



**Innovation, Collaboration and New Zealand Public Sector
ICT Middle Managers**

by

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Abstract

The case study explores the relationship New Zealand public sector information and communication technology (ICT) middle managers have with innovation and collaboration in relation to an all-of-government ICT strategy. Middle managers are key to implementing ICT strategy, innovation is a stated expectation and collaboration is a critical enabler. The study identified that awareness of the ICT strategy amongst middle managers was lower than desirable, although slightly higher from core public sector managers mandated to follow the strategy. There was not a consistent sense of what innovation is, although managers indicate they are engaging in innovations to quite a high degree. There is a very limited range of stakeholders collaborated with; primarily other agencies, consultants and vendors. This may inhibit potential for innovation that could come from wider engagement. Agencies are exhibiting a narrow view of collaboration and appear reluctant to share resources. Middle managers engage in collaboration and networking within their sector, and appreciate assistance provided by the Government Chief Information Officer, however they also note there is little support provided to collaborate. They would like more forums, facilitators, tools, and policies that support collaboration and systems thinking. The most significant factor empowering middle managers to innovate was the support of their senior manager; however lack of senior manager support was also noted as a significant issue. Primary barriers to innovation were workload and budget, leadership thinking, internal governance mechanisms and risk aversion.

Preface

Thanks to my husband Danny Kerton and children Eva and Edward, for their patience and support.

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Introduction

The case study explores the relationship New Zealand (NZ) public sector information and communication technology (ICT) middle managers have with innovation and collaboration in delivering to an all-of-government ICT strategy. This was done by undertaking a review of the literature, surveying middle managers and interviewing senior managers. Middle managers are key to implementing ICT strategy and to delivering innovation, and collaboration is a critical enabler. Barriers and enablers to collaboration and innovation are examined in the context of the NZ public sector.

Internationally there has been a drive to do ‘better with less’, with a demand by governments for innovative responses to challenges. Expectations of the NZ state sector have increased, both by government and public at a time when resources have diminished. The NZ government’s response to a more demanding environment has been evident in a variety of ways, one of which was to develop ‘Better Public Services’ in 2012. This was quickly followed by ‘Result Areas’ to foster a whole of government strategic approach, which has in part a focus on using technology to support innovative approaches for businesses and consumers (State Services Commission, 2014b). Better Public Services was also followed in 2013 by the all-of-government *ICT Strategy to 2017*, with a Government CIO (GCIO) as the functional leader (Department of Internal Affairs, 2013b)¹. The ICT Strategy and associated roadmap is significant in enabling achievement of the Result Areas and supporting innovation, particularly for Result 9 and 10. The GCIO’s mandate “applies to all Public and non-Public service departments as well as ACC, EQC, HCNZ, NZTA, NZTE, NZQA, TEC and District Health Boards. Other state sector agencies are also participating in many of the initiatives he is leading” (Department of Internal Affairs, 2014b)². Wider state sector collaboration is encouraged, but is voluntary (State Services Commission, 2013).

An analysis of where ‘innovation’ appears in the ICT Strategy can be seen in Appendix 1, it reveals that it is predominantly mentioned within the ‘leadership and culture change’ theme (Department of Internal Affairs, 2013b). Challenges for the implementation and adoption of technologies are often not technical but strongly related to organisational, political and

¹ The *Strategy and Action Plan* are referred to as the ICT Strategy in this paper.

² ACC – Accident Compensation Corporation, EQC – Earthquake Commission, HCNZ – Housing New Zealand Corporation, NZTA – New Zealand Transport Agency, NZTE – New Zealand Trade and Enterprise, NZQA – New Zealand Qualification Authority, TEC – Tertiary Education Commission.

cultural issues. A review of the literature on public sector innovation makes it clear that collaboration is a critical component in supporting innovation; therefore it is unsurprising that collaboration is specified in the ICT Strategy as key to supporting change. The significant role of middle managers in supporting both the development and implementation of innovations and delivery to strategy is strongly reinforced from a review of the literature. However a 2014 report on how managers are collaborating to meet Better Public Services published by the NZ State Services Commission noted that more collaboration was required, especially by middle managers where the level of collaboration was not as great as it could be (SenateSHJ, 2014). However the SenateSHJ report did not specifically focus on ICT managers and was only focused on the core public sector.

A lack of collaboration could significantly impair the NZ public sectors ability to deliver technological innovations that support Better Public Services. In considering the management level ICT staff sit at, all managers reporting into the Chief Information Officer, Chief Technical Officer or equivalent, are at middle management level (Sellitto, 2012). Therefore it is timely to see if middle managers in the NZ ICT public sector are collaborating to initiate and deliver innovation, and what the barriers and enablers to this are.

To explore this innovation is defined, why it is important to the public sector and why collaboration is also important. This is followed by the role middle managers have in collaborating and initiating innovation. To assess the current state five senior managers at Chief Information Officer (CIO) level and above were invited to be interviewed to gain their perspective on innovation and collaboration. Middle managers were also surveyed to examine their awareness of the ICT Strategy, the level of collaboration and innovation they are engaged in, and what they considered the barriers and enablers were.

Review of the Literature

Defining Innovation

The ability of an agency to create the conditions and apply the resources required to enable and support innovation is critical. Opportunities for innovation frequently come from exploiting advances provided by technology (Micheli, Schoeman, Baxter & Goffin, 2012; Australian National Audit Office, 2009). “Technology can be used to initiate, stimulate or develop changes within government. As a result, ICT nowadays often functions as a catalyst for innovation” (Duivenbode & Thanos, 2008, p.214). O’Leary (2014, p.5) notes that “Technology is helping public organisations and personnel share information in a way that is integrative and interoperable, with the outcome being a greater emphasis on collaboration”. It is because of the advances in information technology that new business models supporting innovation have become possible (Lee, Olson & Trimi, 2012). Therefore technology can be both an enabler and deliverer of innovation, improving capabilities and producing value for organisations and stakeholders (Hanna, 2011; Jiao, Alon, & Cui, 2011). There are different types of innovation; administrative and technical, product and process, and radical and incremental (AL-Hakim, Hassan, 2011). Government adoption of radical innovations would generally be driven by top management; however most innovations are incremental and driven from the middle and centre (Hollanders, Arundel, Buligescu, Peter, Roman & Simmonds, 2013).

However “the conventional wisdom regarding the public sector is that innovation is a virtual oxymoron” (Borins, 2002). The term ‘innovation’ is overused, making it almost impossible to use it effectively, as it is often applied to any organisational change (Kattel, Cepilovs, Dreschler, Kalvet, Lember & Tonurist, 2013). The Department of Internal Affairs internal review of its Open Door to Innovation initiative, designed to help information technology businesses sell bright ideas to the public sector, also noted the need to define innovation to better manage expectations (Department of Internal Affairs, 2012). Although innovation has been defined in different ways, for the purpose of this case study it is defined as “the creation and implementation of new processes, products, services and methods of delivery which result in significant improvements in outcomes’ efficiency, effectiveness or quality of outcomes” (Albury, 2005, p. 51).

This case study has a focus on technological innovation; however it is necessary to understand the culture, behaviours and leadership that is required to support innovation in the public

sector, as technological innovations happen within that environment. Public sector ICT occurs within a complex and diverse political context (Hackney, Desouza & Chau, 2008).

Why Innovation is Important for the Public Sector

Internationally there has been a drive to 'do more with less' in the public sector. The Australian National Audit Office report on innovation in the public sector states, "Enhancing public sector performance is a key goal of government around the world. Innovation in the public sector ... is a necessary element in public services becoming more targeted, more responsive to community needs and more efficient" (2009, p.111). Following the global recession there has been a demand for innovative responses to challenges (Macmillan, Gordan, Valliquette, Garven, Mitchell, & Ledwell, 2011). Demand increased from 2005, as did the requirement for e-government services, reflected by an ever increasing focus on internal problem solving capabilities. Recently 'more with less' has evolved to 'better with less' (Roberts, 2014). The economic crisis has placed a greater emphasis on technological innovation to increase both efficiency and effectiveness of the public sector, to do new things or existing things better and more cheaply, and to drive continuous improvement in design and delivery (Micheli et al, 2012; León, Simmonds & Roman, 2012). "We are living in times characterized by high levels of interdependence, complexity and uncertainty with great challenges ahead but also many new opportunities offered by the rapid advancements in technological innovations" (United Nations Department of Economic and Social Affairs, 2014, p. 92). A review of innovation in the European public sector noted three primary drivers to innovation; political ambition, public demand (including from non-government agencies and business) and shrinking resources (León et al, 2012).

New Zealand's expectations of the state sector have also increased, both by government and public at a time when resources have shrunk (State Services Commission, 2013b). The public sector generally accounts for approximately one-third to one-half of all economic activity (Potts, 2009). It is unsurprising that the New Zealand Treasury states there is "an important and potentially quite active role for government to create the best conditions for innovation" (Lewis, 2008, p.6). However as Potts points out, there is a "systematic trade-off in the public sector between the static efficiency of minimizing the misuse of public resources and the dynamic efficiency of experimentation" (2009, p. 34). This makes innovation in the public sector particularly difficult. An assessment undertaken by the Organisation for Economic and Co-operation and Development (OECD) of New Zealand's strengths and weaknesses discovered that there was a "fragmented system of government support" in relation to

innovation, making it difficult to allocate public resources in a strategic manner, potentially resulting in wasteful duplication of effort (Hutschenreiter, Barber, & Bell, 2007, p.14). A systemic approach to innovation with clear overarching strategy was indicated as being of value, fostering “coherence and cooperation” (p. 18). The need for overarching government strategy to enable employees to recognise that new change is consistent with the needs of their workplace is endorsed by Lee, Hwang & Choi (2012) in their research on open innovation in the public sector.

How did the NZ government respond to these challenges?

New Zealand Government Strategy and Innovation

The State responded to challenges posed by the economic and social environment with a number of measures. The Prime Minister, John Key, launched ‘Better Public Services’ calling for “a public sector that embraces innovation” noting that the impact of proposed changes would “require amendments to the State Sector Act and the Public Finance Act” (Key, 2012).

The State Sector and Public Finance Reform Bill proposed changes which were subsequently implemented, one of which was “to support functional leadership, by expanding the purposes for which a whole-of-government direction can be... to adopt common ICT capabilities and other initiatives within the *Strategy and Action Plan*. This wider uptake will deliver further economies of scale and enhance system benefits” (Department of Internal Affairs, n.d.).

The change in state sector legislation supported an all-of-government approach, creating an environment which better enabled government to direct state sector agencies as part of a drive to support transformational change. For instance, “there is now an increased focus for Crown Entities to work across boundaries in the collective interests of government. Using a whole-of-government approach to providing system-wide orders has been strengthened, and will continue to be a lever. But most collaboration will be expected without being directed” (State Services Commission, 2013c). However voluntary compliance relies on adequate knowledge, a belief that it is advantageous to comply, and adequate resource in order to do so (Weaver, 2014).

In 2013 under the banner of Better Public Services the government set up 10 challenging ‘Result’ across five areas for the public sector to achieve over a five year period. The Result areas that particularly involve ICT are 9 and 10, with the intent to improve interaction with government (State Services Commission, 2013b).

Result 9 outlines that NZ businesses have a one-stop online shop for all government advice and support they need to run and grow their business. The Result areas are agency collaborations, with the Ministry of Business, Innovation and Employment acting as the lead agency for Result 9. “The Better Public Services Result 9 programme is a collaborative effort by government agencies to deliver better public services for business. A key focus for this result area is using technology to support continuous innovation and improvement” (State Services Commission, 2014a).

Result 10 supports New Zealanders completing transactions with government easily in a digital environment. Result 10 has the Department of Internal Affairs as the lead agency. Result 10 articulates that there will be a “culture of digital innovation” (Department of Internal Affairs, 2014c, p.7). Appendix 3 contains excerpts related to innovation under Result areas 9 and 10.

Further evidence of a changing environment can be seen by the NZ government accepting an invitation in 2013 to join the Open Government Partnership (OGP) (State Services Commission, 2014b). The OGP is a forum of countries working to ensure that member governments are more open, accountable and responsive to citizens. Two of the three key pillars to NZ’s Action Plan under the OGP are Better Public Services (Result 10) the ICT Strategy and Action Plan, the third relates to anti-corruption efforts (Macaulay, 2014).

A Cabinet paper makes it clear that the *ICT Strategy to 2017* supports Better Public Services Result 9 and 10 by “accelerating transformative change through the use of information and technology” (New Zealand Cabinet, 2013, p. 1). These strategies support the overarching vision noted as desirable in the OECD report on the NZ innovation system (Hutschenreiter et al, 2007).

There are four key interrelated themes in the *ICT Strategy*:

- Services are digital by default
- Information is managed as an asset
- Investment and capability are shared, and
- Leadership and culture deliver change

Innovation, although not defined, is specifically referred to in two of these areas; ‘information is managed as an asset’, and ‘leadership and culture deliver change’. However three of the four references to innovation sit under the leadership and culture area. In the work done on

the Result areas by the Better Public Services Advisory Group, references to innovation primarily appear in the context of leadership (see Appendix 2). ‘Information is managed as an asset’ is associated with making government-held data and information more widely available and discoverable, for use and re-use (Department of Internal Affairs, 2011). Although information and data are valuable as an input to innovation, the primary focus is on leadership and culture to deliver innovations. A United Nation report on e-government (2013, p. 12) notes that “addressing e-government challenges is often dependent on the national capacity for change and innovation, which itself largely determines the success of e-government goals”; the focus on leadership is unsurprising.

As the functional leader of government ICT, the Government Chief Information Officer (GCIO) sets expectations with agencies based on an overview of their needs and business plans. The GCIO’s mandate is “to provide system-wide assurance and give the public, Ministers, and other stakeholders greater confidence that ICT risks and processes within the State services are identified and managed effectively” (Department of Internal Affairs, 2103a).

The ICT Strategy makes it clear that change needs to be “delivered collaboratively, with delegated decision rights and clear accountabilities that connect at a system level” (Department of Internal Affairs, 2013b, p.7). Information leadership is to be evident across government and across a range of staff at different levels. The commonality of this approach is evident in a report on innovation in the European public sector which acknowledges that innovation can arise across an agency from all levels (Hollanders et al, 2013).

New Zealand’s approach towards dispersed information leadership to deliver innovation resonates with those of many countries where innovative technology is seen as a way to better support the economy and deliver social gains. Connections and collaboration, including outside of agencies, are seen as critical (León et al, 2012). Given the importance of leadership and culture it is worth exploring the relationship between these and innovation.

Leadership, Culture and Innovation

Technological innovation is “a highly politicized process” (Peled, 2001, p. 202). Innovation is greatly impacted by organisational culture, including perceptions of barriers to innovation, attitudes to risk and change, and incentive structures (Kattel et al, 2013). Recent changes in the state sector and increasing expectations for realising innovation have been happening against a back-drop of mergers and restructurings. Restructuring in the New Zealand public

sector is high compared to other countries. Norman and Gill note that “whereas much of the restructuring of the 1980s and 1990s was to disaggregate larger organisation, the trend since 2008 has been to bring them back together” (2011, p. 5). The risk is that the focus of staff can be more on personal survival than on wider state sector gains. Frequent restructuring has been identified as one of the major barriers to effective cross-agency work (Eppel, Gill, Lips and Ryan, 2008). However Victoria University academic, Bill Ryan noted that “judicious mergers” made more sense (Northcott, 2012, p.6). Maddock (2006) suggests that innovative leaders are focused on developing and working with staff, and far less on restructuring, but these behaviours are not necessarily rewarded. Grant Thornton (2012) noted that the focus of government appears to be on structural change, with mergers and de-mergers and centralisation of ICT systems, but that this kind of change is not enough to drive innovative thinking.

One of the key drivers to innovate has been noted as internal problems within an agency. There may be conscious innovation which is a goal driven deliberate process, or unconscious innovation which arises frequently due to discontent with current ways of working (León et al, 2012). Most public sector innovations arise due to an awareness of a problem that needs to be resolved (Stone, 2014). Radical organisational change can potentially support innovation as it can drive a need for new technological, service and organisational innovations and innovative practices can come out of a turbulent environment (Pekkarién, Hennala, Harmaakorpi & Tura, 2011). Innovation can also come from an individual desire to act, for reasons such as solving a problem, and not related to external pressures or rewards (Rosenblatt, 2011). That this can be seen in the New Zealand environment in relation to driving innovations is evident with the development of ‘as a service’ cloud-based solutions, such as enterprise content management (ECM). ECM was led primarily by the agencies that had an immediate requirement to find a way to deliver unified system solutions that became critical following merger (Department of Internal Affairs, 2013a). It is evident that barriers and drivers to innovation are complex and, depending on circumstances, barriers can also be enablers.

Cultural and leadership aspects tend to dominate in terms of barriers to innovation (Hollanders et al, 2013). Leadership style within the public sector in general, not specific to New Zealand, is described as being of two major types (Maddock, 2006):

1. Technical system leadership which is transactional focused, and which looks for system solutions.

2. Adaptive or transformational leadership, which looks to involve people in collaborative work to deliver better long-term outcomes.

The ICT Strategy takes a strong system perspective, and also clearly acknowledges the role of collaboration. This is evident in the United Nations 2014 e-government survey where it says of New Zealand, “collaboration among departments, supported by strong leadership in the form of a Government Chief Information Officer, is seen as crucial to moving transactional services online and has been a central plank in the national plan to transform public sector ICT” (p. 50).

The predominant model in most of Europe is a ‘top-down approach’ to innovation whereas in the UK and Netherlands a ‘bottom-up’ approach has become more popular. The bottom-up approach is seen as having more of a disruptive impact; taking a more advanced perspective to innovation and is indicative of a country where innovation is already well supported (León et al, 2012). Hanna (2011, p.241) describes the difference between what he describes as push vs pull programmes, “push programmes...ensure the right people and resources are available at the right time and place using scripted processes and standardized applications”. He notes that they have their place and have dominated development and policy, however pull techniques cover “open innovation, pull or collaborative platforms, cross-sector and cross-institutional partnerships, and leveraging change agents”. The top-down ‘push’ approach is evident in initiatives currently outlined on the government ICT website; however the ICT Strategy appears to have a goal of achieving a bottom-up ‘pull’ approach as well, with its drive to support collaboration, delegated decision rights and information leadership occurring at all levels. The concept of delegated decision-making is supported by Professor Banks, Dean of the Australia and New Zealand School of Government (2013), who notes that innovative ideas are as likely to originate at the bottom of the organisation as at the top. Supporting this is challenging for agencies that tend to be hierarchical, with innovation driven from the top-down (Rosenblatt, 2011).

The ECM example mentioned earlier is an example of *technical system leadership*, driven primarily from the top, although middle managers were closely involved in leading its delivery. *Transformative leadership* includes the ability to foster dispersed leadership (Maddock, 2006; Orazi, Turrini & Valotti, 2013). Given the complexity in organisations a collective or distributed model of leadership is the most appropriate model to foster innovation (León et al, 2012). Choi and Chang (2009) emphasise the need for innovation to be supported by both institutional factors and processes involving employees. Consequently

both top-down and bottom-up approaches working together creates an environment in which innovation can flourish and be effectively implemented. This reinforces the approach taken within the ICT Strategy of collaboration and delegated decision-making.

Nauta and Kasbergen note that “the top of the organization formulates the innovation agenda” and that it needs to “create the space for the willing (2009, p. 18). Grant Thornton suggested that the following is required:

- clear leadership
- creativity that is recognised and rewarded
- implementation of innovation processes with people and resources to drive change, and
- communication to the public about economic and social benefits.

It is also important to note that innovation is a process that goes through different phases, and that it is characterised by flows of knowledge and market transactions between actors such as:

- Small and large firms
- End-users
- Government bodies
- Regulatory bodies
- Universities and research institutes

“A country’s technological infrastructure consists of those institutions – universities, other institutes of higher and further education, public research institutes and laboratories, commercial laboratories, technological consultancies, professional bodies, etc. – which supply research results, undertake contract R&D and provide advice on science, technology and engineering to firms” (Hutschenreiter et al, 2007, p. 203.). However leadership in partnership settings can be very challenging due to the diversity of culture (Tarplett, 2010). Hanna (2011) notes that non-government organisations (NGO’s) and individuals have become key in influencing governments and supporting bottom-up development. However in some circumstances a hierarchical approach may exacerbate risk, with most technology failure in government showing evidence of “fragmented approaches that missed key enablers, operated within separate bureaucratic domains, and ignore synergies for sustained transformation and ecosystems for sustained innovation” (Hanna, 2011, p. 253).

Tizard (2012, p.82) notes the “paradigm shift in the relationship between the business, public, social and third sectors” and that this will require more effective collaboration, and “a willingness to cede and share power and resources (people, finance, information and assets)

(p. 187). The SenateSHJ report notes that “shared responsibility and integrated funding are key”, however this approach tends to be project based rather than way of operating (2014, p.10).

A 2013 State Services Commission case study, *Designing and Growing Innovation Capability*, noted the need for senior managers to support enduring organisational capability to innovate by setting aside resources to enable this. The case study revealed that Inland Revenue (IR) and the Canterbury District Health Board (CDHB) invested in innovation capability over a sustained period of time with positive results. Nonetheless barriers around collaboration between agencies and the private sector and non-government partners were evident; with difficulty in joint funding of initiatives, poor information sharing and difficult business case processes that inhibited piloting options. However the case study noted that the barriers were more evident in IR, and less so in the CDHB because “a Crown entity is relatively more autonomous” (p. 11).

There are barriers to any public sector agency innovating. There is no competitive pressure to innovate and this is combined with stringent constraints that, although designed to minimise corruption, stifle innovation. Innovations developed by public sector staff are the property of the government, there are few rewards to innovating in the public sector, and financial rewards are small if at all existent. However it is still possible to recognise employees for their contribution and ideas; supporting motivation. It has been suggested that the public sector could allow a certain percentage of time to be focused purely on job related innovation and innovative ideas in general (Belcourt & Tagger, 2002; Borins, 2002).

Grant Thornton (2012) notes a low tolerance for failure which inhibits experimentation and innovation, and lack of a roadmap for innovation. Government leaders are not able to manage innovative employees well and reward change, and innovation does not generally appear as a role requirement from a study of public sector senior manager job descriptions. Innovative staff tend to reject the public sector as well. This is combined with the harsh consequences of unsuccessful technology innovations where media scrutiny is a powerful disincentive and negative media fallout from political exposure can be disastrous for careers. The result is that innovation in the public sector does not flourish (Borins, 2001; Micheli et al, 2012). A drive for efficiency in public services does not readily allow the experimentation, and risk-taking that supports innovation. The public sector drive for accountability and transparency also casts a spotlight on any behaviours that may be considered to waste public sector resources, and yet some “dynamic investment” or “good waste” is required to support innovation (Potts,

2009, p. 42). A US report showed that the success rate for overcoming obstacles in the public sector was 57% on average, but for overcoming that of lack of resources was only 19% (Borins, 1998). Micheli et al (2012) notes that although research has shown what the major barriers to public sector innovation are; overcoming them is less clear. Public servants themselves tend to consider senior managers the primary source of innovative ideas, potentially reducing the pool for innovation.

The European Public Sector Innovation Scoreboard report said that the lack of human or financial resources was the most important barrier to innovation, followed by ‘regulatory requirements’, ‘lack of management support’ and ‘lack of incentives for staff’ (Hollander et al, 2013). A study of Nordic countries also found a ‘lack of funding’ and ‘inadequate time’ to be the most frequently mentioned barrier to innovation (Bloch, 2011). This differs a little from what has been described by an Australian commentator who noted firstly the overly risk averse approach, and secondly a lack of resources, time and funding devoted to innovation (Stone, 2014). The Australian report on the public sector, *Empowering Change*, notes a range of barriers that have implications across different areas of the innovation cycle, with the one’s that impact across all phases being that of risk, short-term focus, policies and procedures, efficiency and resources, and external opposition (Management Advisory Committee, 2010).

The European Commission’s report on trends in innovation in Europe suggests a barrier to innovation may be reluctance by staff to embrace new ways of working, combined with the structure of agencies inhibiting the ability of employees to input ideas (Hollanders et al, 2013). Lewis, Considine, and Alexander (2011, p.110) say that “while innovation is viewed as an outcome of interactions...role and rank are also expected to play a part in structuring those interactions.” However it is important to note that innovations without implementation never realise their potential, and remain as brilliant ideas only (Choi & Chang, 2009; Australian National Audit Office, 2009). The European Commission’s report also says that committed management and leadership is one of the most important factors supporting successful innovation, and innovation is even more likely when championed by senior managers (Hollanders et al, 2013). Support for technological innovations also requires that senior managers are “conversant and comfortable” with ICT (Pijpers & Kees, 2005, p. 544). Leaders have a role in supporting learning to reinforce an innovation culture where innovation can happen at all levels within an organisation, and where “technological innovations ...are [used as] powerful means of generating and spreading knowledge” (Australian National Audit Office, 2009, p.11).

Collaboration to Support Innovation

Collaboration is key to supporting innovation (Sorenson & Torfing, 2014). There is a need for close collaboration with different organisations, and across different sectors (van Duivenboden & Thaens, 2013). The need to work across boundaries is reinforced by a United Nations report “Collaborative leadership may be defined as the capacity of leaders to work across organizational boundaries to inspire, engage and motivate people and teams to work together in pursuit of common goals” (2014, p. 80). And information leadership as defined by the ICT Strategy pervades all levels (Department of Internal Affairs, 2013b). Nonetheless one of the most powerful tools to support collaboration is ICT, facilitating the ability of the government to act in cooperation with others, sharing and linking assets and knowledge (Millard, 2013). This is an example of where technology is both the enabler and deliverer of innovation (Lee, Olson & Trimi, 2012). In 2008 Satish Nambisan boldly stated that “The performance of the next administration and, more broadly, the American government in the twenty-first century will be shaped by how well it adopts collaborative innovation” (p. 36). In 2014 Borins noted that, based on public sector innovation awards, an increasing proportion of American innovation initiatives involve collaboration, with over 80 percent of award semifinalists reporting external collaboration and collaboration with government in 2010. This was compared to 28 percent reported in the 1990s.

Hendy and Callaghan (2013) in writing about innovation in NZ talk of ‘innovation ecosystems’. They consider collaboration key to supporting innovation in a country as small as NZ. Innovation ecosystems require an effective understanding of all of its parts, including contribution from the wider state sector as well as the private sector. They also note Crown Research Institutes hold substantial data, and access to data is also important to support innovation. Sorenson and Torfing (2014) argue that there is huge, and “largely unexplored potential for enhancing public innovation through networked collaborations of multiple stakeholders” and that joint ownership of ideas that are implemented may produce very positive outcomes. Lee, Olson and Trimi (2012) reflect on this in their article on co-innovation, where ideas are approached from multiple internal and external sources to generate new value, a core component of which is collaboration to support co-creation.

The characteristics of collaboration in innovation have been explored by researchers.

Sorenson and Torfing (2014) identify four phases in the innovation cycle:

- Generation of ideas

- Selection of ideas
- Implementation of new ideas, and
- Dissemination of new practices.

The dissemination of new practices involves spreading the innovation either inside of, or between, agencies. They propose that supporting collaboration in each of the innovation lifecycle phases strengthens innovation.

Micheli et al (2012) notes that for technological innovation to be successful it may depend more on the level of collaboration with the private sector than on the specific technology. This may overcome barriers around risk aversion, organisational structure and resistance to change. The Senate SHJ (2014) report noted that for change to become embedded barriers need to be acknowledged and work done to reduce them, successes need to be visible and replicable, incentives need to be in place, and innovators and collaborators need to be recruited for the public sector.

ICT professionals are key change agents at the middle of the e-government process (McLoughlin, 2006). It is of advantage to consider a resource based view in considering the role of ICT staff in supporting collaborative innovation in the public sector. If the resources and capabilities to deliver services to users involves 'invisible assets', such as decision-making, culture and relationship with consumers, it may provide opportunity for longer term advantage. It is the ability of the ICT managers to work effectively within and across organisations that may impact on ability to derive longer term sustainable advantage (Mata, 1995). It is the intangible assets that are the main drivers of innovation performance (Bakar & Ahmad, 2010). A report published by the New Zealand Productivity Commission notes that ICT investment is a key driver in innovation in services but that there is also a need to invest in human capital and business process changes (de Serrees, Yashinro, & Bouilhol, 2014). This is reinforced by the Australian approach, where investment in capability and systems delivers greater efficiency than cutbacks in resources (Stone, 2014). A 2014 United Nations survey on e-government revealed that although New Zealand was 9th overall for e-government, it was 20th for e-participation, and e-participation requires engagement with citizens. (United Nations Department of Economic and Social Affairs, 2014, p.49).

It is necessary to mobilise knowledge across agency boundaries to support innovation, as the sharing of ideas and expertise is critical for the diffusion of innovation and the co-creation of value (Micheli et al, 2012; Prahalad & Ramaswamy, 2004; Un & Montoro-Sanchez, 2014). Borins (2001) observed that the most frequent characteristic of innovation was that 60% of

innovation relies on cooperation, with crossing of organisational boundaries a defining characteristic. A challenge for agencies is ensuring that knowledge from both outside and from within the agency is used effectively in the innovation process. The relative strength of the links between and within agencies correlates with the level of knowledge transfer, with strong links required for transfer of more complex knowledge. (Savory, 2006). This is reinforced by Naqshbandi & Kaur who refer to a necessary talent for “relationship building both within and outside the agency” as a critical competency needed for innovation success (2014, p. 653). Bryson, Ackerman, and Eden (2007) propose that public agencies that perform well over time draw on competencies that support successful collaborations by exploiting existing knowledge and creating new knowledge products and services. Many agencies identify that many of the best ideas come from other organisations, and “increasingly partners are non-traditional – communities of interest, academic institutions or other types of organization” (Ban & Marshall, 2013, p. 39). A brief examination of some different types of collaboration is found in Appendix 4.

O’Leary sums up the issues related to realising collaboration as a management and leadership strategy in the public sector in the following way, “Conditions that hinder culture change... include the stifling of grassroots innovation; programmes that are stripped down to their basics with managers “playing tennis at the net” all day without time to get off the court and think about new ways of serving the public; lack of shared understanding concerning the meaning of the words collaboration, collaborate, collaborative and co-production; a culture where risk is discouraged and public servants fear deviating from standard operating procedure; and the fact that prime movers of collaborative ideas leave when room to manoeuvre closes down” (2014, p. 41).

Given the role of middle managers in collaborating to support the ICT Strategy, what is the role of managers in relation to innovation?

Middle Managers and their Role in Innovation

Middle management has been traditionally defined as the layer of management that implement strategies and policies, whereas upper level managers are those who develop strategies and policies (Van Fleet, 1988). There is a positive relationship between middle management involvement in strategy and organisational performance. Middle managers have influence in both directions, upwards and downwards, and use their internal and external network to support strategic activities (Floyd & Wooldridge, 1992; Salih & Doll, 2013).

ICT managerial capability is critical for agencies that are going through times of change such as delivering to a new strategy and new all-of-government approaches. In times of relative stability technical ICT capabilities can suffice. However in times of change different capabilities are required (Tallon, 2008). A study on the role of middle managers in supporting innovation found that their role was imperative, knowledge and knowledge sharing, or collaborative skills, supports public sector innovation. (AL-Hakim, 2011; Atalay & Anarfarta, 2011). People can act as knowledge intermediaries, linking innovations, organisations and others (Kattel et al, 2013). What's more, dynamic capabilities, or capabilities that support the creation of new knowledge, are an important resource as they support adaptability in changing environments. (Baumane-Vitoliona & Igo, 2013). Managerial ties form a component of social capital and essentially support access to greater information and resources. The networks associated with these support learning and innovation between agencies. Network relationships were determined as the most important predictor of innovator status, the level of collaboration across networks was critical, as was an ability to work outside of formal structures (Naqshbandi & Kaur, 2014). This is supported by Voets and De Rynck (2011) who refer to boundary-spanning individuals as those who are strongly linked to others both internally and externally and who are both highly trusted and collaborate highly.

Top level managers are more likely to drive larger-scale more radical innovations however the majority of innovations, which tend to be of a more incremental nature, are initiated by middle management and front-line staff (Hollanders et al, 2013). Middle managers are “key strategic actors” with “knowledge to assess the viability of proposed strategies”, and it is critical for them to believe they are the owners of the outcomes of strategy (Salih & Doll, 2013, p. 34). It would be expected, given that the role of middle management is to implement strategy, that they would be deeply involved in the implementation of innovations and that it would be part their role. In surveys from Commonwealth nations it was found that middle managers in the more economically advanced nations were initiating 75% of the innovations. In the USA middle management were responsible for initiating 43% of the innovations, with the next most innovative group being front-line staff (Borins, 2002). Several studies have shown that there is “a negative correlation between generating new ideas and hierarchy” (Nauta et al , 2009, p. 20). However an OECD review on public sector innovation that defined top-down as being innovation initiated, assigned and controlled from the top, and bottom-up as initiated from the bottom of the organisation and then moving up noted that in reality the two approaches mix. Therefore it can be hard to determine where the innovation originated (Nauta et al, 2009). Nonetheless when innovations are initiated by middle managers and front-

line staff it is important that they receive support from the top (Borins, 2001). For innovations to be successful they need to be supported by both institutions and employees (Choi et al, 2009).

A factor that may inhibit middle managers to initiate innovations is that they may feel threatened by non-hierarchical work flows, given they have built careers around relying on hierarchical pathways within an agency (Szabo & Csepregi, 2011). The SenateSHJ report noted that “collaboration is not a priority for managers looking for promotion, or those driven by personal ambition” (2014, p.16). Consequently the challenge is to support competencies associated with ‘cooperational skills’. If innovation is rewarded and encouraged it is most likely to flourish in a supportive culture where trust, respect and good communication and collaboration flourish (Szabo & Csepregi, 2011). Banks says that “the most fundamental challenge confronting innovation in the public sector is having innovative people in settings that reward innovative thinking” (2013, p. 7). Time was also seen as an issue, a recent NZ public sector study noted that managers not having time to think about new ways of serving the public is inhibiting cultural change. Many staff left central government or moved to new agencies if they did not work in a collaborative environment protected and sustained by a senior manager (O’Leary, 2014).

Middle managers work to keep communication flowing upwards as well as downwards, which led one manager to describe it as being “meat sandwiched between two slices of bread” (Trent, 2003, p. 4). This sentiment was reflected in a report by SenateSHJ which looked at collaboration in general within the NZ public sector where it was stated “It is the middle management who are stuck between being told to control their areas without being high enough to see the whole picture” (2014, p.6). The report found that there were significant challenges in relation to middle managers collaborating. Better Public Services was seen as an add-on to existing work rather than a new direction for existing work, and a way of delivering to specific projects rather than a way of working. The collaboration that was occurring was related primarily to specific and time bound projects, rather than being systemic. The report also noted that those consulted felt that their willingness to collaborate had a dependency on ability to deliver to core business outputs, and that the value of collaboration is not always visible, or quantifiable. The report identified that there were particular difficulties in achieving collaboration at the middle management level, middle managers felt that collaboration is driven either by frontline need or senior leaders and that change was particularly hard to achieve. However the SenateSHJ report did not address how ICT managers as a specific group of managers were experiencing collaboration.

The area of collaboration and innovation merits attention given the potential issue being experienced by middle managers regarding collaboration, and the need to collaborate to deliver the ICT Strategy. Middle managers have a crucial role in implementing the ICT Strategy, which is key to realising Result areas under Better Public Services. Innovation, and consequently collaboration, is important for fostering public sector recovery, and leadership and culture is also a key component. To examine this, responses to the following questions were explored:

- How do senior managers perceive the role of middle managers in relation to innovation?
- Given the role middle managers have in implementing the ICT Strategy, what is their level of awareness of it?
- Are middle managers currently engaging in innovations, and do we have a common sense of what innovation is?
- Are middle managers collaborating with a range of actors to deliver innovations, and if so, who with?
- Are middle managers supported to collaborate, and do they get the support they want?
- Are middle managers supported to innovate, and if so how is that done? If they are not supported, what do they perceive the barriers to be?

Methodology

Five public sector senior leaders at CIO level or above were invited to contribute in separate semi-structured interviews. Those interviewed have a role in supporting innovation and delivering to the ICT Strategy. This gained senior leader insight on innovation and collaboration and the role of middle managers. Middle managers from the wider public sector were asked to respond to an anonymous online survey that was sent to groups engaged in work that is integral in some way to the ICT Strategy, covering those that work in information management, ICT and web services. Appendix 5 details the questions asked.

The survey was sent to several electronic mailing lists; the Government Information Group, Innovators Network, New Zealand Records Group, and the Government Web Community. Members of the groups were encouraged to forward the survey to other middle managers working in the ICT area in their agencies. It was also sent to public sector CIO's asking if they would encourage their staff to respond to it.

Public sector middle managers were asked about their level of awareness of the ICT strategy. They were also asked if they were in a government department or other state sector agency to determine if there was a difference in awareness of the ICT strategy given that it was mandated for some agencies and not for others.

They were asked if they were initiating or implementing innovations, how many, and who they were collaborating with in relation to innovations. A wide range of options for collaboration was provided, with the option of also being able to add to the existing list if required. The definition of innovation used in the literature review was provided to assist respondents to answer the question. They were also asked about any barriers to collaboration and innovation, and what support or enablers are in place.

Questions were open ended to support open engagement and unprompted responses. Questions related to innovation focused on the initiation or implementation on the basis that a good idea remains only that unless some action is taken to realise it (Choi et al, 2009; Australian National Audit Office, 2009). Findings were grouped based on most common responses against themes that emerged.

Eighty-four responses were received from public sector managers, although not all responded to all questions. It is difficult to determine how many public sector ICT middle managers there are, however the State Services Commission provided a figure of 372 ICT Managers for

the core public service, which comprises 29 departments, or one-fifth of the state sector (Human Resources Section, State Service Commission, personal communication, August 26, 2014). Therefore it is a small sample of middle managers, and should be seen as capturing insights that are worthy of reflection rather than being of high statistical validity.

Findings from Engagement with Senior and Middle Managers

Responses by senior and middle managers are outlined below against questions. Senior managers are identified as interviewee 1 through to interviewee 5.

What do senior managers think the role of the middle manager is in relation to innovation?

Interviewee 1 described the role as being comprised of three elements or teams; determining and designing the future state, maintaining current state and taking advantages of all-of-government offerings, and those with the projects to transform to meet the future state.

Interviewee 2 described an environment where middle managers were empowered to have ideas “*rather than it being imposed from the top*”, and that the role of the senior manager is to provide a supportive culture. Interviewee 5 described the role as bringing “*innovation and different thinking and understanding of what the business requires*” and that this was innovative on the basis that it is not traditional thinking. It was noted that most middle managers would say they are there to manage staff and provide core services, but there is also an expectation of transformation of the core service. The nature of incremental innovation was also acknowledged by interviewee 5 when they said “*Innovation is happening on a daily basis, and it is more about how you define it than anything*”. They also said of middle managers, “*They are the doers I suppose, not only are they thinking but they have to implement and be given the opportunity to do so*”. Interviewee 3 said innovation was in the ICT Strategy to “*knit together what is a slightly confused and uncoordinated government ICT and information management landscape*”.

Interviewee 5 defined the concept of dispersed leadership within the *ICT Strategy* as meaning that the initiatives are led by other departments as well as central agencies. This is similar to interviewee 4 who related it to sector CIO’s appointed by the Department of Internal Affairs who would take more of a sector wide approach, and they could focus on building collaboration at the middle management level. Interviewee 1 described dispersed leadership as being about empowerment and taking more of a citizen centric approach, with “*all levels having responsibility for driving change and improvement from their position*”. Interviewee 3 when asked about dispersed leadership noted that it really was about “*just getting on with it*”, “*sharing our needs and influencing our own entities in a whole of government direction, rather than waiting for there to be too much of a framework*”, but that there are also formal processes and mandates that various entities and people have, such as the GCIO.

What is the awareness of the ICT Strategy?

When middle managers were asked if they had an excellent understanding of the government’s ICT Strategy 60% of all respondents either agreed or strongly agreed, 23% neither agreed nor disagreed and the remaining 17% either disagreed or strongly disagreed. There was a slightly higher level of awareness from government departments compared to the wider state sector.

Awareness of the ICT Strategy by middle managers was not something asked of senior managers, however one senior manager did comment on this. Interviewee 4 suggested that although there was collaboration to develop the ICT Strategy, “middle management generally wasn’t involved” and that “many middle managers haven’t even heard of the strategy which is a real indictment of their leadership.”

Are ICT middle managers initiating or implementing innovations?

Of the 77 managers that responded to a question on number of innovations being delivered over the last 18 months there were 1 or more innovations evident in 74% of responses.

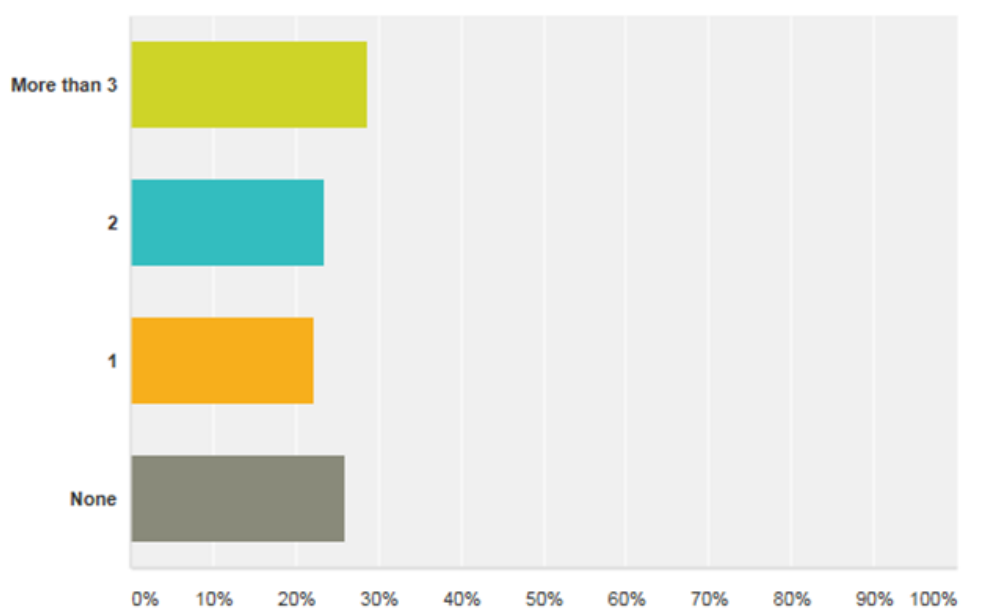


Figure 1 Number of innovations delivered over the past 18 months

A definition of innovation had been provided in the survey question. However comments made in relation to the nature of the innovation revealed how broadly the definition was applied. Initiatives described as innovative ranged from things such as taking up government as-a-service offerings to developing mobile crowdsourcing applications.

Senior managers showed different understandings of innovation. Interviewee 5 described it as “thinking about how we can collaborate and ...what some of those services and opportunities

[are] that we can enable...innovation is happening on a daily basis”, and interviewee 1 described it as being “around trying to do things differently, more effectively at a cheaper cost...really it’s more of a catch phrase than anything”. Interviewee 4 said “there is a bit of a tension between how do you centrally coordinate and deliberately control investment in technology across a huge sector but at the same time promote innovation and innovative ways of thinking.”

What collaboration between agencies/citizens/private sector and middle managers is happening to support innovation?

Sixty-seven managers responded to the question of who they were collaborating with. The lower number of respondents is unsurprising given that not all were engaging in innovations. As can be seen from Figure 2 most collaboration is with commercial suppliers of products, followed by agency to agency collaboration, consultants, and professional organisations. The organisations most likely to *not* be collaborated with are Crown Research Institutes, followed by not-for profit agencies, universities and then citizens.

When the ‘other’ category was broken out it was evident that there were instances of collaboration with the open source community, local authorities, international governmental networks and District Health Board’s.

<i>Extent of collaboration (no collaboration to a high degree of collaboration) and who is being collaborated with</i>	Not to Low	Medium to High
Another public sector agency or agencies	37%	63%
Professional organisations	69%	31%
Commercial suppliers of Products	26%	74%
Consultants	45%	55%
Not-for-profit agencies or associations	90%	10%
Involvement from citizens	79%	21%
Universities	87%	13%
Crown research institutes	96%	4%
Other	93%	7%

Figure 2 Who managers are collaborating with and extent of collaboration

A detailed breakdown of collaboration can be found in Appendix 6.

There were very different responses from the senior managers when asked about the nature of the collaboration occurring between middle managers and others. Interviewee 1 noted, “I’ve

got them involved in a whole range of working groups...primarily public sector” and also noted the relationship with service providers and commercial suppliers. Interviewee 3 said that he thought in relation to agencies other than his own that they *“have more immediate stronger links with industry sector or with CRI’s or the universities”* and that, *“I would struggle to think about where, outside of your own agency, department and its work programme, where you would connect if you were a line manager...”*. Interviewee 4 said that *“often middle managers don’t necessarily know other people in their sectors [as] they are in their silo and it’s generally the CIO or the CEO that gets out and does the relationship management”*.

Interviewee 5 also noted that public private partnerships are not really happening in the ICT space at the moment.

Are ICT middle managers supported to collaborate?

Answers to the open ended question on support received to collaborate were grouped by similarity of response. When middle managers were asked what support is received to enable collaboration the most common responses were:

1. Support was gained through sector collaboration and networking with other agencies
2. No support received at all.

Several middle managers noted that collaboration was a natural part of their personal style, and the way they interacted in their role.

Some of the comments were:

“...most processes are still biased towards internal collaboration. Cross-boundary activities are supported but generally take longer”.

“Most support is essentially driven by the networks I have”

“Collaboration is just a part of the way I naturally work”

Other comments were made about peer support, collaboration with GCIO staff, and access to national and international conferences.

Senior manager perspectives on support provided to collaborate varied. Interviewee 4 said that *“I’m not sure there are sufficient collaborative forums at the middle to promote the message”* and that the way government finance is structured does not support the achievement of shared outcomes. They also said that *“...there is still a competitiveness, competition between agencies, the incentives are just not there to take one for team.”*

Interviewee 2 noted the role of the GCIO in bringing together groups to share experiences, and the need for reward and incentive structures. Interviewee 3 and 5 noted the focus on collaboration within sector. Interviewee 4 said there was no support for collaboration apart from at the sector level. Interviewee 3 took the perspective of collaboration being about *“looking at a question afresh through a different lens”* as a way to moving to an innovative solution rather than incremental improvement, and that this requires a *“change in standpoint to look at operations through a customer’s lens”*. Collaboration *“redefines the boundaries of the problem...and starts to open up the potential for some new ways of looking at a problem.”* They also said that collaboration can minimise considerations around resourcing.

Interviewee 5 said that it was up to the managers as to whether they had time to attend networking events, that plenty of opportunities existed and that middle managers needed to create the opportunities for themselves.

What support would middle managers like to assist with collaboration?

The bulk of comments on support middle managers would like to support collaboration fell into the following areas:

1. Level of support is fine as it is and the GCIO support is available when required.
2. A closer working relationship with agencies, greater visibility of what other agencies are doing and more open dialogue, and
3. Better collaborative forums, tools and facilitators to encourage interaction, as well as policies that support collaborative approaches and systems thinking.

The difference in the number of responses between the points above was small. Most of the respondents who were fine with the level of support for collaboration still noted that funding and time were barriers for innovation in the follow-up question.

Comments made by middle managers were:

“More open dialogue; less territorialism/ownership issues; greater information sharing – for the benefit of everyone, incl. ‘public’”

“It would be good to know what other agencies are doing/have done, and who can be contacted to leverage off their learning and IP. Government still tends to be quite siloed in terms of sharing successful projects and a wider view would be beneficial”

“Visibility into what other groups may be doing under the radar”

“Better central leadership that works on supporting/enabling people and projects, not telling them what to do”

“Support from my manager to attend seminars, networking and a work programme that gives me “think” time to develop ideas so work not so reactive”

“Very often there is talk of collaboration, especially at an agency level, but when actual resources need to be put on the line nothing will eventuate – this may be for any number of valid reasons too given that each agency has their own budget and business plan to achieve”

There were also comments made about how greater executive support would be helpful as well as the value of collaboration being acknowledged. Comments were made about easier access and visibility of what people are working on, as well as comments on the need for improved business processes, decision frameworks, and sharing what is learned.

This was not a question for senior managers; however availability of GCIO support was mentioned by the middle managers, and also mentioned by the senior managers during the interview process. Interviewee 3 also noted the need for agencies to rethink their business processes, and cited the example of Novopay which failed to examine and change existing business processes³.

What are the barriers to initiating innovation?

Strong themes were evident in response to the question on barriers to initiating innovations.

The most common responses were, with the first two being very close:

1. Workload delivering to the work programme
2. Budget restraints
3. Gap in leadership thinking around innovation and change
4. Internal governance and risk aversion

Other barriers also emerged; the business not being ready for innovation and managers with low technical ability. A few comments were received about no barriers being evident and comments were also received about poor processes and poor project management.

Some of the comments made were:

“Culture (each agency has its own deliverables and it’s difficult to get them to collaborate as they don’t normally work that way). Bureaucracy (staid processes and procedures designed

³ Novopay is a web-based payroll system for schools in New Zealand. The implementation of the system led to widespread and very public issues with teachers pay.

not to manage risk appropriately but to eliminate all risk – and innovation involves some risk, which of course must be mitigated but cannot be eliminated).”

“Pressure of BAU”

“Biggest challenge is the priority given to the immediate tactical solutions, rather than sustainable strategic solution”

“Fear that some collaborations, particularly involving the sharing of resources for BAU, will lead to job losses.”

“Time constraints. My team is still dealing with a lot of inherited issues that need to be addressed now”

“Lack of buy in from middle managers who have low technical literacy”

“Team is not always recognised for their efforts once innovations have been initiated or other teams reaping the reward”

“The language of innovation, ‘I’m going to try’ ‘I’m hoping to see, ‘I think’ ...is not a good fit with a project management mindset... Innovative success couched in those terms is often seen as failure by Management. And their reputation is too delicate to risk it.”

“Fear of failure”

Senior managers had a variety of views as to barriers to implementing innovations.

Interviewee 1 said that *“the biggest barrier is the inability of organisations to line up and support each other...it is very hard to get cross-agency activity”*, this was related to the lack of maturity within agencies. Interviewee 2 described it as primarily a cultural issue, *“there is a lot of ingrained behaviour that has incentivised people to operate with low risk, stable, reliable, highly accountable for their patch...we have not rewarded risk-taking behaviour, entrepreneurial behaviour at all.”* Interviewee 3 highlighted the risk, particularly in relation to spending public money, and the *“risk to the idea”* with the openness and transparency of the public sector combined with the *“memories of past failures”*. This was linked to desirability of incremental change and trialling small scale innovation. Interviewee 4 noted that the way government finance is structured does not support shared outcomes, and given competing demands for funds it is a choice between the *“incentive to innovate in the future or the incentive to keep the lights on”*, that there is still competitiveness between agencies, and a lack of incentive to *“take one for the team”*. This is combined with smaller agencies who may

not have the ability or opportunity to innovate, but the big agencies who are expected to do the “*heavy lifting*” are engaged in delivering transformation. It was also noted that some of the smaller agencies do not get to have a voice at the table, and if they are involved they may not be representative given the range of agencies around. They also said that “*the risks of innovation is that innovation can be seen as uncontrolled as well*”, and that there is a tension between organisational accountabilities and potentially lack of rewards for thinking and at a system level. Interviewee 5 felt that the primary barrier was financial, combined with each agency having its own set of priorities to deliver to.

How are middle managers empowered to initiative innovations?

The primary responses around enablers to innovation were the following; with point one being the most common response.

1. Empowered by support from senior managers and staff
2. Too many barriers to innovation with passive or active resistance
3. Empowered to deliver innovations, but had to deliver to work programme first
4. Role has a specific innovation component to it.

Points 2 and 3 do not describe how managers are empowered, but show further barriers.

Two respondents noted that they had regular time set aside to focus on innovation, and 6 respondents noted that it was a component of their role.

Comments received from middle managers were:

“I’ve been lucky to have visionary managers who support my work”

“It is the purpose of my role”

“I am expected and encouraged by my senior managers and staff to remove barriers and improve our services. My professional advice is encouraged and supported by my colleagues”

“Support from top when resistance to changes threatens to thwart progress”

“Anyone in the Ministry can initiate an idea and it goes to the appropriate governance board to assess”

“The organisation is in a process of change and is open to new ideas”

Senior manager responses varied. When asked if managers had support to innovate interviewee 1 said “*Nothing I am aware of*”, and followed this up with the comment that it

would “*depend on the confidence and maturity of the agency and of a number of people within it*”. Interviewee 2 noted that the Result areas inherently cut across agencies forcing agencies to “*co-solve problems*”, supporting the necessity of both collaboration and innovation to meet government strategy. Interviewee 3 noted the need for “*senior leaders to create an environment where they [middle managers] are empowered to innovate*”. They also noted that the government assurance frameworks that have been developed are designed to enable innovation, by better enabling management of risk. This enables Ministers and senior leaders to set expectation and create an environment where change is supported. Communities of practice were effective for providing bottom-up support, and information sharing was seen as also supporting innovation. Incentive and reward structures were noted as key to support innovation, “*seeing some of their peers who take risks are recognised, and rewarded and promoted*”. Another comment made was that “*we need business leaders who are more attune to the potential on information use and technologies.*”

Discussion

The discussion follows the line of questioning taken with managers, however given the open-ended nature of the questions at times the insights draw on different areas from across the findings. Key insights are based on findings that had sufficiently strong support; generally they are those that fell into the category of the top three popular themes. Some findings were interesting and have been briefly discussed but are not described as key insights; it has been noted if they merit further investigation.

The role of the middle manager, and their awareness of the ICT strategy

There was a general sense from senior managers that middle managers needed to be empowered to support innovation. This is unsurprising given that intangible assets are the main drivers of innovation performance, and it is the ability of ICT managers as key change agents to derive longer term sustainable advantage (Bakar et al, 2010; McLoughlin, 2006; Mata 1995).

Transformational leadership shown by a desire to involve people in collaborative work was in evidence from the interviews with senior managers, but the indication that middle managers may not have been as involved in the development of the ICT Strategy as they could is more indicative of technical system leadership (Maddock, 2006). Given the critical role of middle managers in delivering to strategy, a high degree of awareness of an ICT strategy is essential (Van Fleet, 1988; Floyd & Wooldridge, 1992; Salih & Doll, 2013; Stone 2014). The suggestion made by a senior manager that middle management was not very involved in the development of the strategy could impair mobilisation of teams to pursue the ICT Strategy as a common goal (United Nations Department of Economic and Social Affairs, 2014). It may also indicate why the awareness level of the ICT Strategy is slightly low, with only 60% of all the middle managers surveyed agreeing or strongly agreeing that they had an excellent understanding of the ICT Strategy. The higher level of awareness of the strategy amongst government departments compared to responses for those engaged in other areas of the state sector is unsurprising given that it is mandatory for them, and that voluntary compliance relies on adequate knowledge (State Services Commission, 2013c; Weaver, 2014). A potential lack of involvement in strategy development reveals more of a top down approach, ensuring resources and people are in place but not supporting open innovation, greater change and collaboration, which is better supported by a distributed model of leadership (Choi et al, 2009;

Hanna, 2011). Research reveals a positive relationship between middle management involvement in strategy and organisational performance (Floyd & Wooldridge, 1992).

The ICT Strategy shows a clear drive to greater empowerment; with information leadership occurring at all levels. Working across organisational boundaries was a theme that emerged from all senior managers interviewed, and this is critical for collaborative leadership (United Nations Department of Economic and Social Affairs, 2014). Fostering dispersed leadership is a key skill to enable transformative leadership (Maddock, 2006; Orazi et al, 2013; Turrini & Valotti, 2013). It the most appropriate model to foster innovation, with both top-down and bottom-up approaches creating an environment in which dispersed leadership can flourish (Choi & Chang, 2009; León et al, 2012).

Dispersed leadership was seen as occurring across sectors as interviewee 5 noted, but generally not through all levels. Interviewee 2 described it as taking more of a citizen centric approach, “*with all levels having responsibility for driving change*”. There was not a consistent sense of what dispersed leadership meant in relation to the ICT Strategy from the senior managers interviewed.

Key Insights:

- *There was not a consistent understanding amongst the senior managers interviewed about dispersed leadership as articulated in the ICT Strategy.*
- *Awareness of the ICT Strategy could be higher given the role of middle managers in delivering to it; awareness is slightly higher amongst the agencies for which it is mandatory. Lack of involvement and low awareness is likely to negatively impact implementation.*

The role of middle managers in initiating or implementing innovations

New Zealand public sector middle managers are involved in innovations, with 74% of respondents being involved in one or more over the last eighteen months. This resonates with research confirming the role of middle managers in innovations (Borins, 2002; Hollanders, 2013; Nauta & Kasbergen, 2009).

It was evident that there was not a clear sense of what innovation is, for instance setting up an as-a-service government offering could be considered innovative, taking one up less so. A lack of clarity around what innovation is was noted in the review of the Open Door to Innovation initiative (Department of Internal Affairs, 2012). This is further complicated by

their being so many different types of innovation (AL-Hakim & Hassan, 2011). Kattel (2013) notes that overuse of the term has rendered it virtually useless. This was mirrored by the comments from one of the senior managers, *“Really it’s more of a catch phrase than anything”*. If innovation is important for the public sector as articulated in the ICT strategy (Australian National Audit Office, 2009; Lewis, 2008; Macmillan et al, 2011; Micheli et al, 2012; Roberts, 2014), without a common definition of innovation, it is difficult to assess if it is being achieved.

Key insights:

- *Middle managers are reporting that they are initiating and implementing innovations, as might be expected given their role.*
- *It is difficult to realistically assess or measure the level of innovation without a common definition of innovation, this was apparent even when a definition was provided in a survey question.*

Collaboration to support innovation

It is clear from the literature that the role of collaboration in supporting innovation is vital, and that this involves working across sectors and across a range of actors (Hutschenreiter et al 2007; Hanna, 2011; Tizard, 2012). The bulk of collaboration undertaken by middle managers is agency to agency, agency to vendor (commercial supplier of products) and agency to consultant. Although these are important actors the very low rate of collaboration with universities, citizens, not-for-profits and Crown research institutes reveals a substantial lack of wider involvement. Senior managers interviewed described collaboration with agencies and the private sector but other forms of collaboration were not apparent. Interviewee 3 said that *“I would struggle to think about where, outside of your own agency, department and its work programme, where you would connect if you were a line manager”*. Interviewee 4 said that *“often middle managers don’t necessarily know other people in their sectors [as] they are in their silo ...”* In one example provided by a senior manager engagement was expected to be delivered by web services. Another senior manager noted that they expected that other agencies would have stronger links with universities and CRI’s, however that was not evidenced by the survey. Yet another said that it was generally the CE or CIO that did the relationship management. This is of concern given that technology failure in government is often because of fragmented approaches that miss engaging with the wider ecosystem. Lack of engagement with multiple and varied stakeholders inhibits the potential that could be derived from wider collaboration (Ban & Marshall, 2013; Hanna, 2011; Hendy & Callaghan, 2013; Sorenson & Torinfg, 2014). Better Public Services has a clear focus on supporting more

of a 'citizen voice' (Appendix 2). However the United Nations Department of Economic and Social Affairs (2014) reveals that New Zealand has a strong transactional focus, but has less of a focus on e-participation, or engagement. Co-creation of value is achieved through collaboration or engagement, and requires the contribution of different skills and knowledge to support innovation (Prahalad & Ramaswamym, 2004).

The need to share power and resources is challenging for the public sector (Tizard, 2012). The SenateSHJ (2014) report noted that shared responsibility and integrated funding are key but tend to be seen as an approach to projects rather than a way of life. One of the middle managers noted "*territorialism/ownership issues*" between agencies. As another middle manager noted, "*Very often there is talk of collaboration, especially at an agency level, but when actual resources need to be put on the line nothing will eventuate*". One of the senior managers noted that, "*It is very hard to get cross-agency activity*". As Weaver (2014) said, there has to be a belief that complying is advantageous to achieve support.

Collaboration is occurring, albeit with a narrow range of partners, the reasons why or why not collaboration is happening with specific partners has not been explored. Given the importance of a variety of actors in an innovation system, this merits further research.

Key Insights:

- *ICT middle managers are collaborating to support innovation. However this is with a limited range of partners, namely vendors, agencies and consultants followed by professional organisations, this is potentially substantially limiting potential for innovation.*
- *There is a sense of "territorialism" within agencies, with a narrow rather than wider view in evidence; this combined with a reluctance to share resources is inhibiting opportunities for collaboration.*

Support for middle managers to collaborate

Support is critical to enable middle managers to collaborate, and collaboration is a critical input to innovation (Micheli et al, 2012; Millard, 2013; Sorenson & Torfins, 2014; van Duivenboden & Thaens, 2013). Support for middle managers is predominantly via sector collaboration and networking. However it is of concern that receiving no support was almost equal in popularity to support received. Senior management support and a supportive culture is very important in realising a culture where innovation can flourish (Borins, 2001; Szabo & Csepregi, 2011).

One middle manager noted, *“I’ve been lucky to have visionary managers who support my work”*. Some middle managers also noted that a natural collaborative style, *“Collaboration is just a part of the way I naturally work”*. Individuals who are strongly linked to others both internally and externally, who have networked relationships and who are both highly trusted and collaborate highly are more likely to support collaborative learning and innovation (Baumane-Vitoliona & Igo, 2013; Kattel et al, 2013; Naqshbandi & Kaur, 2014; Voets & De Rynck, 2011). There are a number of theories that look at the way value is realised from the technology; the resource based view in particular acknowledges the relationship skills of ICT staff as important for realising long-term value (Mata, 1995). A collaborative style is also acknowledged as important by other researchers who write of boundary spanning and the necessity for internal and external networks (AL-Hakim, 2011; Atalay & Anarfarta, 2011; Floyd & Wooldridge, 1992; Kattel et al, 2013; Salih & Doll, 2013; Votes & De Rynck, 2011). The need to have innovators and collaborators in the public sector to embed change was also noted by SenateSHJ (2014).

When managers were asked what support they would like, the most common response was that the level of support is fine, and the role of the GCIO was noted as helpful. However managers still noted that there were barriers of time and funding to support innovation, and one of the issues with greater collaboration was the time it takes, and the implications of sharing resources.

Some practical suggestions were provided, including:

- A closer working relationship with agencies and greater visibility and dialogue
- Better forums, tools and facilitators, as well as policies that support collaborative approaches and systems thinking.

Collaboration across agencies and also tools to support an innovative knowledge sharing culture are important (Australian National Audit Office, 2009).

Generally the results obtained confirm the SenateSHJ 2014 report, that change is hard to achieve, and that middle managers are not collaborating as well as they could be. However there is also a perception from middle managers that they are not supported to do so, which is not surprising given the finding by Senate SHJ that collaboration is not a priority for senior managers looking for promotion (2014).

Key Insights:

- *The support available to middle managers is primarily via sector collaboration and networking with other agencies, however middle managers note that no support is available almost as commonly as support being available.*
- *Although no support being available is noted, it is not always considered an issue, and help provided by the GCIO when required is appreciated.*
- *Practical suggestions for support include; collaborative forums, facilitators and tools, and policies that support collaboration and systems thinking.*

Barriers to innovation

The most significant barriers to innovation noted were workload and budget, followed by issues related to leadership thinking around innovation and change, followed by risk aversion and governance issues. The first two barriers are mirrored by international research; however issues related to leadership in an assessment of the European public sector appear fourth, with third being regulatory requirements. In Australia an overly risk averse approach is noted as the most substantial factor inhibiting innovation, followed by short-term focus and policies and procedures (Bloch, 2011; Hollanders et al, 2013; Management Advisory Committee, 2010; Stone, 2104). However it is important to note that the issues related to leadership articulate by middle managers were not necessarily detailed, so for some respondents may have encompassed risk aversion and short-term focus as well.

Workload encompassed issues with lack of time and also inhibited collaboration, as one manager put it *“Cross-boundary activities are supported but generally take longer”*. Risk was a major issue; both as one senior manager put it due to *“risk of the idea”* and *“memories of past failures”*. One senior manager noted there is a need to create a culture where those that take risks are recognised, rewarded and promoted

Although not identified as a key barrier, lack of rewards was indicated to be a disincentive. This mirrors the research on the impact of organisation culture and incentive structures which reward innovative people, and the need for an innovation agenda (Banks, 2013; Kattel et al, 2013; Nauta & Kasbergen, 2009).

ICT as both enabler and deliverer of innovation means that old business models and ways of doing things needs to change (Lee, Hwang & Choi, 2012). This has been acknowledged by both middle and senior management. However a drive for efficiency in public services combined with the spotlight that accountability and transparency casts on initiatives may inhibit innovation, and yet some *“dynamic investment”* or *“good waste”* is required to support

innovation (Potts, 2009, p. 42). As interviewee 4 said “*there is a bit of a tension between how do you centrally coordinate and deliberately control investment in technology across a huge sector but at the same time promote innovation and innovative ways of thinking.*” Potts describes this as the “systematic trade-off in the public sector” (Potts, 2009, p.34). Public sector is challenged by competing demands of control of technology and drive for efficiency investment vs. cost of innovation. A report published by the New Zealand Productivity Commission notes that ICT investment is a key driver in innovation in services but that larger returns on investment in ICT are only evident after a few years due to the need to also invest in human capital and business process changes (de Serrees et al, 2014). The Australian approach is that investment in capability and systems delivers greater efficiency than cutbacks in resources (Stone, 2014). The need for investment in ICT alongside investment and support of people and processes was evident in some of the responses. Interviewee 3 also noted the need for agencies to rethink their business processes, as did a couple of the middle managers.

Budget restraints was a significant barrier cited by middle managers. One senior manager felt that working collaboratively minimised resource constraints, and another one noted that the structure of government finance did not support the achievement of shared outcomes, with a lack of incentive for agencies to “*take one for the team*”. A US report showed that the success rate for overcoming obstacles in the public sector was 57% on average, but for overcoming that of lack of resources was only 19% (Borins, 1998). However the OECD report on NZ noted the need for cooperation to minimise wasteful duplication of effort (Hutschenreiter et al, 2007).

Yet there are examples where innovation has been actively supported with the provision of resources. Inland Revenue and the Canterbury District Health Board have invested in innovation capability over a sustained period of time with positive results (State Services Commission, 2013a). Evidence of agencies actively supporting innovation were apparent, with some staff being allocated time for this. The European Commission’s report noted that the structure of agencies inhibits the ability of employees to input ideas (Hollanders et al, 2013). There was only one instance where a middle manager indicated that there was a structure within an agency that supported innovation, “*Anyone in the Ministry can initiate an idea and it goes to the appropriate governance board to assess*”. This process mirrors the first two phases in an innovation cycle, the generation and selection of ideas (Sorenson & Torfing, 2014).

Managers with low technical ability was noted as an issue by a couple of middle managers, and a senior manager also noted the need to have “*leaders who are more attune to the potential of information use and technologies*”, although it was not a dominant theme. This has been identified in the literature as problematic (Pijpers & Kees, 2005).

It could have been expected that restructuring would have been identified as a barrier given the evidence from Eppel et al (2008), however this was not discovered. One manager did note that a barrier to initiating innovation was “*fear that some collaborations, particularly the sharing of resources for BAU, will lead to job losses*”. However without further investigation it is not possible to say why restructuring was not identified as a barrier to collaboration and innovation.

Key Insights:

- *Primary barriers to innovation are described by middle managers as being workload and budget.*
- *Leadership thinking is seen by middle managers as a significant barrier to innovation.*
- *Further barriers to innovation are seen as internal governance mechanisms and risk aversion*

Middle managers empowered to initiate innovation

The most common response related to empowerment for middle managers to innovate was support from senior managers, followed by points related to barriers. It is significant that despite the question asking for responses related to empowerment the two next most common responses detailed barriers including passive or active resistance by senior managers, and the impact of delivery to existing work programme. It is important to note that it is the agency that creates the conditions for empowerment and the top of the agency formulates the innovation agenda (Micheli et al, 2012; Nauta & Kasbergen, 2009). As one of the senior managers noted an environment is needed where middle managers were empowered to have ideas “*rather than it being imposed from the top*”. One senior manager noted that there was not really any support provided for middle managers to innovate, and its existence would be very dependent on the confidence and maturity of the agency. In some respects this was not dissimilar to what another senior manager said when they indicated that it was very much up to the middle manager to realise the opportunities available to them. This combined with findings where lack of support to collaborate was equally in evidence as support to collaborate indicates that the realisation of transformational leadership is not yet pervasive.

The public sector could allow a certain percentage of time to be focused purely on job related innovation and innovative ideas in general (Belcourt & Tagger, 2002; Borins, 2002). Several survey respondents noted that they had an allocation of time to devote to innovation and innovative thinking. Interestingly the 2102 Grant Thornton article revealed that few senior managers had innovation explicitly noted as a role requirement. Several middle managers noted that innovation was in their position descriptions, and therefore a clear expectation. However it was evident from senior management comments that not all middle managers either accepted that as their role or were expected by their manager to be innovative in their approach. It is worth noting that the European Commission's report on trends in innovation noted that there may be reluctance by staff to embrace new ways of working (Hollanders et al, 2013). The SenateSHJ report noted that ambitious senior managers do not prioritise collaboration, which is a critical input to innovation (2014). More research would be required to determine if innovation, and also collaboration, is specified as a component in ICT middle managers position descriptions and if there was reluctance on the part of ICT managers to accept this as part of their role.

It is important to note that the right people, the 'change agents', need to be in place and resourced to maximise opportunities provided by partnerships (Hanna, 2011). This was endorsed by SenateSHJ when it was said that innovators and collaborators need to be recruited for the public sector.

Key insight:

- *The most significant factor empowering middle managers to deliver innovation is the support of their senior manager; conversely lack of support by senior managers combined with existing workload was a significant barrier.*

Conclusion

Collaboration is very important for innovation, however a 2014 report commissioned by New Zealand's State Services Commission identified that collaboration amongst middle managers in the core public sector was not as good as it could be. Middle managers are key to implementing ICT strategy and to delivering innovation, and collaboration is a critical enabler for both. The all-of-government ICT Strategy enables state sector goals, and has a stated intention of delivering innovation. The ICT Strategy outlines its expectation for innovation under the theme 'leadership and culture deliver change', and states that this will be delivered at all levels. This case study set out to discover if NZ ICT middle managers from across the public sector are collaborating and implementing innovations, and what the enablers and barriers to enabling this might be. Key insights were obtained from interviewing senior managers and surveying middle managers.

Given middle managers have a critical role in implementing the ICT Strategy there is less of an understanding of it than desirable, although awareness is slightly higher amongst agencies that are mandated to follow it rather than simply encouraged. There is not a consistent sense of what innovation is, although middle managers report that they are engaging in innovations to quite a high degree. The range of stakeholders engaged with is limited; the collaboration is primarily agency to agency, agency to consultant and agency to commercial supplier. Although these are important relationships there is a noticeable lack of engagement with universities, citizens, not-for-profits and Crown research institutes. Leadership, and dispersed leadership, encourages collaboration and is highly desirable to support innovation, the desire for this was evident; its realisation less so. Collaboration and innovation is happening, however agencies are taking a narrow rather than wider view and are struggling to share resources. The study confirmed the SenateSHJ 2014 report that middle managers are not collaborating as well as they could.

The study discovered that support to collaborate available to middle managers is primarily from sector collaboration, GCIO support and networking, but equally as frequently it was reported that there is no support to collaborate, although this is not always considered an issue.

Primary barriers to innovation were the workload delivering to the existing work programme and budget, and leadership thinking followed by internal governance mechanisms and risk

aversion. The most significant factor empowering middle managers to innovate was the support of their senior manager. Although easier to identify barriers than minimise them, minimising barriers would better support delivery to the all-of-government ICT Strategy, and better enable Result areas 9 and 10 under Better Public Services. Practical suggestions for support were provided; ideas included collaborative forums, facilitators and tools, and policies that support collaboration and systems thinking.

Areas where further research could be done were identified. Given the importance of a variety of actors in an innovation system, why collaboration is occurring with a limited range and what could support wide collaboration merits further research. More research could also determine if innovation and collaboration are clear role requirements in ICT middle managers position descriptions, if they are being recruited for these skills, and if there was reluctance on their part to accept this as part of their role.

Although this study was small in scope, it nonetheless provides insights into a demanding and rapidly changing ICT environment, and provides a focus for further actions and research.

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Appendix 1: References to Innovation in ICT Strategy

Where innovation occurs in the ICT Strategy with related wording is in the table below.

Section heading	Wording
The future of government ICT	The future for government ICT is envisaged as information-centric rather than the technology-centric model of today, transcending agency boundaries to deliver smarter customer-centred services and being characterised by: information being open by default, and sharing being widespread, encouraging knowledge creation and innovation – including by the private sector;
Information is managed as an asset	Information hubs provide a secure platform for innovation and growth
Leadership and culture deliver change Destination 2017	A culture of collaborative leadership and operation will be ingrained and – along with new sustainable funding approaches – will be delivering genuine agility, collaboration, innovation , and engagement with people and businesses. Information leadership will pervade government, from Ministers through to front-line delivery personnel.
Leadership and culture deliver change The changes we need to make	Currently, ICT services are agency-centric, reducing opportunities for collaboration, or creating economies of scale or scope. Likewise, business units within agencies are a captive audience for their ICT units, restricting innovation , mobility and choice.
Leadership and culture deliver change Collaborating, communicating and engaging.	Establish a research and innovation accelerator programme
System change Today	ICT services are agency-centric, reducing opportunities for collaboration, or creating economies of scale or scope. Likewise, business units within agencies are a captive audience for their ICT units – restricting innovation , mobility and choice.
System change 2017	ICT units move from supporting business operations to enabling business transformation, with capabilities focused on: strategy, architecture and planning; information management; collaboration and innovation ; business transformation; business intelligence; capability management; supply, sourcing and service chain management; and where appropriate, customer services.

	<p>ICT units have clear business models and focus on co-creating value with partners and customers; ‘open’ innovation, collaboration and partnership are the norm.</p> <p>Information sharing is widespread, encouraging knowledge creation and innovation, including by the private sector, thus reducing the burden on citizens and businesses accessing services.</p>
<p>Action Plan</p> <p>Collaborating, communicating and engaging</p>	<p>35 Research and innovation practice</p> <p>Establish an innovation accelerator programme that focuses on business-driven research and development. Engage more strongly with industry and academia.</p> <p>35.1 Design and commission the practice in consultation with stakeholders and building on existing innovation initiatives.</p> <p>35.2 Pilot and evaluate the programme, with an initial focus on business process re-engineering opportunities to improve service design and delivery.</p>

Appendix 2: Papers Supporting the Better Public Services Advisory Group

References and context for innovation from a set of issues papers prepared by the joint central agencies Secretariat that supported the work of the Better Public Services Advisory Group in 2011. They set out the thinking on some of the critical issues (State Services Commission, 2011).

Result (p. 13)	<p>... and management of risk tends to trump innovation</p> <p>To the extent that accountability mechanisms are used primarily to control expenditure and minimise risk for government, they stifle innovation. Moving to mechanisms that are more concerned with the achievement of results would free up actors to achieve those results in innovative ways. This shift requires an environment that is more tolerant of failure and is based on solid information about the achievement of high-level results.</p>
Result (p. 18)	<p>(re public reporting)</p> <p>maximising the return on investment for government-funded information by making this available to fuel innovation, and</p>
Leadership (p.3)	<p>There is a considerable gap in leadership terms between what we have and what will be needed, including leadership of culture change across the system to support greater innovation and continuous improvement. (exec summary)</p>
Leadership (p.4)	<p>Early work in the context of the Better Public Services programme identified that the state services are not well equipped to meet the challenges of the next 20 years. Barriers to progress include weak customer focus in public services, lack of coordination, poor economies of scale, slow pace and little innovation.</p>
Leadership (p.4)	<p>Agencies will have to transform and reinvent themselves to do this, changing internal cultures to support greater innovation for continuous improvement.</p>
Leadership (p.6)	<p>We need leaders who can move beyond a simple “value-for-money”, cost-cutting paradigm as this is not sustainable over the medium term. Transformation of current service delivery and policy is needed. Innovation and calculated risk-taking will be needed to achieve the required year-on-</p>

	year efficiency and effectiveness improvements in the public sector.
Leadership (p.7)	In an environment which places greater emphasis on citizen voice, achievement of cross-cutting results and achievement of functional excellence, the culture of the system will need to shift to encourage innovation in how agencies engage with communities and innovation in inter-agency collaboration and coordination.
Leadership (p.7)	There will be a need to define and communicate the behaviours needed for collaboration, innovation and continuous improvement; ongoing reinforcement of these behaviours in engagement with chief executives and senior leaders; and defining and encouraging the kind of organisational changes needed to support and entrench culture change.
Leadership (p.8)	lack of commercial legal expertise causing unnecessary risk aversion within agencies thus blocking innovation and creating huge cost and inefficiency (related to procurement expertise)
Leadership (p.10)	Leadership for transformation will require a focus on cultural change in agencies with frequent reinforcement of the behaviours required for innovation, including the ability to take calculated risks.
Leadership (p.11)	Consequently, a major innovation at the system leadership level is needed to ensure that we have, at a single point, a comprehensive view of leadership including: <ul style="list-style-type: none"> ● all of the leadership roles in the system – functional, cross-agency, sector and Agency ● definition of these roles and the associated accountabilities and powers – to ensure efficiency and effectiveness of the system and to avoid costly duplication or gaps ● an ability to identify and grow talent pools for the system as a whole ● an ability to more move talented individuals into critical leadership roles in a flexible and timely manner, and ● an ability to express a vision for culture change across the system and lead its implementation.
Leadership (p.14)	Leadership, in this context, will be very concerned with leading culture change and will involve, at both agency and system level, modelling and communicating the behaviours for a culture of innovation, collaboration and

	citizen engagement.
Information (p. 6)	Economic value: <ul style="list-style-type: none"> • allowing greater innovation through the development of new products and business opportunities based on government data
Information (p. 6)	What do we know about the value of public sector data? In 2003, the European Union issued a directive setting minimum standards for access to public information and conditions for its re-use as a way of promoting both growth and innovation. These included having clear procedures for the re-use of information, an upper limit on charging, and equality of access and an appeal mechanism to ensure fair access to all. A review of this policy in 2009 found that the value generated by the information released was €27bn, equal to four times the size of the mobile phone market.
Best sourcing (p. 3)	Having an open and transparent framework to encourage choice means suppliers are under constant pressure to provide ongoing evidence on how and why they should continue to be the service provider – a framework which encourages efficiency and innovation.
Best sourcing (p. 3)	Using a best-sourcing approach for allocating funding between multiple providers encourages ongoing innovation and service improvements even where services are provided by the Crown and its agencies.
Best sourcing (p. 3)	The New Zealand state sector currently uses best-sourcing in many places. There remain examples, however, where public services in New Zealand are provided by Crown agencies where, in other jurisdictions, the same public services are being provided by non-state providers. Where this is the case, further exploratory work is required to examine where a more contestable approach in New Zealand might promote the strengthening of those public services, cost savings to taxpayers and a greater facilitation of innovation.

No references to innovation were found in the Better Public Services Advisory Group papers on decision-rights, organisational arrangements, or in the core elements paper which describes the approach in the 1980's.

Appendix 3: Excerpts from Result Areas 9 and 10

Result Area 9

New technology will provide easier, more cost effective ways for New Zealanders to engage with government. Technology will also contribute to continuous innovation and improvement in the public sector. Technology is constantly evolving and so the reality of a 'one stop shop' has had to change as we better understand the needs of our business customers and adapt services for the channels and tools that businesses use.

Result Area 10

We will build on innovation, and collaborate to share learnings and best practice across the public sector. (p.5)

Independent design labs may be used to support the innovation process. There will be a culture that values innovation, and the regulatory and legislative environment will support this. Changes to services will often be trialled with customers on a small scale before being adopted more widely, speeding up the innovation timeframe and reducing the risks associated with 'big bang' change – effectively helping 'design out' risk. (p. 26 – 127)

*Removing legislative barriers will help clear the way for agencies to provide services in new ways using digital channels. It therefore supports the system vision according to which there is a culture of digital innovation within government
(p.47)*

This action supports the Result 10 system vision according to which customers are at the centre of service design and delivery, government is connected and collaborative, and there is a culture of digital innovation.

(p.49)

(State Services Commission, 2014a)

Appendix 4: Examples of Types of Collaboration

There are a number of different types of collaboration. The three below provide a good example of the range of collaborations; agency to agency, public private and public citizen. As such they are quite different in the way they are managed.

Cross-agency collaborations

New Zealand government agencies are expected to adopt shared ICT products and services to enable transformation of their systems; this is a top-down model of innovation. However a collaborative approach was taken to determine what to procure, for instance the Department of Internal Affairs worked with Department of Conservation, NZ Transport Agency, NZ Qualifications Authority and the Ministry for Primary Industries to develop the ‘office productivity as a service’ offering (Department of Internal Affairs, 2014a). Procurement as innovation for technologies is a common tool to promote economic benefits (Lember, Kalvet & Lattel, 2011). Collaboration is important to transfer user-rights to all participants (Jarvenpaa & Wernick, 2011).

This form of innovation sits most closely with the cross-agency model. Cross-agency collaboration happens in the NZ government scenario as noted above where innovations such as accessing shared enterprise content management cloud-based services are available for all public sector agencies. The Zealand government website for ICT (www.ict.govt.nz) details ICT products and services currently available for use across government agencies.

Another example is the Trade Single Window (TSW), a component within the Joint Border Management System (New Zealand Customs Service, 201?). The TSW will enable parties involved in international trade and transport to submit the craft and cargo clearance data required by NZ border agencies electronically, once, through one entry point. It is being developed by the NZ Customs Service and the Ministry for Primary Industries. Stone (2014) points out that cross-agency teams tend to be “more innovative, even when the teams were not specifically set up for the purposes of driving innovation”.

Public/private collaborations

Establishing relationships with the private sector, including the not-for profit sector, can contain costs and increase efficiencies (Alves, 2013). Teams that comprise members from both public and private agencies who balance their collaboration and cooperation can make good progress towards innovation. Collaboration increases the range of skills and talents

available, supporting more innovative thinking particularly in the area of service delivery and better products (Cankar & Petkovsek, 2013; Nissen, Evald & Clarke, 2014). Micheli et al (2012) notes public/private as an “emerging business model , and one which is important in facilitating collaboration between public-sector organisations, and private-sector partners. Public/private partnerships are typically used for large-scale infrastructure projects where “risks can be identified and transferred to the private sector” (p.51).

Public/citizen collaborations

Another form of collaboration is co-creation with users of a service. This can overcome some of the issues around scarce resources and a multitude of clients to support (Alves, 2013). Increasingly the public sector is ‘reaching out’ to citizens to make the greatest use of citizen’s knowledge, utilising that for the public sector innovation process. An example of this is the USA’s Citizen Corps (www.citizenscorp.gov) which helps communities to help themselves with the support of government. There are examples across a number of countries of government engaging in collaborations with citizens (Lee et al, 2012). A similar concept is referred to as ‘crowdsourcing’; this supports generation of ideas and solutions from citizens. An increasing focus is creating solutions for people with people. (Datt & Nash, 2013; León et al, 2012). A NZ example is the Christchurch City Council’s ‘Share an Idea’ community public engagement campaign for the redevelopment of the Central City following the earthquakes for which it was recognised internationally with a Co-creation Award (Christchurch City Council, 2011). The proposed NZ Government Online Engagement Services (NZGOES) initiative is both an enabler and deliverer of innovation as it is intended to utilise technology to provide a comprehensive online consultation and engagement service to NZ government agencies (Department of Internal Affairs, 2013c).

Appendix 5: Interview and Survey Questions

Semi-Structured Interview (senior managers)

1. Describe your understanding of what is meant by the concept of innovation as discussed in the *ICT Strategy to 2017*?
2. Please explain the role of IM/ICT public sector middle managers in the generation and implementation of innovative technologies within government agencies, and
 - *How is dispersed leadership fostered?*
3. Describe how collaboration occurs between agencies/citizens/private sector and ICT/IM public sector middle managers in support of innovative technologies
4. Please outline any barriers to ICT public sector middle managers developing or implementing innovations
 - *Describe any barriers to ICT experimenting with new approaches*
 - *Describe if resource constraints are an issue?*
5. Explain what support is in place to enable ICT public sector middle managers to collaborate on innovations

Online Survey (middle managers)

1. For the purposes of this survey a middle manager is defined as someone who reports in to the CIO level.

Do you work in a public sector information/ICT middle management role?

Yes

No

2. Do you work in one of the following?

Government department

State service agency (e.g. Crown entity, CRI)

State sector agency (e.g. SOE, university)

Other (Describe)

3. Evaluate the following statement:

“I have an excellent understanding of the government’s ICT Strategy to 2017”

Strongly Disagree

Disagree

Neither agree nor disagree

Agree

Strongly Agree

4. An innovation is a new or substantially changed process, product, service or delivery method for delivering outputs. The focus of this survey is on technological innovations, or innovations supported by technology.

Have you implemented, or initiated implementation, of any innovations over the last 18 months?

More than 3

3

2

1

None

Details (*free text field*)

5. How important was collaboration with the groups below for your work unit/team innovation(s)?

Another public sector agency or agencies

Professional organisation

Commercial suppliers of products

Consultants

Not-for-profit agencies or associations

Involvement from citizens

Universities

Crown research institutes

Other (Describe)

(categories of Not, Low, Medium, High – and must pick one)

Comments

6. Describe the support you receive to assist you to collaborate with other groups (agency, private sector, citizens etc)?

7. Describe the support you would like to assist you to collaborate with other groups (agency, private sector, citizens etc)?

8. Describe any barriers to you/your team initiating innovations?

9. Explain how you are empowered to initiate innovations?

10. Any other comments

Appendix 6: Detailed Breakdown of Middle Management Collaboration

This table provides a more granular breakdown of the collaboration between ICT middle managers and other actors.

	Not	Low	Medium	High
Another public sector agency or agencies	19.40% 13	17.91% 12	43.28% 29	19.40% 13
Professional organisation	44.78% 30	23.88% 16	20.90% 14	10.45% 7
Commercial suppliers of products	14.93% 10	10.45% 7	37.31% 25	37.31% 25
Consultants	22.39% 15	22.39% 15	34.33% 23	20.90% 14
Not-for-profit agencies or associations	77.61% 52	11.94% 8	10.45% 7	0.00% 0
Involvement from citizens	65.67% 44	13.43% 9	14.93% 10	5.97% 4
Universities	76.12% 51	10.45% 7	11.94% 8	1.49% 1
Crown research institutes	77.61% 52	17.91% 12	2.99% 2	1.49% 1
Other (Describe below)	88.06% 59	4.48% 3	4.48% 3	2.99% 2

Described under the 'Other' category were, with one instance of each:

- Local authorities
- District Health Boards
- Other country government cyber-security advisors
- Social media networks
- Volunteers
- KPMG – to see how they use email tool
- Use of a paper-based process to model electronic processes