Distributed Digital Leadership for All-of-Government Digital Transformation: Challenges and Enabling Processes

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Abstract

Governments around the world are rolling out public sector-wide digital strategies and initiatives that cut across traditional agency boundaries in a bid to achieve All-of-Government (AoG) digital transformation and the adoption of emerging technologies at space and scale in the public sector. These centrally led initiatives assume the existence of digital leadership and cross-agency collaboration amongst agencies to achieve AoG outcomes. However, this is not often the case, as AoG initiatives are plagued with several challenges, including a lack of agency collaboration, lack of funding, lack of capability assessment et cetera. In this paper, we examined the challenges and organisational structures that support the distributed digital leadership (DDL) that underpins AoG's digital strategy implementation. We analysed interview data from 21 public sector employees across four agencies and arrived at a set of six challenges that impede the effective implementation of AoG DDL digital strategy initiatives and seven mitigating processes and organisational structures. Finally, we provide actionable recommendations on how public sector agencies can fully maximise their collective distributed digital leadership for AoG digital transformation initiatives.

Keywords

Distributed Digital Leadership, All-of-Government, Digital Transformation, Digital Government

1. Introduction

Governments around the world are increasingly rolling out 'joined-up' digital strategies and initiatives in a bid to deliver digital transformation outcomes that transcend organisational boundaries and reduce duplication of efforts [1]. These joined-up efforts are often referred to in literature by different terms, including joined-up government (JUG), whole-of-government (WG) or all-of-government (AoG) – terms that loosely mean the same thing, which is a cross-agency collaboration to deliver better outcomes for citizens [2]. These terms (WG, JUG, AoG) are used interchangeably in this paper, but we prefer to use AoG as that is the term used more widely in the New Zealand public sector, the context of our research. We chose the New Zealand context because New Zealand has been among the leaders and early adopters of digital technologies [3] and has since been involved in AoG efforts for the digital transformation of the public sector. We define these joined-up efforts as distributed digital leadership because public servants (digital leaders) across the public sector and "Lead" agencies are required to contribute to AoG digital transformation efforts based on their job role accountabilities and the competencies they bring to their role [4, 5]. In New Zealand, there is an AoG digital strategy called 'Strategy for a Digital Public Service'(SDPS) that is led by the Department of Internal Affairs (DIA), the "Lead" agency for digital transformation in the public sector [6]. The

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Government Chief Digital Officer (GCDO) is responsible for driving the SDPS and has introduced a 3-year Service Modernisation Roadmap to deliver on the digital strategy across the public sector [7]. However, implementing distributed digital leadership in the public sector is not without challenges [5, 8]. Ensuring that agencies can work together requires cross-agency processes and organisational structures that will enable effective AoG digital strategy execution, especially in the area of AI adoption in the public sector. We use AI adoption in the public sector as our illustration because it involves the coordination and participation of several agencies, and it is a good example of distributed digital leadership (DDL).

To investigate the challenges and processes that enable distributed digital leadership for AoG digital strategy execution, we ask the following questions. ***RQ1: What are the challenges that impact the implementation of DDL for AoG strategy execution in the public sector? RQ2: What are the factors, processes and organisational structures that should be put in place to address these challenges?*** For the first question, we focus on specific challenges to AoG distributed digital leadership strategy execution not thoroughly covered in the existing literature. And in the second question, we focus on identifying from practitioners who are involved in AoG approaches, certain processes and organisational structures that should be put in place to address the challenges identified. To address these questions, we interviewed 21 public servants across four agencies, including the Lead agency responsible for AoG digital transformation. In the rest of this paper, we provide a theoretical background, describe the study and the results and finish with a discussion and outlook.

2. Background

2.1. All-of-Government (AoG) Approach for Digital Transformation

The need for AoG/JUG approaches to public service delivery and digital transformation may have come about as a response to New Public Management (NPM) reforms [9]. However, not all public administrations have undergone institutionalised NPM reforms, and join-up efforts may be driven by other factors such as working collaboratively for a crisis– e.g. the COVID-19 pandemic response, or to tackle health or climate issues [10-13]. This paper is focused on the digital transformation of the public sector, especially one that is driven by an AoG strategy that seeks to transcend traditional, siloed government structures [14] and deliver better digital outcomes for citizens. This AoG strategy approach requires "*the coordination and integration of IT strategies across different agencies. It also requires the alignment of agency IT strategies with top-level government IT policies and strategic initiatives such as the public administration reform and e-government programs*" [1]. Joined-up government or all-of-government digital transformation requires in most cases a strong central core government agency or "Lead" agency that will work with other agencies across government to deliver digital transformation outcomes [15].

Joined-up government or all-of-government digital transformation requires in most cases a strong central core government agency or "Lead" agency that will work with other agencies across government to deliver digital transformation outcomes [15]. An example of a centrally led digital transformation is seen in the UK, where the Government Digital Service (GDS) is responsible for "setting, leading and delivering the vision for a modern digital government" [16]. The GDS has recently published 'a blueprint for modern digital government' which is a long-term vision for the future of digital government in the UK, and has a six-point plan for government digital reform, including 'join up public sector services'[17]. Another example is in Australia, where the Digital Transformation Agency (DTA) leads the government's digital transformation strategy through an implementation plan that requires whole-of-government approaches and collaboration [18].

In New Zealand, this AoG approach is set out in the Strategy for the Digital Public Service [6] which is delivered through a cross-agency three-year programme of work called the Service Modernisation Roadmap [7]. Different government agencies are responsible for delivering certain aspects of the Service Modernisation Roadmap based on their areas of expertise and key functions in the public sector. For example, the Government's Chief Data Steward (GCDS), who is

the Chief Executive of Stats NZ is responsible for working with agencies to identify opportunities for implementing data standards, developing a plan to build a high-quality administrative data pipeline to provide improved data for service delivery, among other responsibilities. The Government Chief Digital Office (GCDO) is responsible for AoG AI work programme amongst other responsibilities, demonstrating distributed digital leadership at an all-of-government level.

2.2. Digital Leadership for AoG Digital Transformation

Effective Digital Leadership [19-21] is required to deliver the Service Modernisation digital transformation initiatives, both at the Lead agency and across other agencies [4] in the public sector, and indeed, is a key focus area of the New Zealand Strategy for the Digital Public Service [5]. The SDPS aims to identify and grow talent at all levels that is diverse and multi-disciplinary and deliver system results [4], but for this goal to be achieved, there must be skills and capability analysis across the public sector to identify suitable digital leadership competencies for digital transformation across government. Digital leadership competencies must be aligned with the job role accountabilities of digital leaders and matched to the digital strategy to increase the likelihood of digital strategy success[26]. Digital leadership is inherently distributed (shared) because every role contributes to digital transformation based on their job role accountabilities and the competencies required for the role [27]. This is demonstrated at the individual level, especially for senior management roles [11] or at an agency level by the distribution of the Service Modernisation responsibilities to agencies in the public sector based on their areas of expertise [6]. We acknowledge that some challenges to digital transformation in the public sector, including constitutional, jurisdictional, collaborative, cost and organisational constraints [22], have been discussed. Our point of differentiation is presenting a perspective from public sector practitioners who are actively involved in delivering AoG digital transformation initiatives that are driven by a distributed digital leadership approach [5].

2.3. Distributed Digital Leadership for AoG Digital Transformation

This paper builds on the work that conceptualised distributed digital leadership (DDL) in the public sector and positions AoG digital transformation initiatives as a form of DDL [5]. We adopt a working definition of distributed digital leadership as *the intentional alignment of job-role accountability of digital leaders and the adoption of their shared capabilities for digital government outcomes*, which describes the DDL framework conceptualised by Adie, Tate [5]. The DDL framework enables AoG digital strategy implementation and ensures that specific cross-agency and within-agency initiatives can be aligned to leverage the digital leadership competencies of digital leaders across the public sector to achieve digital strategy outcomes [5].

Four principles underpin the DDL framework. The first principle is the principle of ***digital leadership contribution***. This principle suggests that everyone in the organisation is a potential digital leader, participating in digital leadership and therefore, contributes (with varying job role accountabilities) to the digital transformation outcomes of the organisation [23]. The second principle is the principle of ***digital leadership competencies***. Every job role in the organisation requires digital leadership competencies at different levels of expertise, depending on their digital leadership contribution and job role accountabilities. The third principle is the principle of ***digital leadership contribution and competencies alignment***. This principle suggests that for organisational (AoG) outcomes to be achieved in a digital transformation, there must be an intentional alignment of the job role accountability (contribution) of digital leaders and the digital leadership competencies they bring to the role. Finally, the fourth principle – the principle of ***digital leadership shared competencies*** addresses the problem of lack of competencies in niche areas and suggests that competencies are distributed and could be 'sourced' from within a group of people participating in shared leadership towards a collective outcome [24].

These principles apply to the AoG-led adoption of AI in the public sector because every agency contributes to the overall AI adoption process through the job role accountabilities and capabilities of their staff members. For example, front-line staff in an agency are required to set the proper permissions and classification labels on those documents to prevent accidental data

exposure, and senior leaders are required to define AI policies and ensure alignment with the Lead agency's (GCDO) direction. This means agencies across the public sector can contribute to and share the collective capabilities across the sector based on each agency's areas of expertise and digital leadership, thus demonstrating distributed digital leadership [5]. However, an AoG-led initiative across the public sector is not without challenges [5, 25, 26], but the specific challenges and mitigating factors that impact an AOG distributed digital leadership approach is a research gap and the focus of this paper.

3. Methods

3.1. Data Collection

We used qualitative data analysis and qualitative interviews for this study [27]. Semi-structured interviews [28, 29] with 21 public sector employees was conducted using purposive sampling [29] to identify participants from four different agencies. Random sampling was not advisable because we aimed to include participants from a Lead Agency (LA) who demonstrates distributed digital leadership [5] and responsible for implementing an AoG digital transformation initiative. Participants from three other 'participating' agencies are denoted collectively as 'PA' and shown in Table 1.

Table 1
Interview Participants

Agency	Number of Participants
Lead Agency (LA)	9
Participating Agencies (PA)	12
Total	21

Overall, we conducted and transcribed over 20 hours of interviews, both in person and online via Microsoft Teams. Questions were asked about challenges that impact AoG DDL implementation and the processes and organisational structures that enable it. Participants were allowed to review their interview transcripts for accuracy.

3.2. Data Analysis

Interview transcripts were coded into themes [30] reflected in Figure 1, adapted from the DDL framework [5].
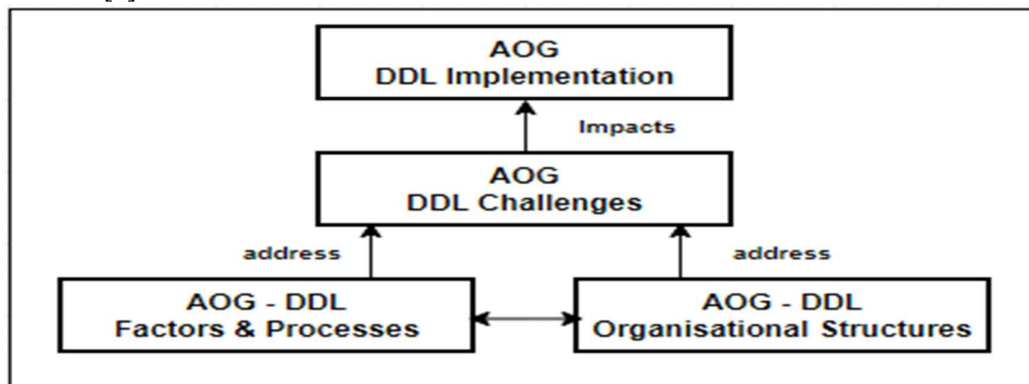
Figure 1: A conceptual view of DDL challenges, organisational structure and enabling factors [5].

Figure 1 provides a conceptual view of how certain challenges may impact the implementation of an AoG-led distributed digital leadership initiative (AI adoption) across the public sector, and the factors, processes and organisational structures that address these challenges, which are discussed in the next section.

4. Preliminary Findings

In our conversations with public servants involved in AoG initiatives, we found several challenges that impact the implementation and outcomes of AoG initiatives, which the Service Modernisation Roadmap (digital strategy) is intended to deliver. We also found that these challenges can be mitigated by having robust cross-agency processes and organisational structures that enable the implementation of AoG initiatives, discussed in the subsequent sections.

4.1.   Challenges that impact AoG distributed Digital Leadership

We highlight in Table 2 the challenges that impact AoG DDL adoption of AI across the public sector. These challenges can be categorised into six main areas which are a) misalignment of AoG outcomes between agencies, b) siloed government agency structures, c) conflicting government policies and regulatory hurdles, d) inadequate skills, competencies and capability within the public sector, e) lack of cross-agency management support, and f) technical debt and legacy system issues.

Table 2
DDL Challenges, Processes and Organisational Structures

Dimension	Themes
Challenges that impact AoG Distributed Digital Leadership	Misalignment of AoG outcomes between agencies.
	Siloed Government agency structures.
	Conflicting Government policies & Regulatory hurdles.
	Inadequate skills, competencies and capability within the public sector.
	Lack of cross-agency Management support.
	Technical debt and legacy systems
Factors and processes that enable AoG Distributed Digital Leadership	Organisational structure, culture, funding and resource sharing.
	Effective Digital Leadership.
	Establish strategy, processes & systems that enable cross-agency collaboration.
	Establish cross-agency collaboration and working groups.
Organisational structures enable	Create cross-agency roles and working groups.
	Enable cross-agency talent rotation and secondment opportunities.

| AoG Distributed Digital Leadership | Enable AoG teams with funding and clear mandates to perform their role. |

Misalignment of AoG outcomes between agencies: Government agencies may often have different sets of outcomes for their digital transformation programme that may not align with the outcomes set out in the AoG digital strategy. This may be because agencies design and implement their digital strategies to support their primary functions (role) which can often lead to bespoke applications and systems that do not necessarily join up with the rest of government. This is a challenge for an AoG-led AI adoption initiative as agencies do not all have the same short-to-medium-term goals for their adoption of new technologies. As one interview participant pointed out agencies are "*so task-based and our productivity (outcome) is hard to measure*" (PA1).

Siloed government agency structures: AoG digital initiatives are hampered by siloed government agencies and the lack of information sharing between agencies [8]. Without adequate information sharing, AoG-led initiatives are not adequately communicated to agencies, and public servants who are supposed to participate in or deliver AoG digital strategy initiatives may not be aware that such initiatives exist in the first place. Siloed structures can also be seen in the IT department of agencies, where different teams may be working towards key tasks and deliverables that are not necessarily aligned with the digital strategy of the government agency, let alone an AoG strategy. Siloed structures hinder collaboration and breed mistrust between agencies, which negatively impact an AoG effort towards AI adoption in the public sector.

Conflicting government policies & regulatory hurdles: AoG digital strategy implementation can be challenged by regulatory requirements, lack of funding or government policies that are risk-averse, inconsistent or constantly evolving, making it difficult for agencies to quickly adopt AI or new technologies in the public sector. On the flip side, some government policies that are pro-AI adoption may place an unnecessary 'burden' on agencies that are not quite ready for AI adoption and who may be dealing with several legacy issues, including technical debt. Either way, government regulatory and policy settings need to be consistent, balanced and supportive of agencies across the spectrum for a centrally led AoG approach to AI adoption to be successful.

Inadequate skills, competencies and capability within the public sector: Government agencies are always drawing from a limited pool of resources, especially for emerging technologies. Specialist skills and competencies in the use of AI for government are hard to come by, which hinders the rapid adoption (at pace and scale) of AI across government. Even for centrally-led AoG initiatives, specialist skills are required in the deployment and implementation of AI, managing privacy, cybersecurity and data governance requirements and ensuring that the right outcomes are achieved with the use of AI in the public sector.

Lack of cross-agency management support: In the absence of the right authorising environment at leadership, governance and management levels, agencies do not have clear directives to participate in AoG initiatives. Public servants are unable to commit to AoG initiatives and collaborate across the public sector for shared outcomes (AI adoption) if they are not supported by their leadership or their direct line managers.

Technical debt and legacy systems issues: Agencies are burdened by legacy systems and technical debt, which may hinder their ability to adopt AI or other new technologies. AoG digital strategies and initiatives are often 'forward-looking, doing little to address the legacy systems, processes, data or other IT issues that agencies are dealing with on a day-to-day basis. Agencies with such issues may be more interested in efforts to 'keep the lights on' than in adopting new technologies, especially if they lack the in-house capabilities to do so. These challenges are mitigated by organisational factors and processes discussed below.

4.2. Factors and processes that enable AoG distributed digital leadership

Factors and processes that enable AoG distributed digital leadership (shown in Table 2) are:

Organisational structure, culture, funding and resource sharing: Government agencies should be set up with the right cross-agency values, culture and mindset so public servants are comfortable and supported to reach out to their peers across the public sector for collaboration and joint digital strategy initiatives. Consistent job design and competencies requirements for job roles across the public sector will enable the 'portability' of skills and competencies across the public sector, especially for specialist or in-demand roles. Steering committees and governance groups should provide the right authorising environment for cross-agency initiatives to be carried out. Participating agencies should be encouraged to contribute to Lead agency initiatives and support AoG outcomes.

Effective digital leadership at the agency and cross-agency levels is essential for AoG strategy initiatives to succeed. For digital leadership to be effective, job role accountabilities and required competencies must align with those espoused by leaders in these roles. Digital leaders in each participating agency must bolster the leadership at the Lead agency in ensuring the effective implementation of AoG strategy initiatives. An analysis of skills and competencies across the public sector is necessary to identify areas of alignment or misalignment in job roles and competencies, providing a foundation for upskilling, reskilling, and collaboration.

Strategy, processes & systems for cross-agency collaboration: Intentional efforts must be made to ensure that there are processes and systems in place to enable cross-agency collaboration. AoG's digital strategy must consider the agency's digital strategies or technology roadmap to ensure top-down (from the Lead agency) and bottom-up (participating agencies) alignment to increase the chances of implementation success. Such top-down and bottom-up alignment of digital strategies will pave the way for joined-up digital solutions [15] and common approaches for technology implementation and procurement across government. Government agencies should also be incentivised to collaborate using either government policy settings or measurable key performance indicators. Awareness and education about the job role accountability of Lead agencies should be done so that public servants are aware of cross-government digital initiatives and their responsibilities in supporting such initiatives. As an interview participant suggested, "*I'd love to see our work centralised and automated in some system that would make distribution easy. I think that would be a huge value-add*" (PA2).

Cross-agency collaboration and working groups: Agencies that want to collaborate are often hindered by siloed agency processes [14] which makes communication and information sharing between agencies cumbersome, negatively impacting AoG strategy implementation efforts. With the right processes and organisational settings for cross-agency collaboration, working groups and government forums become easy to set up with clear directives for supporting AoG strategy initiatives.

4.3.   Organisational structures that enable AoG distributed digital leadership

Effective AoG DDL is also supported by organisational settings and structures (Table 2), which are ***Cross-agency roles and working groups***, which are a pool of volunteers who can step in to support specific initiatives across the public service and help fill the competencies gap in niche areas. Working groups could be set up for AI adoption to ensure the speedy adoption and effective use of AI across the public sector. Special interest working groups could also be established for niche areas like privacy, cybersecurity and data governance for AI adoption.

Enable cross-agency talent rotation and secondment opportunities to ensure the 'cross-pollination' of competencies and capabilities across the public service. Individuals competent in niche areas that would benefit other agencies should be encouraged to take on secondment opportunities to support other agencies lacking in those areas.

Establish strategies, processes and systems that enable cross-agency collaboration. IT departments are isolated from the business, even within an agency, which hampers collaborative efforts across multiple agencies in the public sector. We suggest that deliberate investment in systems and strategies be made across government that enable information sharing, joined-up initiatives and collaboration.

5. Discussions

In this section, we provide practical examples of how certain roles and organisational structures can mitigate the challenges impacting AoG distributed digital leadership. These roles could serve as 'coordinating agents' or 'network entrepreneurs' who help coordinate activities between the Lead agency and other agencies in the public sector, ensuring alignment and collaboration across government. We identify and briefly discuss some of these roles as follows:

Agency Champions within agencies could be the advocates for AoG Lead agency initiatives and the link to the Lead agency. Agency Champions may be staff in specialised functions such as Privacy, Cybersecurity, Data Governance, and Procurement, who continuously 'echo' the guidance from the Lead Agency and ensure their agencies align with the AoG direction regarding AI adoption.

Lead Agency Liaisons will serve as champions of the Lead agency's initiatives to other agencies in the public sector. This role is the AoG 'link role' to participating agencies and communicates the Lead agency's strategy and work initiatives (AI adoption) to these agencies, assisting them in aligning with those activities.

AoG (DDL) Squads are a team of specialised skills and competencies covering various work areas who can be placed on rotation within agencies to assist with digital transformation initiatives (AI adoption) and ensure alignment with central government strategies.

Dual Reporting Lines: We suggest that some key senior roles in the agency could have dual reporting lines, one to their direct reports in the agency where they are placed, and the other to the Lead Agency responsible for delivering aspects of the Service Modernisation Roadmap. For example, the CIO of an agency can report to their Chief Executive but also to the leadership of the Lead agency to ensure accountability for cross-agency initiatives – this is succinctly captured in this interview quote "*I've always thought that CIOs, for example, should have had a dual report in line. And you have an operational report line into your, ultimately, the chief executive of the agency you're in, but you also have a report line into the central function, whether that's devolved into sectors*" (PA3).

Working Groups and Forums should be set up for cross-agency collaboration and tasked with working on specific initiatives that will benefit the wider public sector. The working group could be set up by the Lead Agency for AI adoption or self-organised from within the public sector as the need arises. Working groups can also be supported by forums and special interest groups that are set up to achieve a common objective – AI adoption in the public sector.

Governance Boards made up of senior leaders (with the appropriate delegations and authority) across the public service will ensure that agencies are given the right support from senior leaders and that there is strategic alignment to ensure agility, collaboration and digital competencies [31] development across the public sector. Governance boards should direct agencies on the key cross-agency priorities and ensure that progress on these priorities is reported.

6. Conclusion and Outlook

Governments around the world are deploying more coordinated, centrally led AoG approaches for digital transformation across the public sector [1]. These centrally led initiatives require AoG participation and coordination from several agencies in what we deem to be a distributed digital leadership approach. However, deploying a distributed digital approach for AoG strategy implementation is not without challenges. We have identified certain challenges (RQ1) like the misalignment of AoG outcomes between agencies, siloed government agency structures, conflicting government policies, inadequate skills and competencies, lack of cross-agency management support and legacy systems as some of the challenges that may impact the successful implementation of AoG digital strategy across the public sector. Addressing our RQ2, we identified certain organisational processes and structures that mitigate the challenges identified, like ensuring adequate funding and resource sharing for AoG initiatives, effective digital leadership, strategy and processes that support cross-agency collaboration, creating cross-agency roles and working groups, and providing more support for Lead agencies to undertake their role.

This ongoing research provides two main contributions. On the theoretical front, we contribute to

the AoG literature and discuss how a distributed digital leadership lens can be used for AoG digital strategy implementation initiatives. By identifying and 'deploying' effective distributed digital leadership across the public sector, the digital transformation of the public sector is more likely to be achieved [5]. On a practical level, we identified certain challenges that may impact the successful implementation of AoG distributed digital leadership approaches to digital strategy execution as reflected in the New Zealand Service Modernisation Roadmap. We also identified certain processes and organisational structures that can mitigate these challenges if adequately implemented. Finally, we provided some practical suggestions on the processes and organisational structures that must be put in place to support AoG distributed digital leadership implementation.

We highlight two opportunities for next steps. First, we have focused our analysis on the New Zealand context; future work could include comparisons with other countries that are pioneers in digital government, and drawing on similar research that has been conducted in those jurisdictions. Second, future analysis could highlight the potential conflicts, tensions and perceptions of digital outcomes between Lead and participating agencies and how those conflicts and tensions could be managed using the organisational structures and processes discussed in this paper.

Declaration on Generative AI

During the preparation of this work, the authors used notta.ai for transcription and Grammarly for spelling checks. After using these tools, the authors reviewed and edited the content as needed and take full responsibility for the publication's content.

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