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Abstract: This paper adds to emerging research on the application of design-led approaches to public policy and services by public sector innovation labs. It presents key findings from the first in-depth case study on the New Zealand government Service Innovation Lab, which operated between 2017 and 2020 as part of broader public sector efforts for citizen-centric digital transformation. Based on a thematic analysis of semi-structured interviews and organizational documentation, it discusses how the challenges of applying the Lab's design-led approach in this public sector context were navigated by professionals involved with the Lab over time. The findings reveal that to navigate the public sector system barriers to innovation, conditions for innovation were created on a strategic and operational level through an authorizing environment, leadership, and innovation culture. These conditions enabled the Lab team to facilitate learning for, and delivery of, innovation with cross sector stakeholders through its approach and supporting strategies.

Keywords: public sector innovation labs; design-led approaches; policy; public services

1. Introduction

Public sector innovation (PSI) has recently gained increasing interest in practice and research, revealing a consensus for the need to understand it further (De Vries et al., 2016). There are several unique features to innovation in the public sector, including democracy, legal responsibilities, accountability to citizens, public agency monopolies, and the political climate with its inherent media, opposition, and leadership aspects. Due to these factors resulting in risk-aversion and short-term gains, PSI has been regarded as a contradiction in terms (Bason, 2010; Bekkers et al., 2013; Schuurman & Tõnurist, 2016). The research suggests that "public sector entrepreneurs, boundary crossing networks, empowerment of citizens and experimental policies" (Schuurman & Tõnurist, 2016, p.81) are essential for PSI, which are challenging to foster in public organisations (Bason, 2010; Bekkers et al., 2013).

Design-led approaches have recently been applied to innovation by governments with the aim of strengthening problem-solving for complex societal challenges involving technological, demographic, and economic change (Bason, 2010; Bailey & Lloyd, 2015). This type of creative problem-solving is not unique to any single field of design, having evolved from the field of industrial product design to deal with increasingly complex services and systems (Ceschin & Gaziulusoy, 2016), through the use of a combination of inductive, abductive, and deductive reasoning in determining the what and how of creating a desired end value (Dorst, 2011). Design-led approaches are also characterised by problem re- definition, collaboration, citizen perspectives, and iterative experimentation (Mintrom & Luetjens, 2016); however, they tend to sit uncomfortably with 'traditional' approaches to policy and service delivery (Lewis et al., 2020). The emerging literature is starting to explore the application of design-led approaches in the new sphere of government, and the tensions between these and more conventional approaches (Clarke & Craft, 2019; Lewis et al., 2020; Mintrom & Luetjens, 2016).

PSI labs have emerged and spread as the main mechanism for applying design-led approaches to public policy and services over the past decade, along with increasing research attention (Bason, 2010; Bukke & Block, 2016; Schuuman & Tõnurist, 2016; Tõnurist et al., 2017; McGann et al., 2018a; McGann et al., 2021). What distinguishes the current wave of PSI labs is their focus on the user, digitalisation, and fiscal constraints (Tõnurist et al., 2015) compared to previous labs linked to the New Public Management movement of the 1980s (Osborne & Brown, 2013; McGann et al., 2018a). In addition, the use of a design-led approach differentiates PSI labs from previous initiatives and other kinds of public knowledge actors (McGann et al., 2018a). PSI labs primarily apply this approach to the redesign of public services, although some also explore experimental development of policies (Ferreira & Botero, 2020; Lewis et al., 2020).

The literature on PSI labs is lagging behind the rapid growth in practice, and tends to focus on conceptual and normative overviews (Gryszkiewicz et al., 2016; De Vries et al., 2016). Initial theoretical research has aimed to conceptualise and classify recent PSI labs (McGann et al., 2018a; Schuurman & Tõnurist, 2016; Tõnurist et al. 2017), with most published materials being practitioner reports offering surveys and descriptions of operating labs (Fuller & Lockhart, 2016; Kieboom et al., 2016; Mulgan, 2014; Puttick et al., 2014). There does not appear to be any single clear agreement on the definition of a PSI lab (Gryszkiewicz et al., 2016; Papageorgiou, 2017; McGann et al., 2018a) in the literature. Therefore, for the purposes of this research, PSI labs are defined as "an organizational form or a unit operating as a separate structure from a larger public sector organization, with a focus on working on complex public issues through design-led approaches to improve the well-being of citizens and experience of dealing with government." Within the Aotearoa New Zealand context, attention has been paid particularly to co-design in the public sector and work by the place- based Auckland co-design lab (Mark & Hagen, 2020). Extensive empirical research conducted on national-level labs or their challenges is currently scarce (McGann et al., 2018b; McGann et al., 2021).

This paper presents selected key findings from a case study of the Service Innovation Lab which operated as a cross-sectoral government initiative between February 2017 and June 2020 in Wellington, Aotearoa New Zealand. The aims of the study were to generate an understanding of the challenges associated with the case, including applying the Lab's design-led approach to the public sector context, and how these challenges were navigated by professionals involved with the Lab over time. In this paper, the focus will be on the latter aim.

2. Case background

2.1 Case context

The Service Innovation Lab was part of wider Aotearoa New Zealand public sector efforts to design and deliver integrated citizen-centric digital services. These were guided by the "Better Public Services Result 10" change program, which was made a government priority in 2012 to improve services around citizen life-events. The Department of Internal Affairs was tasked with leading the program with a core cross-sector team of chief executives from multiple other agencies (Department of Internal Affairs, 2014), and acted as the host organisation for the Lab as part of program delivery. Additionally, the Service Innovation Working Group and Reference Group provided oversight, leadership, and coordination for the Lab. The Lab executed a total of 17 projects, from re-designing services, and involving citizen voices in the development of services and policy, through to the digital transformation of legislation and policy.The Service Innovation Lab is an example of a large national-level lab that has not previously bee e xamined as an in-depth case study, and therefore, acts as a timely example given its recent closure in June 2020 during the COVID-19 pandemic..

2.2 The Service Innovation Lab model and approach

The Lab´s design-led approach was underpinned by the following eight principles:

- uniting to meet user needs;
- doing the hard things to make it easier;
- learning and improving rapidly;
- providing value or stopping;
- doing the least for the greatest impact;
- building for reuse and openness;
- accepting help and challenge; and openly and widely talking about the work of the Lab

These were delivered by the the operating model of the Service Innovation Lab, consisting of: (1) offering innovation support through the team's expertise; (2) use of the Lab's space and access to the networks created around it, and working with cross-agency sponsors and partners from the public, private, and NGO sectors; and (3) hosting and sharing learnings with visitors.

3. Research Approach

The past nature of the case, along with a qualitative case study approach informed the use of semi-structured interviews supplemented with document analysis. The documents informed the identification of the initial main challenges with the case and its approach as a whole, whereas the interviews, while expanding on these, mainly focused on how these challenges were navigated by those closely involved with the Lab over time.

A total of 9 semi-structured interviews with managers (n=2), Lab leads (n=3), and advisors (n=4) were conducted (see Table 1). This represents a sample of individuals hired by the Department of Internal Affairs who were closely involved with the Service Innovation Lab case over time. These professionals included those who worked at the Lab premises, and managers who worked at the host organisation's premises. The selection of interviewees was made through snowball sampling with a 90% response rate. The interviews took place between December 2020 and March 2021, and lasted between 40 and 100 minutes each. The interviews were recorded, transcribed, and analysed through a reflexive thematic analysis (Braun & Clarke, 2006) using professional coding software.

Table 1. Details of interviews conducted

Role of interviewee(s)	Date conducted	Details
Advisor 1	21.12.2020	60 minutes, face-to-face
Manager 1	20.1.2021	40 minutes, by phone
Advisor 2	21.1.2021	60 minutes, by phone
Lab lead 2, Lab lead 3	17.2.2021	80 minutes, face-to-face
Manager 1 (second interview)	19.2.2021	60 minutes, face-to-face
Lab lead 1	19.2.2021	60 minutes, face-to-face
Advisor 3	22.2.2021	90 minutes, face-to-face
Advisor 4	1.3.2021	70 minutes, face-to-face
Manager 2	3.3.2021	100 minutes, face-to-face

In addition, five internal organisational documents acquired through the interviewees were analysed alongside the interview data for triangulation. These documents included three Miro boards from the Lab's wrap-up team meetings, a progress report, and a final report.

Table 2. Internal documents selected for analysis

Document	Description	Audience
The Service Innovation	10 page report of text	Internal,

Lab: Reflections on the Prototype Phase (2017)	and images on the first five months of the Lab	intended for publication
Miro board: Lab timeline (2020)	A detailed timeline of the Lab with key points, notes and reflections	Internal
Miro board: Team retrospective (2020)	Notes and diagrams from team sessions in May 2020	Internal
Miro board: Lab toolkit and story (2020)	Draft of the summary report and an engagement overview with boards from multiple group workshops	Internal
Summary report (2020)	30 page report of text and images with sections about the Lab approach, project stories, insights, and toolkit	Internal, intended for publication

To increase the reliability of the case study, a detailed case study database was kept throughout the research process, and the in-depth written analysis of the data was sent to the participants to review before publication.

4. Empirics

This empirical section starts with an overview of the study's key findings on navigating public sector system barriers to innovation. This overview will be followed by a discussing of each aspect of the key findings in more detail.

4.1 Overview of navigating system barriers to innovation

The data showed that the main systemic challenges to innovation faced by the Lab were the structures of accountability, and the organisational culture and mindsets of the personnel, which tended to reinforce each other (see Figure 1). Structures supporting accountability through vertical single-agency priorities and a focus on rapid deliverables were noted by all the interviewees to act in contrast to the collaborative cross-sector ways of working required for horizontal design-led approaches with little hierarchy. The organisational culture and mindsets of the personnel included risk-aversion and 'expert' mindsets, with resulting preferences for incremental over radical innovation.

Navigating these system barriers in the context of the case fell into two broad categories: creating the conditions for innovation, and facilitating systems learning and delivery for public sector innovation (see Figure 2). Creating the conditions included the authorising environment at the strategic level, leadership at the operational Lab level, and innovation culture within the space of the Lab. These conditions enabled personnel at the Lab to collaboratively
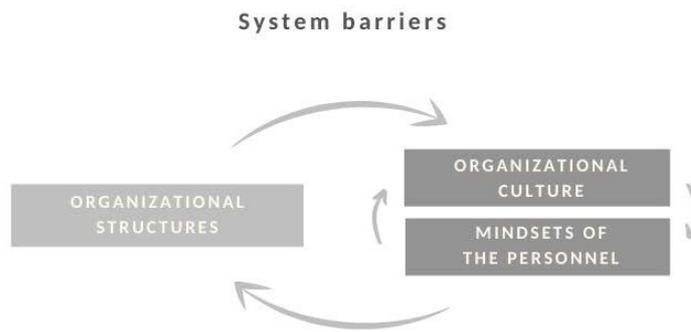
System barriers

Figure 1. Diagram of system barriers to innovation

facilitate learning and delivery for integrated services with cross-sector stakeholders. Learning and delivery were achieved through a collective lens of citizen- centricity actioned through the Lab's design-led approach, as well as various strategies for collaboration and openness.
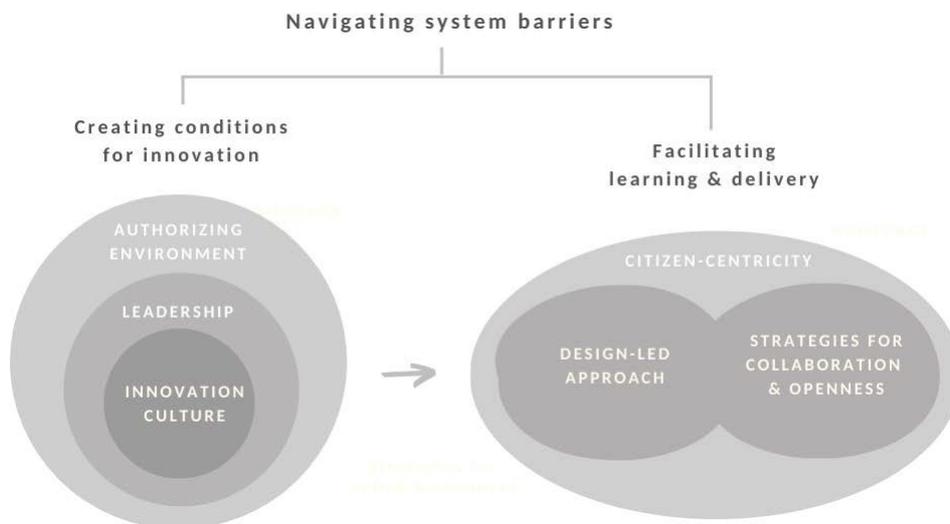

Figure 2. Diagram of navigating system barriers to innovation

4.2 Creating conditions for innovation - the authorising environment

The following quote from an advisor highlighted the difference between rhetoric and setting of strategy from leadership in opposition to public sector innovation: "They talk about innovation and collaboration, but our structures are not set up for that. We work in these incredibly hierarchical, siloed, risk-averse organisations. It's the antithesis of what you need to do this work effectively." This speaks to the operational delivery of innovation and the culture of collaboration needed to enable such delivery being challenging due to the prevalent systemic structures and culture of the public sector. As another advisor noted: "It's a challenge to try and [collaborate] horizontally; that requires…[a] mechanism for shared accountability or shared transparency, because the Ministry of Social Development has a different minister than the Department of Internal Affairs."

Hierarchies within silos—individual agencies and departments—are features of bureaucracies that an advisor noted are "designed to ensure transparency and accountability" with the core purpose of keeping order and stability. This presents a constant tension between stability and change when presented with the purpose to innovate within the sector, which the main system of structures and culture reinforcing each other is biased against. An advisor who worked in a delivery lead role illustrated this inherent tension of public sector innovation with a practical exercise in the Lab space during tours with senior leaders:

> "I often spoke about the silos of government and how collaboration was possible, but required sustained effort. What I did was this—you know those physiotherapy bands"

> "Tera bands? I wrapped one around a pillar in the middle of the lab and used it as a metaphor—if you pull two bands around two pillars and stand in them you can meet in the middle. So you can collaborate, just everything is pulling you back." —Advisor 4

The tension between the structure and the prevalent culture of the sector was navigated with governance groups acting as supporting layers for the Service Innovation Lab. The governance groups coordinated the funding and space for the Lab, and created an operating environment to ensure accountability and ownership. A Lab lead noted: "That [cross agency governance and funding] meant that we weren't as constrained by our host organisation's protocols, policies, ways of working. So we worked slightly outside of that space, and that gave a lot more freedom." The Lab being physically removed from any single organisation in a separate space most of the time created neutrality in their work program that allowed a 'different way of thinking and working'—a phrase often used across the interviewees.

4.3 Creating the conditions for innovation: Lab leadership

Funding, space, and a mandate were the external conditions created within the public sector structure that allowed for the Lab to move forward. The necessity of the Lab's approach in demonstrating by doing and showing value within its governance and stakeholder network was emphasised by one of the managers who had a major role in the team that created the Lab: "It was known that we needed to show the way by doing it, demonstrating it... actually doing anything is the challenge." This quote demonstrates not only the mindset needed by a driven intrapreneurial-minded team to initiate, set up, and maintain such an initiative, but also the realities of surviving as a PSI lab. The contextual pressure to hit the ground running was noted by several interviewees as a challenge. However, with the strong leadership of one of the Lab leads, whose involvement was described as 'giving momentum' to the whole initiative, the Lab team managed to deliver within its initial 10-week pilot phase. The team structure was essential to the delivery:

> "We created a structure which had a design lead, a tech lead, and a strategy lead - excellent leadership. So [from the pilot phase onwards, the Lab] had a program to do delivery work, not just coordination work … having the tech and the design side-by- side."
> — Lab lead 2

This Lab lead noted that the Lab was unique in the New Zealand landscape in terms of the pairing of staff expertise for both design and delivery. This allowed the Lab the ability to engage in different stages of the innovation process from pre-engagement in identifying opportunities in the beta testing phase. The Lab leads needed to manage the tension between the designers' tendency to spend more time on discovery and the balancing of expectations between groups: "...we as [leaders tried] to make sure that we got to an outcome and could move on and keep the momentum going, because you lose interest from stakeholders very quickly." For enhancing stakeholder relations, acknowledgment of their involvement and support for enabling steps in the delivery, however close or distant with the Lab they were in reality, was a leadership strategy. It was also noted that the Lab leadership acted to 'shield' the Lab staff and their activities from the pressures of the authorising and wider environment.

4.4 Creating the conditions for innovation: The innovation culture within the Lab

To enable a culture within a Lab as a unique space conducive to innovation within the public sector required intentional work. A Lab lead noted that they built "a culture of kindness, a culture that gets everyone aligned on a goal around improving the lives of people of New Zealand." This approach revealed a mission-led organisation centred around citizen- centricity, with an accepting culture built around empathy for citizens, the Lab team, and the wider stakeholder network.

The atmosphere of the Lab space was noted to support the innovation culture, and was described as 'ad hoc', 'rundown', and 'welcoming and warm'. A lab lead described items such as furniture and cups gathered from several locations, "drapes on the wall, hand-drawn visuals, kanban boards [for visualisation of working processes]." One of the managers noted: "If it would've been a polished space, [stakeholders] would've expected polished ways of working too." The space was reflective of a quick and agile way of working, and of a safe space for collaborators to break away from the mindset of their 'usual' way of working. One of the Lab's advisors described how during open Lab events, they had the opportunity to talk candidly with "people who were safe to be around". This revealed the psychological safety present in the Lab team and the space made for the wider community, which is a necessary priming condition for innovation teams and organisational creativity.

The culture of the Lab allowed for open conversations and questioning, leading to the possibility of holding multiple perspectives. Within the Lab staff, perspectives in relation to design, technology and te ao Māori were an intrinsic part of the Lab's approach. A lab lead noted that "the natural friction…would flare up occasionally" between varying perspectives, but was manageable precisely due to the established mission and culture. The emphasis placed on these factors of the Lab's approach was "kaupapa [purpose, agenda] driven", changing depending on who was in the Lab at any given time. Early on, there was a stronger focus on design and various types of innovation, whereas towards the end, the focus shifted

more towards streamlined processes of delivery. Later, aspects of te ao Māori were also incorporated into the team culture with learning te reo [Māori language] and through welcome protocols for visitors. However, the focus on te ao Māori, was not in the foreground from the start or as a whole in the Service Innovation Lab, as this appeared to be more challenging and hinted at being perceived as not relevant for a national-level innovation lab with a digital focus.

An informal but concrete measure to contribute to the Lab´s innovation culture was the '10% work'. Supported by the managers, this allowed Lab staff to work on projects of their own choosing outside of their commissioned work to diversify types of innovation beyond incremental innovation that the context pushes towards. One Lab lead noted: "I try to put this in place wherever I go: that's the sort of thing that enables [bottom up and radical innovation] to happen because it has to be allowing [the team] to do formative work, not just normative." Some of the diverse projects that resulted from this policy included the Feijoa project on consent-based data sharing and Better Rules on a systematic issue of digital transformation of legislation and policy, including machine-readable Legislation as Code.

4.5 System learning and delivery: Towards citizen-centricity

Citizen-centricity was a unifying lens of the Lab's design-led approach. As one advisor put it, "understanding the customer need from the outside-in" allowed the aligning of purposes for various agencies to come together for mission-oriented innovation. The following quote captured the essence of this purpose:

> "If you´re a citizen, you don't usually care what department the government service is from. You just want a better experience when you're having your baby or when you're in [the midst of] a traumatic thing [like] when your father has passed away and you´re trying to navigate that space."— Advisor 2

Empathising with the perspective of the citizen ensured that services were organised according to needs specific to life-events of citizens, as opposed to viewing these needs from the perspectives of separate agencies according to the provider organisation's internal structures and ways of functioning. The shift in coming together around a common point of view in a facilitated process by the Lab team was described as follows:

> "Agencies would come in, and...to begin with when you'd start working with them, put their separate agency hats on. But if you keep focusing them on that problem space around the customer, they start slowly taking them off and start to see [the problems] from that point of view."—Lab lead 3

Having a citizen-centric mindset as a public servant resulted in a willingness to partially, even if temporarily, suspend the expert-led model prevalent in the sector, as one of the advisors noted: "I got my assumptions tested...when I first started doing this [citizen-centric design] work. We shouldn't be assuming that we know the answers." In some instances, having a citizen-centric mindset might also mean admitting that one, as an organisation and a system, does not know what to optimally do, counter to the norms of expert culture.

Admitting agency shortcomings was necessary to open up to empathic listening as the first step to subsequent service improvement for the best outcomes for citizens. A manager's recount of a dialogue that proceeded between agencies and citizens in a scoping Hui [meeting] to help create support services for bereaved parents following the loss of a child for the Whetūrangitia project illustrated this:

> "The agencies expressed that they just don't know how to operate...and parents would ask, "why do [you] do this?" The agencies would say that they are required to do certain things by law and don't know what to do, to which the parents replied [whispers]: "Why don't you ask us?"—Manager 1

Taking the mindset that the citizen at the centre of the service knows their needs and situation best might require expanding one's conception of legitimate knowledge, e.g., evidence to inform the creation of policies and services to include accounts of lived experience. These include emotive aspects, which a manager noted "aren't by their nature easy for the government to do". This would be a significant change to a culture that assigns quantitative evidence in particular as the most legitimate form of knowledge. In the above instance, getting to these conversations also meant creating this space with te ao Māori protocols by making the event space tapu [sacred, restricted], as opposed to taking an individualistic Western, Pakeha [non-Māori] approach:

> "When you use te ao Māori approach...everything would relate to [it] in terms of family and tikanga [custom] and all those other things came with you...it didn't matter where the story went: everything was important to the story. Which meant we got a greater enrichment of information around what was happening."—Manager 1

The manager noted that this approach provided sufficient mana [authority] to go ahead with an event that allowed sharing stories and coming together of groups within a safe space to share. Participants involved were from NGOs, the private sector, support people from large businesses like Telecom, midwives, citizens, health and justice agencies, and the Police. This was one example of how the Lab approach allowed for 'different ways of working' for cross-sector collaboration in a project beyond a solely design approach, through the incorporation of aspects of an indigenous approach.

4.6 System learning and delivery: Strategies for enabling design-led collaboration

Prevalent structures and single-agency priorities can work against initial engagement from collaborators, or can tend to take over at later stages. One of the managers who had an extensive network of higher officials described a 'beg, borrow, and steal' strategy, which involved utilising relationality around objects to achieve buy-in. They asked individual stakeholders to bring office supplies to their first meetings, describing this as an unofficial means for them to invest in contributing prior to stepping into the Lab: "Asking senior government officials to bring supplies with them to a meeting was a simple, unofficial way of getting their buy-in already." This relational strategy was used for gathering supplies for the Lab space.

These contributions were noted to result in a sense of goodwill and resourcefulness across the stakeholder network, as well as being reflective of the innovative approach.

To prevent losing agencies from project collaboration at the start, the Lab leadership team created a 'first-in first served' strategy around work program priorities. Rather than Lab staff waiting on agencies in a predetermined priority list, the strategy led to those who were fully on board getting more organised. For those who were not, it represented 'a dignified way out'. Prior to this, the time spent between cross-section collaborations was used for working on collaborating internationally and on different types of projects with a more systems view. A lab lead noted that "even if they weren't [directly creating] value to the citizen, they were value to the [innovation] system". An example of this was the 20-year emerging technology landscape, which mapped seven key areas of future technologies ranging from Artificial Intelligence to Internet of Things in progressive timescales.

To reduce resistance to, and perceived negative associations with, the Lab's design-led approach by stakeholders, one of the managers mentioned the slight change of language they started using when talking about the problem-solving process with stakeholders. The Lab team started calling experiments 'hypotheses', and framed the discovery and prototyping stages as 'research'. As semantics shape our understandings and associations, the managers expanded on how words such as 'experimentation' would often make those in senior roles in particular shy away, especially when it had to do with citizens. Another manager echoed the same sentiment, referring to the 'safer' associations and familiarity that government officials had with the more typical scientific evidence-led ways of working in the context.

Similar issues of semantics were aimed to be bypassed by the Lab team, naming some projects randomly to anonymise them in relation to their content. Examples of this were project "Feijoa" on consent-based information sharing to aid citizens in accessing public services and project "Croissant" on analysing public submission to consultations. This naming was partially done to avoid locking a project into a preconceived course and solution according to its title to make room for possible future pivoting. Sometimes a pivot through learning, supported by the Lab ethos of experimentation, led to closing a project. This happened for example with the Victim of Crime project, which an advisor noted "should have been celebrated as a success…but it was seen as a failure [by those outside the Lab]". A manager noted that, despite these negative perceptions with some projects coming to a halt, "we kept doing experiments" to demonstrate that they "were designed to ask the question: Would it be useful?...what we were actually doing was learning."

4.7 System learning and delivery: Strategies for enabling design-led collaboration

A Lab practice that contributed to learning within the stakeholder system, as well as supporting the Lab's approach was the principle of 'openly and widely talking about our work'. Open communication took the forms of storytelling, events such as workshops and semi-

nars, and visual communication in the Lab space, as well as blogging and making code components available online as open source. Early on, hosting visitors in the space emerged through telling the story of the Lab and its approach in words and visuals, including having the lab principles and elements of the approach in posters. This was delivered by a particular advisor, who supported the team's use of metaphors and visuals in the space when guiding visitors through. The openness also applied to the Lab space to be used by those who needed it, even when they were not in any way involved with the Lab and its projects. This sharing seemed to be in part, a tactic to bring people in, who would sometimes be exposed to, and become curious about, the Lab by simply being in the space. Hosting of visitors for tours connected to the ethos of 'showing, not telling', which was exemplified by the approach of the Lab team from its inception. In addition, open Lab days on Fridays were set up, where anyone could drop into the space. One of the advisors noted: "The uniqueness for the physical space was that it was an open, collaborative space that anyone and everyone was welcomed in." Later, specific Māori welcoming protocols were set up for visitors during a phase of increasing internationalisation.

One of the many realisations was the lack of understanding of, and capability for, the collaborative ways of working the Lab tried to achieve, which would presumably have been one of the first barriers to involvement for agencies. The interviewees often mentioned 'meeting people where they were at' in terms of building learning and capability for design-led innovation approaches, of which the above storytelling is an example of taking introductory steps for. The openness was not only for learning for the wider system, it also served to allow for the continuation of the Lab's approach:

> "Usually, stuff goes through comms with finesse, so putting something out raw and being non-threatening at a low level—and all of it being small enough not to scare the horses...It was a tactic to divert questions and Official Information Act requests by working in the open and letting people see stuff."—Advisor 4

However, achieving full openness, particularly with published written communication, presented a challenge. Communication materials in relation to the Lab needed to be shaped by the political environment, and limitations were placed on materials deemed too innovative around the 2017 election. The preceding quote also exposed the drastically different way of working at the Lab compared to the wider context.

One of the learnings that emerged in relation to the Lab's approach was discovered during a brief period when the Lab was located inside the host organisation's office. This was due to the circumstantial necessity of an earthquake damaging the previous space. One of the managers noted: "by the time we got to that point [of leaving for another space], no-one was [questioning whether] we needed a separate space, it was rather "You're just too disruptive. We recognize this now, we can't house this"." In response, a final physical Lab space was arranged soon after, until the Lab moved fully online during Covid-19. However, during this time, there was a noted increase in ownership of the Lab's projects by the host organisation coinciding with a shift from multi-agency funding to single-agency funding. As one advisor

put it: "At the end, a lot of our projects were [Department of Internal Affairs]-based". These events preceded the Lab's closure and the formation of the Digital Public Service branch at the Department of Internal Affairs in 2020, which continues such work.

From its inception, the Lab was planned to eventually close. However, the length of its operation for over three years showed the success of its collaborative approach and delivery during its operation. In the end, as one manager put it: "we demonstrated that we can do government differently".

5. Discussion and future directions

The key findings suggest that the challenges, and the responses to them, largely centred on the Lab's design-led approach in tension with the pressures of being part of the wider public sector. This tension corresponds to the literature, with broad notions of challenges to, and the contradictory nature of, PSI and the conditions that set up the challenges within this context, where there is considerable risk- aversion and pressure for rapid deliverables (Bason, 2010; Bekker et al., 2013). The Service Innovation Lab showed the multiple characteristic challenges of PSI labs over its existence in the New Zealand and Australian context, risk aversion within the organisation; funding constraints; lack of capabilities and skill sets within the organisation; and lack of operational capacity within the organisation (McGann et al., 2018b). Questions related to aligning with te ao Māori and the Māori population were also present (Mark & Hagen, 2020).

The Service Innovation Lab case presents several points of learning for future initiatives in the Aotearoa New Zealand or similar contexts when creating and maintaining collaborative conditions for design-led innovation approaches delivered through PSI labs. The findings show the necessity of creating an authorising environment on a strategic level, and of strong leadership and culture at the operational level of the Lab. These can counter some of the public sector's wider pressures that were evident with the case, including considerable risk-aversion and pressure for rapid deliverables (Bason, 2010; Bekker et al., 2013). Several factors supported cross-sector collaboration beyond single-agency accountabilities: The case Lab was at its most successful with identity and culture being at their strongest when they had cross- sector funding in a fully neutral, separate space. This showed the necessity of locating a Lab in a physically separate space, which is often referred to in the literature as the usual and unique qualities of PSI labs (Bason, 2010; Tõnurist et al., 2015; Tõnurist et al., 2017).

Strong leadership can be shown through creating, and retaining, a strong intrapreneurial-minded Lab team that creates and demonstrates value across the stakeholder network, from the beginning, and throughout operations. Public sector entrepreneurs have also been noted in the literature to be challenging to foster (Schuurman & Tõnurist, 2016). In the case of the Lab, there were particular managers and Lab leads who played a strong role in forming and maintaining the initiative. The Lab leadership ensured a strong implementation vi-

sion. As part of this, the pairing of design and technology expertise for a technological delivery-focus coupled with strong communication strategies ensured that, despite projects mostly being focused on idea generation and proposals, the Lab team worked across the innovation cycle from identifying problems to diffusing lessons. This is atypical for PSI labs, which usually only work in the early stages of the innovation cycle (Lewis et al., 2019; Schuurman & Tõnurist, 2016). Implementing a 10% work policy contributed to multiple projects through diversifying types of innovation, which resulted in multiple successful Lab projects.

These conditions, comprising of the authorising environment, Lab leadership, and the innovation culture within the Lab, enabled the Lab team to facilitate learning for, and delivery of, innovation with cross- sector stakeholders through its approach and supporting strategies. Rather than viewing the Service Innovation case purely through design methodologies or tools, as is usual in practitioner reports in the field of design (Buchanan, 2015), or reducing collaborative innovation approaches to toolboxes as a suggested avenue for future research (Gryszkiewicz et al., 2016) more suitable to the European context, this research viewed the case through a broad design-led innovation approach, allowing for the inclusion of broader practices unique to Aotearoa New Zealand. These included Māori worldviews that were acknowledged and incorporated into the Lab's approach alongside a focus on cross-sector collaboration and human-centred design approaches (Service Innovation Lab, 2021).

Although the Lab's approach evolved throughout its existence according to those who contributed to it, its elements can be characterised overall. The Lab principles (see 2.2) underlininged the aim of placing the citizen at the centre of integrated digital services. The focus on citizen-centricity was at the core of the Lab's design-led approach, which included aspects of design thinking, systems thinking, and te ao Māori [the Māori worldview]. In particular, the addition of te ao Māori aspects within the Lab's approach and culture allowed for increasing understanding of them, not only within the team and the Lab stakeholder network, but also for culturally improved services in certain instances.The Lab approach was additionally characterised by speed and feedback in an iterative design process with high openness and interaction within the ecosystem that multiple collaborative Lab strategies aimed to sustain.

Workshops and hui [meetings] were some of the ways the Lab brought together stakeholders across sectors alongside citizens, especially in the early discovery phases where the problem space was explored. These actions as part of the Labs approach could be seen as constituting an inductive activity of problem re-definition and framing (Mintrom & Luetjens, 2016; Dorst, 2015). To aid this, intentional use of language, for example in refraining from descriptive, solution-focused project titles, was employed to suspend associations and judgement in order to allow expansion of the discovery space. Additional strategies for collaboration included utilising a 'beg, steal, borrow' strategy in using objects to facilitate stakeholder buy-in, and a 'first-in, first-served' strategy with work program priorities to ensure the full utilisation of the Lab's resources. The approach to openness included open Lab days and tours,

and communication and reporting of work online. These strategies largely emerged during the initiative due to its experimental nature.

Overall, the findings reveal the Service Innovation Lab as an evolving organisation in terms of interacting with the conditions for learning and delivery for public sector innovation through various collective and individual responses taken by those involved with the initiative during over three years of its existence. Furthermore, the findings of this study draw attention to, for example, innovation culture and language use at the case organisation and their impact on the team and their work, that to the author's knowledge, descriptions of are mostly lacking in the literature, particularly in Aotearoa New Zealand. Such findings were able to be revealed due to the use of qualitative interviews coupled with a thematic analysis of the data. The inductive analysis contributed to findings that were at times unexpected, with some not apparent in the existing literature or in theoretical frameworks.

As the first in-depth case study of a national level Lab in Aotearoa New Zealand, the findings can serve as learnings for successive initiatives, and provide ground for future studies of this and other cross-sector cases, particularly in Aotearoa New Zealand and similar contexts. Future research on the case could expand oninto exploring especially perspectives from higher management, stakeholders, and the public, and the te ao Māori [the Māori worldview] lens to the approach and the projects of the Lab. Other avenues for research include what aspects of the Lab's culture and practices were able to be transferred, maintained, or adapted to the Digital Public Service branch that superseded the Lab. Finally, a topical avenue of research would be on the impacts of COVID-19 on the Lab, and how capability and resilience enhanced through its practices could affect or strengthen responses to crises, such as pandemics.

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