		***Emergence***	
Govt focussed =>	**Citizen-centric**	**Govt focussed =>**	**Citizen-centric**
Have policies & procedures in place for e-government services	Be aware of power differential for stakeholders between structural levels, including citizens	Have formal procedures in place to consider	- Order an emergent property of disorder - Allow new strange attractors to emerge - Like attracts like (both an advantage and a disadvantage) - Edge of chaos conducive to new patterns emerging
Role		***Whole System***	
Govt focussed =>	**Citizen-centric**	**Govt focussed =>**	**Citizen-centric**
Have clearly defined roles (& duties) for all stakeholders	Roles (& duties) should be fluid with changing times, patterns & processes includes local govt & citizens	- Well defined with a 'public face' and a well-structured private entity - Public face shown to citizens	- Honour both legitimate system & shadow system

Initial Conditions		*Flexibility*	
Govt focussed =>	**Citizen-centric**	**Govt focussed =>**	**Citizen-centric**
Set by senior managers	Look carefully & sensitively for small changes in initial conditions for all stakeholders	Within the bounds of clearly defined structure, roles & processes	- Consider whole system as a complex evolving system - Most flexibility & more opportunities for change on edge of chaos - Emphasis creativity & change

METHOD

For this study, a model based on Checkland's (1984) core systems properties has been developed as shown above in Table 2 (STML). This model also considers the role that people play within the system being considered. From complexity theory (Benbya & McKelvey, 2006; McCarthy, 2003; Stacey, 1996) comes consideration of initial conditions and the importance of small changes. This systemic study adopts a flexible and adaptable whole systems approach in looking for ways to move forward for marginalised people in New Zealand when considering their position in an ever-increasing digital divide.

Research Questions

The questions addressed in this paper are: (i) What issues arise for those people who live in the margins of society when considering New Zealand Government's national digital strategy; and (ii) How does the New Zealand Government's national digital strategy address issues that arise for those people who live in the margins of society.

These issues will be explored by considering four hypothetical cases:

1. Psychological disability. In this case subject A, who has bipolar disorder but has the intellectual capacity, the knowledge and skills to access the internet is considered. This particular psychological disorder places A in a lower socioeconomic status as A can only work during the small personal windows of opportunity between mood swings.
2. Impaired intellectual ability. In this case subject B has family support, but learning disabilities, lack of life skills, and lives in the family home with financial support.

3. Homelessness. Subject C is considered to belong to the invisible homeless population – moving between temporary accommodation and living – but not sleeping on the street.
4. The elderly. Subject D has never even used an ATM, owned a cell phone, or operated a computer and lives on a pension.

These four hypothetical cases have been analysed systemically using STLM (Table 2, Table 3) that incorporates core systems properties: communication, control, emergence and structure (Checkland, 1984); and four other properties: whole system, socioeconomic status, ICT access and personal coping mechanisms.

Case 1 Psychological disability

Subject A is a person with multiple disabilities. She has bipolar disorder, which means that she is subject to emotional mood swings that make it difficult for her to maintain a healthy work life balance. Her mood swings tend to alienate others. Subject A also has a physical disability that affects her mobility. Her mental disorder has meant that it is difficult for her to work full time which in turn places her in a lower socio-economic bracket. Subject A is very intelligent and in the times when her moods are stable, she has the ability, the motivation and the skills to work, study and access the internet. Her lower socioeconomic status means that she does not always have the financial to support internet access. Her mood swings mean that there are times in her life when she is not able to communicate with others by whatever means.

Case 2 Intellectual impairment

Subject B lives at home and has the support of his elderly parents. B has a wide cross section of learning disabilities and does not have the ability to remember details from one learning session to the next. B has limited living skills and requires his parents' help for daily living requirements. B is supported financially by a government pension and his parents' carers-allowance.

Case 3 Homelessness

Subject C is considered to belong to the invisible homeless population of New Zealand, moving between temporary accommodation and living but not sleeping on the street. Subject C has little or no access to the internet. If he wanted, he could pay for online access at an internet café. Because C is not a resident or a ratepayer, taking an interest in local politics is not a priority for him. He can and does use the public telephone system. In New Zealand, there are about 4000 public telephones and there were 12 million public phone calls made in 2008. The busiest payphones are outside prisons, in city central business districts, and at Auckland airport. Public phone users pay a surcharge on each call.

For New Zealand's homeless, the main priority each day is finding the necessities for living. Homelessness is often accompanied by other problems, such as mental and intellectual impairment, and substance abuse.

Subject C has been homeless for five years since being discharged from prison. He has been unable to find work, and so has existed through his prison contacts, making the most of living opportunities as they present themselves.

Case 4 The Elderly

Subject D lives in her own home in an Auckland suburb. She has never used a bank automatic teller machine, has never owned a computer nor has she used or owned a cell phone. She has a landline phone at home, uses local public transport and pays all her bills in cash which she withdraws from her government pension at the bank counter with a savings pass book. Notably, the main technological aid she has is a St Johns medical alarm linked directly to the St John Ambulance Communications Centre.

D only uses the local library to pay her local government rates bill. She does not have a council library card. If she did have a library card she would have free access to the internet. Her preferred means of communicating with government agencies is to talk face-to-face. If she can't do that she phones. She has seen many changes to government services, both local and national and has a wealth of knowledge to share.

Contributing to Government structure

Case 1

In analysing the position of someone with such disabilities, it can be seen from Table 3 that in this case, it is possible for subject A to provide input into government processes via the internet – only when she is a stable mental state, and when she has the money to do so. These may only be small personal windows in her life when access is possible.

Case 2

Neither B nor his parents interact with government online. B's father emails family and friends and uses online auction sites to trade in second hand sporting goods.
In the family unit that revolves around caring for B, interacting with government is not a priority.

Case 3

For subject 3 accessing information about government processes, relationships and structures is not a priority. If subject C was willing to contribute to government processes, the only way that would be possible online is via free public access. For the homeless, many of them have diverse alternate views on government processes and structures.

Case 4
It would seem that the best way to move forward to include the elderly in the national digital strategy would be for government agencies to approach older people and invite them to participate directly. The push to have the internet as the main delivery platform for information processes and services is further marginalising the elderly.

Communication – processes, feedback and relationships
Case 1
Subject A would definitely benefit from double feedback loops for communicating to and contributing to government processes, receive feedback and form relationships. The main risk factor for subject A is that if she interacts with government agencies during a mentally unstable phase of her disorder, she is likely to offend government employees. It is difficult for people who have never experienced mental illness to understand such emotional and psychological states. In many cases, it is these people who are most in need of government processes, services and information.

Case 2
Feedback between the family and government agencies does not occur online.

Case 3
For subject 3 accessing information about government processes, relationships and structures is not a priority. He rarely accesses the internet and has other priorities if he has any money. With no free public access, nor a mindset in which such activities are a priority, this is not likely to happen.

Case 4
For subject D accessing information about government processes, relationships and structures is not a priority. If D wishes to contact a government agency, she has her own traditional ways of doing this.

Control – power differentials
Case 1
For the four cases considered it is subject A who is most likely to be aware of the power differentials that exist between government agencies and those who exist in the margins of society. In her case, subject A has the intelligence, small personal windows of opportunity, but not always the money required to access the internet, to addresses issues relating to power differentials.

Case 2
B's father is aware of the power differentials between the family unit and government agencies and the directions that the government's digital strategy is taking (Table 1), but

he feels that he is powerless to provide and input into the process. B's father is frustrated by the government's lack of hands-on assistance in caring for his son.

Case 3
Subject C is aware of the power differentials between government agencies and his homeless state, and in the main avoids any contact with officialdom. The only exception is the Auckland City Mission where he queues for night shelter when he can find nowhere else to sleep.

Case 4
Subject D is aware of power differentials and has long accepted the case that this is the ways things are. She is not likely to voice an opinion about this.

Emergence, order, strange attractors and the edge of chaos
Case 1
The most important issue that emerges for subject A is the need for her to be able to utilise her small windows of opportunity when she is in a stable mental state. During these times, she is capable of providing valuable insights to government agencies via the internet. Because of her physical disability that restricts her mobility, this is her preferred means of interaction. The main benefit for her is to have sufficient funds to have a continuous effective internet subscription.

Case 2
B's father would benefit from government assistance, training in the use of e-government portals and how to access the necessary information and services required for caring for someone with intellectual and learning disabilities.

Case 3
The service that would benefit him most would be to have free internet access at the night shelters in the central business district.

Case 4
For subject D, a social outing, a contribution to her wellbeing that enhances her liveability, is the daily outing to the local shopping centre where she conducts her day-to-day activities – shopping, socialising, visiting the local bowls clubs and interacting with local government counter staff. An emergent property of online government services would mean that she was further socially isolated.

Roles
Case 1
Subject A is very aware of her role in society, and is frustrated in having an intellect trapped in a body that is both physically and mentally impaired, knowing that she should

only interact with government agencies in her stable times. Government agencies have their own agendas and timetables that do not always coincide with her personal windows of opportunity.

Case 2
It is evident that this family has taken on the primary caring role for their intellectually handicapped son, and that access, training and support via the internet would be beneficial.

Case 3
Subject C has 'opted out' of main stream society and at present does not feel the need to re-enter main stream society. C does not pay rent or rates, does not have access to public library services and spends each day making the most of the opportunity that can be found on the street and wherever temporary accommodation appears.

Case 4
Subject D lives in a world that is much smaller than most. She has redefined her world so that she can live comfortably in the bounds that have been in place for many years. She does not feel the need to go online, receive government services at home, or pay bills at home.

Whole System

For all four cases it is important to consult widely and to explicitly elicit the views of those who are both socially and digitally excluded. It is not sufficient to expect marginalised people to consult with government in the traditional manner.

Initial conditions and small changes
The setting of flexible and marginal-group specific initial conditions for involvement in e-government is very important. With the present direction taken for New Zealand's digital strategy, this is not taking place. A solely government-focussed approach has been adopted.

Table 3. Hypothetical case positioning on STML Citizen-centric

Structure – structural input	***Communication – processes and relationships, double feedback loops***
Case 1: possible in small personal windows Case 2: not possible – intellectual impairment Case 3: no access to internet Case 4: possible through library access	Case 1: would benefit by double feedback loops Case 2: low possibility - intellectual impairment Case 3: no mechanism for receiving feedback Case 4: receives feedback in traditional manner – no internet at home
Control – power differentials	***Emergence, order & attractors and edge of chaos***
Case 1: aware – no $ to act Case 2: not aware Case 3: awareness not a priority Case 4: aware – not a preference	Case 1: capture opportunities from small windows Case 2: educate family and carers Case 3: free internet at shelters Case 4: training and access in public libraries
Roles – citizen input	***Whole System – legitimate & shadow***
Case 1: aware – small personal window to act Case 2: not aware Case 3: not a priority Case 4: has own way for input (not internet)	Cases 1 - 4: consult widely and go to the socially and digitally excluded – not just expect them to consult in the normal manner
Initial Conditions & small changes	***Flexibility, evolving system & creativity***
Cases 1 - 4: allow input in from all these not just via internet. Consider all cases not just the majority with digital access	Case 1: capture creativity in small personal windows Case 2: provide opportunities for family and carers Case 3: honour homeless as citizens – not just as a housing problem Case 4: tap into the wisdom of the elderly with their own transliteracy patterns

Flexibility, evolving systems and creativity

Case 1

It is evident in considering Case 1 that more flexibility in using the internet for 24/7 access for processes, services and information would mean that she would be able to access e-government portals when she was able – with the proviso that she could afford to do this. This would allow A to capture the creativity available in small personal windows of opportunity.

Case 2

In the case of the intellectually disabled, families and carers are often the ones for whom flexible delivery of services would be of benefit. Training, ICT infrastructure provision and greater access possibilities would all be of benefit.

Case 3

When the homeless are viewed by government as an integral part of society, and not just a housing problem, they are more likely to be included in a national digital strategy. At present, marginalised people do not appeared to be considered. While the homeless are focussed on the necessities of daily living, they are not likely to contribute to or have need of e-government services.

Case 4

The elderly often have their own well-developed means of interacting with government. With the collective wisdom in this group, it is important to keep as many communication channels open as possible.

DISCUSSION

It is evident from this hypothetical study that there are diverse issues for marginalised people, and each type of marginalisation has its own set of issues. This is best viewed as a rich and complex problem space that is yet to be explored. Strategising and implementing a national digital strategy for e-government without considering marginalised people is likely to reinforce both social and digital exclusion. In a similar study Letch and Carroll (2008) discovered that adoption of e-government processes and services resulted in less flexibility in the delivery of services to marginalised people who needed greater flexibility rather than less.

Rather than exploring a limited number of solutions for marginalised people as the New Zealand government moves to internet-based services, it is more appropriate to consider the rich and complex problem space that has yet to investigated. Whilst there may be unintended consequences for marginalised people, inviting representatives from a variety of marginalised groups into the problem space and inclusive government initiatives taken out to these groups could provide valuable input into the move to 24/7 internet delivered

government services, information and processes. The major obstacle to such initiatives appears to be a government focussed view of services pushed out to the general population with little consideration for those who are marginalised.

CONCLUSION

Results from this study suggest that both sustainability and liveability have different meanings for each subject studied. There is a complex array of issues that arise for marginalised people that do not appear to have been considered at the planning stage in meeting the New Zealand's national government digital strategy. In the four hypothetical cases considered it can be seen that for some, there would be further social exclusion thus degrading existing liveability standards. As Letch and Carroll (2008) indicate, e-government systems can reduce flexibility in over-the-counter services, and it is this very flexibility that is required for marginalised people. By going back to core systems properties, a clearer - and more pragmatic – view of the issues faced by marginalised people can be obtained.

REFERENCES

Arch, A. (2008). *Web Accessibility for Older Users: A Literature Review.* Web Accessibility Initiative: Ageing Education and Harmonisation (WAI-AGE) European Commission Project, 6th Framework, IST 035015 Retrieved 26 May, 2008, from http://www.w3.org/TR/2008/WD-wai-age-literature-20080514/

Asgarkhani, M. (2007). The Reality of Social Inclusion Through Digital Government. *Journal of Technology in Human Services, 25*(1/2), 127-146.

Bell, A., Crothers, I., Kripalani, K., Sherman, K., & Smith, P. (July, 2008). *The internet in New Zealand 2007: Final report.* Auckland: Institute of Culture, Discourse and Communication, AUT University (Auckland, NZ).

Benbya, H., & McKelvey, B. (2006). Toward a complexity theory of information systems development. *Information Technology & People, 19*(1), 12-34.

Bradley, G. (2005). Towards Global Villages - Networks in action. Proceedings of the CIRN conference on Sustainability and Community Technology: What does this mean for Community Informatics? Monash Centre, Prato, Italy, September 29 - October 1, 2004.

Bradley G**.** (2006). *Social and community informatics – Humans on the net.* London/NY: Routledge .

Checkland, P. (1984). *Systems thinking, systems practice.* Great Britain: John Wiley & Sons Ltd.

Crang, M., Crosbie, T., & Graham, S. (2006). Variable Geometries of Connection: Urban Digital Divides and the Uses of Information Technology. *Urban Studies, 43*(13), 2551-2570.

Cushman, M., & McLean, R. (2008). Exclusion, inclusion and changing the face of information systems research *Information Technology & People, 21*(3), 8.

Dahlberg, L. (2007). "Do-it yourself" Digital Citizenship: A preliminary interrogation. *New Zealand Sociology, 222*(1), 104-222.

Dawson, J. (2008). *An Assessment of Web Standards for New Zealand Council Website Homepages*. Retrieved 8/10/08. from http://www.algim.org.nz/site/Seminars/2008Web_Symposium.aspx.

Hill, R., Beynon-Davies, P., & Williams, M. D. (2008). Older people and internet engagement. Acknowledging social moderators of internet adoption, access and use. *Information Technology & People, 21*(3), 22.

Legatt-Clark, C. (2007). *Homelessness in New Zealand: A discussion and synthesis of research findings*: Methodist Mission Northern.

Letch, N., & Carroll, J. (2008). Excluded again: implications of integrated e-government systems for those at the margins. *Information Technology & People, 21*(3), 16.

Local Government New Zealand. (2008a). *Benchmarking New Zealand local e-government initiatives 2007 - 2008*. Retrieved 8/10/08. from http://www.lgnz.co.nz/library/files/store_020/BenchmarkingReport_e_government.pdf.

Local Government New Zealand. (2008b). *Councils in the Digital Age - A progress report on local government initiatives relating to the Digital Strategy.* Retrieved 26/5, 2008, from http://library.lgnz.co.nz/cgi-bin/koha/opac-detail.pl?bib=3873

McCarthy, D. (2003). *Complex Systems Thinking: Principles for research and intervention.* Paper presented at the Workshop on Complex Systems Approaches to Sustainable Research and Education, British Columbia.

Rubaii-Barrett, N., & Wise, L. R. (2008). Disability Access and E-Government: An Empirical Analysis of State Practices. *Journal of Disability Policy Studies, 19*(1), 52-64.

Stacey,R.(1996): *Strategic Management and Organizational Dynamics*, 2nd Ed, Pitman, Great Britain.

State Services Commission. (2003). *E-Government Strategy*. Retrieved 16/3/09. from www.e.govt.nz/docs/e-gov-strategy-june-2003.

Statistics New Zealand. (2003). *A portrait of health: Key results of the 2002/2003 health survey*. Retrieved 20/10/08 from http://www.stats.govt.nz/datasets/health/health-statistics.htm.

Statistics New Zealand. (2004). *Older New Zealanders – 65 and Beyond*. Retrieved 29/5/08 from http://www.stats.govt.nz/NR/rdonlyres/CF82C033-BE57-49E4-8F43-ECCDED9B30ED/0/OlderNZrs2004.pdf.

Statistics New Zealand. (2006). *Access to telecommunications systems* Retrieved 22/5/08 from http://www.stats.govt.nz/census/2006-census-data/classification-counts/about-households-families-dwellings/access-to-telecommunication-systems.htm.