Controller and Auditor-General
Tumuaki o te Mana Arotake

Discussion paper

Realising benefits from six public sector technology projects

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Realising benefits from six public sector technology projects

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Contents

Glossary 4

Auditor-General's overview 5

1 – Introduction 7

Using technology to deliver public services 7
Realising benefits 7
How we did our work 8

2 – The projects that we looked at 11

3 – Financial support in Christchurch after the February 2011 earthquake 13

4 – Providing real-time travel information 19

5 – Processing passengers faster at airports 25

6 – Portal access to Student Loan account information 31

7 – Managing land title records electronically 37

8 – The 111 text service for the deaf 43

9 – Lessons from the six projects 49

Figures

1 – The projects and their main direct benefits and lessons 11
2 – Using information and communication technology to realise benefits 50

Glossary

Benefits realisation is the active managing of, planning for, and delivery of results through information and communication technology-enabled projects. It involves continuously planning, reviewing, reporting, and updating the benefits being and to be realised.

A **direct benefit** is a business outcome that delivers value to the organisation. Direct benefits are benefits that have been planned and achieved, and involve both financial and non-financial business outcomes.

An **indirect benefit** is a planned and achieved business outcome that delivers value to stakeholders in the ICT-enabled public sector project.

An **unplanned and/or unexpected benefit** is a positive business outcome that was not foreseen in benefits realisation planning.

An **intangible benefit** is a non-quantifiable, positive business outcome.

Auditor-General's overview

During the past 25 years, information and communication technology (ICT) has become integral to how we work, enjoy leisure activities, and receive services.

Partly because of advances in ICT, people who use public services expect them to be delivered faster, cheaper, and more conveniently. ICT can help public service providers to meet these expectations and has become essential for delivering many of these services, such as tax collection, paying benefits, and recording land titles.

Furthermore, as part of the better public services agenda, the Government wants public entities to use technology and digital channels more, so that people can access government services more easily.

It's important to note that introducing new technology doesn't automatically bring better results. We see better results when technology gives people the power to do things differently, as it's people who get better results, using ICT.

You could be forgiven if you thought that ICT-enabled projects are costly and don't achieve what they were meant to. We usually hear about the failures, but many public sector ICT-enabled projects have successfully realised benefits.

In this paper, we look at six public sector ICT-enabled projects that range in cost from a few hundred thousand dollars to tens of millions of dollars. We highlight some of the features of the projects' management that have led them to realise benefits successfully.

Above all, the projects show the need to manage benefits realisation dynamically. This need continues beyond the formal life of the project.

In my view, this paper identifies practical and useful factors that should be considered carefully when planning to realise benefits through ICT. I hope that, by sharing these factors, we can help other public entities to better realise benefits and achieve better results.

I thank the public entities whose projects are featured in this paper for their co-operation and help. I also thank Dr Miriam Lips, Professor of e-Government, School of Government, Victoria University of Wellington, and her team for their advice and help.

Lyn Provost
Controller and Auditor-General

22 June 2012

Part 1
Introduction

Using technology to deliver public services

1.1 Technology is playing an increasing role in our lives and in delivering public services. During the past 25 years, information and communications technology (ICT) has become integral to how we work, enjoy leisure activities and receive services.

1.2 The Government has signalled a focus on increasing the use of ICT to reduce the cost of services to the public and improve their quality.

1.3 ICT can help to achieve better value for money. The November 2011 *Better Public Services Advisory Group Report* states that "value-for-money means less cost, time and effort are taken to generate the same – or a better – result".

1.4 Making the most of available technology and ICT-enabled ways of engaging, such as via social media, can reduce costs and help meet what people and businesses expect in their dealings with government.

1.5 The Government has set 10 high-level results for the public sector to achieve during the next three to five years. Two of these results aimed at improving interaction with government are:

- that businesses have a one-stop online shop for all the advice and support from government that they need; and
- that people can easily complete their transactions with the Government in a digital environment.[1]

1.6 In this paper, we identify practices that have helped or are helping six public entities to deliver benefits effectively using ICT-enabled projects.

1.7 We have taken this approach, in contrast to auditing all the aspects of projects, because, in our view, achieving benefits effectively is what makes an ICT-enabled project successful.

1.8 The practices we identify are not all new or spectacular. However, they are not yet a consistent feature of public entities' ICT-enabled projects.

Realising benefits

1.9 It is vital that ICT-enabled projects focus on the benefits for users and the organisation that provides the services. Inevitably, not all projects go to plan. This can lead to intended benefits of ICT-enabled projects not being realised and, in extreme cases, organisations performing worse and using public money ineffectively.

1 Our proposed 2012/13 work programme includes exploring how public entities use social media and identifying what conditions are critical for success. We will look at how effective and efficient investments in social media are. We plan further work in 2013/14 on delivering technology-enabled services.

1.10 To deliver ICT-enabled projects successfully, it is essential that the projects' managers, governors, and sponsors focus effectively on realising benefits. They should:

- understand clearly what the intended benefits are and how they can be achieved;
- be agile enough to ensure that benefits can be maximised and enhanced; and
- be able to adapt the project, if required, to realise the required benefits.

How we did our work

The purpose of our work

1.11 There is no set way to maximise ICT-enabled projects' benefits, but some practices have helped public sector projects to successfully realise benefits. We want to pass on knowledge of these practices.

1.12 We compiled a list of 15 projects for possible inclusion in this discussion paper. We then met people in the organisations responsible for those projects and reduced the list to six projects. The critical feature that we looked for was a clear direct benefit for the end user.

1.13 To ensure that we had an appropriate set of projects, we approached:

- the Office of the Government Chief Information Officer at the Department of Internal Affairs, which oversees the Government's ICT strategy and provides relevant high-level advice;
- the State Services Commission ICT monitoring unit, which monitors government ICT projects; and
- the Treasury, which has an interest in capital investment proposals, including those for ICT projects.

1.14 To identify the practices that made each project successful, we:

- interviewed project managers and others involved with the projects;
- asked an informed contractor, Dr Miriam Lips, Professor of e-Government, School of Government, Victoria University of Wellington, to:
  - analyse in depth each project by reviewing documents and interviewing those involved; and
  - identify the benefits that each project delivered, but not to audit all aspects of each project; and
- identified common themes from the projects.

What we did not cover

1.15 Public entities already get much advice, scrutiny, and guidance about the more traditional project management aspects of ICT-enabled projects. This includes guidance available from our Office[2] and other organisations on managing ICT projects successfully. Our focus for this discussion paper was instead on realising benefits.

Structure of this paper

1.16 In Part 2, we list the six projects we looked at and their main direct benefits and lessons.

1.17 In Parts 3-8, we discuss each of the projects in turn.

1.18 In Part 9, we discuss lessons from the six projects that may be relevant for other ICT-enabled projects throughout the public sector.

2 Controller and Auditor-General (2000), *Governance and Oversight of Large Information Technology Projects*.

Part 2
The projects that we looked at

2.1 Figure 1 shows the six ICT-enabled projects, public entities, main direct benefits, scale, and main lesson learned. Collectively, the total public investment in the projects has been more than $200 million (excluding ongoing operating costs).[3]

Figure 1
The projects and their main direct benefits and lessons

Project	Entity	Main direct benefits and lessons
Supporting jobs in Christchurch after the February 2011 earthquake	Ministry of Social Development	*Main direct benefit* Immediate financial support was available to people who experienced an income loss as a result of the 22 February 2011 Christchurch earthquake. *Scale* $53 million in payments were made in the first week the system was in place. By 30 June 2011, the system had been used to pay $202 million to 20,000 employers and 50,000 employees. *Main lesson* Results can be delivered very quickly if an appropriately agile approach is taken.
Providing real-time travel information services	New Zealand Transport Agency	*Main direct benefit* NZTA data sets are freely available to third parties to prepare real-time travel information services. These services help the public to make informed decisions before and during travel. *Scale* As of May 2012, about 300 third-party providers have access to NZTA data sets. *Main lesson* Involving third parties in aspects of a project that are not the entity's core business can lead to more effective benefits being delivered at no cost to the entity.
Faster passenger processing at airports	New Zealand Customs Service	*Main direct benefit* People travelling between New Zealand and Australia enjoy more accurate, cheaper, and faster passenger processing at the airport border. *Scale* About 3 million passengers have used SmartGate to date. *Main lesson* Strong leadership and support from main stakeholders can be critical to effective results being delivered quickly.

3 Figure 1 is based on information that the public entities involved gave us. We have not audited this information. Similarly, we have not audited financial and other information provided in Figure 1 and in the case studies.

Project	Entity	Main direct benefits and lessons
Portal access to Student Loan account information	Inland Revenue Department	*Main direct benefit* Consolidated student loan balance information is available at a single information portal, helping people to manage their loan balance and repayments. *Scale* About 700,000 people have student loans, with the total value of the loans being about $13 billion. *Main lesson* Going back to the drawing board when necessary can be critical to success.
Managing land title records electronically	Land Information New Zealand	*Main direct benefit* Users can access an online, more efficient, land property title system with better quality data. *Scale* More than 70% of land title transactions are now registered instantaneously, making reporting for lawyers, local authorities, and surveyors easier. *Main lesson* Having a main business purpose, and involving people with specialist business knowledge, are critical to realising benefits.
111 text service for the deaf	New Zealand Police	*Main direct benefit* Faster emergency service responses to the deaf community. The community describes the service as creating "self-determination" and achieving "a tangible advancement in human rights". *Scale* About 240,000 people in New Zealand have impaired hearing. Of these, about 9000 are described as "culturally deaf".* *Main lesson* It is important to work with users to realise effective benefits for them.

* Culturally deaf people communicate mainly using visual language, especially New Zealand Sign Language.

Part 3
Financial support in Christchurch after the February 2011 earthquake

What the project was about

3.1 In response to the 22 February 2011 Christchurch earthquake, the Government, through the Ministry of Social Development (the Ministry), created the Christchurch Earthquake Support Package to provide financial support to affected employers and employees. The Government's main concern was to remove uncertainty about jobs and businesses in Christchurch and help people to pay the bills.

3.2 The six-week package was made up of two components:

- the Earthquake Support Subsidy – a subsidy to help companies to operate while keeping their staff and pay their wages. The companies would get $3,000 gross to pay an employee for six weeks ($500 gross a week) or $1,800 gross to pay a part-time employee for six weeks ($300 a week); and
- Earthquake Job Loss Cover – a subsidy for those who were unable to contact their employer or whose employer had closed permanently. The subsidy involved a $400 in-the-hand weekly payment for six weeks for full-time employees and $240 a week in the hand for part-time employees.

3.3 Because the Government anticipated that it would receive many applications and that, potentially, it would be difficult to telephone Work and Income, people were strongly encouraged to apply online. Applicants could call a 24/7 government helpline or visit one of seven Work and Income offices in Christchurch.

3.4 Ministry staff designed and built the online Earthquake Employment Support System during a weekend, using rapid development methodologies for system development (the Kanban method and the Ruby on Rails open-source web development framework). The Ministry operated the system in partnership with the Inland Revenue Department (Inland Revenue) and Westpac and allowed employers and employees to apply for financial help by providing basic information using a secure online form.

3.5 Employees had to provide their personal details, including an email address, their cellphone number, their IRD number, and a bank account number. Employers had to provide their business IRD number, business bank account number, details of staff requiring the subsidy (employee names, date of birth and IRD numbers), and contact details, including an email address and cellphone number.

3.6 A combined team of Ministry and Inland Revenue staff looked at all the rejected applications and telephoned people where necessary. Before paying approved applicants through the bank, Inland Revenue had to match the information

provided with their records. Successful applicants received an email or text telling them when the payment was made.

3.7 The system began to operate six days after the earthquake, with $53 million paid in the first week. By the end of June 2011, 20,000 employers and 50,000 employees had received a combined total of $202 million.

3.8 The total costs for developing the system were estimated to be about $250,000. Rapid development methodologies kept ongoing costs low.

Benefits

3.9 A direct benefit of the system was that it provided immediate financial support to people who lost income as a result of the earthquake.

3.10 An indirect benefit was that using online services improved efficiency. Providing online services was much cheaper than having face-to-face meetings or telephoning.

3.11 Unexpected and/or unplanned benefits included:

- better online services as a result of less bureaucracy and minimum verification;
- more people using online services;
- few rejected applications and instances of fraud;
- much lower overhead costs for following common procedures (such as specifying system requirements, preparing a business case, and meeting official guidelines); and
- having a re-usable online tool for managing difficult conditions after natural disasters.

The dynamic nature of realising benefits

3.12 As the new online system proved to be successful (measured by the number and amount of daily payments, the number of financially supported employers, and the number of employees paid), the realised benefits became more apparent.

Practices that helped achieve benefits

3.13 Senior project leaders were directly involved in designing and developing the system, and the project's "deliverable" was clear.

3.14 The Ministry's leaders strongly supported the scheme but did not officially monitor benefits realisation. Senior project leaders reported project results to the Ministry's leaders every day.

3.15 Politicians were strong supporters. This created strong pressures for senior project leaders to deliver the benefits that people expected. Every day, project leaders had to tell the Minister:

- how many employers had received payments;
- how many employees had received payments; and
- how much money had been paid out.

3.16 The reports had to be focused and accurate, as they directly affected what the Minister said to the media every day.

3.17 Strong Ministerial and departmental sponsorship of the project meant tight control – decisions were made almost immediately.

3.18 Working outside "normal conditions", including having to bypass routine procedures for government information technology (IT) projects, encouraged innovation. For example, the project started with no:

- specific system requirements;
- business case;
- system for planning, monitoring, and reporting benefits; or
- official evaluation of outcomes.

3.19 This meant that the scheme's paperwork overheads cost only 10% of those of routine procedures for government IT projects.

3.20 Designing a new online application system was imperative because of the special circumstances in Christchurch, where systems were not functioning (with restricted or no access to Christchurch offices and an expected overflow of telephone calls) and the bureaucracy that those using the Ministry's application system would face (a traditional application for a benefit took about 45 minutes, whereas the new online system took a few minutes).

3.21 Teams collaborated well and were committed. Staff were co-located.

3.22 Special privacy legislation allowed the Ministry and Inland Revenue to share information. Especially important was Cabinet allowing the IRD number to be used. This unique sharing of information between organisations helped the Ministry to learn how to provide services differently.

3.23 Using rapid development methodologies (particularly the Kanban method and Ruby on Rails framework) helped to run the system more cheaply. In general, the chosen flexibility allowed the IT division to deliver the project "on the fly". Changes to the system could be made easily, although some start-up decisions needed revision. The chosen approach led to some mistakes but these did not damage the project.

3.24 Project leaders managed politicians' expectations. Politicians had wanted payments to start from day 1. However, this was not feasible. The senior project leaders were able to convince the politicians that it would take a few days before payments could start.

3.25 Westpac activated a business continuity plan so that daily payments could be made during the weekend.

Practices that affected the outcome

3.26 Because of a late political decision to have a second round of financial support, the system was adjusted and used until late June 2011. For this second round, the criteria for financial support were tightened and fewer people received payments. In the second round, applicants had to provide more information for verification and were paid less money. After minimal verification of applicants during the first round, the critical questions for the Ministry in the second round were:

- Who do we not pay after six weeks?
- How do we assess ongoing needs?

3.27 Working with fewer rules than staff were used to challenged the team.

3.28 At first, Inland Revenue staff were more focused on preventing benefit fraud than paying benefits. At times, this created tension. It took time for the co-located Ministry and Inland Revenue team to understand that their shared goal was to pay benefits.

Lessons for other projects

3.29 Enormous time and political pressures, such as reporting daily to the Minister and then the Minister reporting daily to the media, helped the team to plan, monitor, and report sharply.

3.30 Strong support from political and senior leaders was critical and led to extremely tight control, with decisions made almost immediately.

3.31 Senior project leaders effectively managed political expectations about ICT-enabled benefits realisation. Politicians did not know how long it would take to set up the main technical requirements for delivering the planned benefits.

3.32 The extreme and special circumstances allowed the Ministry to rethink its business, such as thinking about how to better provide services and the opportunities and implications of minimal verifying.

3.33 The extreme and special circumstances allowed the Ministry to reflect on the high costs that are common in routine procedures in government IT projects.

They learned that documents needed for routine procedures in government IT projects quickly become old and potentially less relevant because of fast-changing technical and business conditions. They should help to predict things but can fit awkwardly with changing and/or changed business conditions.

3.34 Strong team collaboration and great team commitment were critical in realising benefits quickly.

3.35 Co-locating staff helped to overcome cultural differences between agencies that had to work together.

3.36 Using rapid development methodologies allowed flexible innovation and reduced risks and cost. Being flexible meant the project team could deliver "on the fly", with relatively easy changes to the system when needed.

3.37 Special privacy legislation has created opportunities for public entities to better share information. This has allowed innovation in providing online services.

Good practices

3.38 The good practices from this project that we refer to in the discussion in Part 9 are:

- understanding the environment and making the most of the circumstances, the:
  - impetus of limited time;
  - extreme and special circumstances; and
  - supportive special legislation or change to legislation;
- having strong support from leaders, including strong political support;
- working effectively with the right people, including end users;
  - strong team collaboration and commitment; and
- using the right technological tools and rapid development methodologies.

Part 4
Providing real-time travel information

The project

4.1 In 2008, the New Zealand Transport Agency (NZTA) began to release real-time travel information for free to developers and third parties. Developers and third parties could republish and repackage NZTA's traffic and road data in innovative ways. This project, called InfoConnect, aimed to provide accurate, timely, and relevant traffic information that:

- tells road users about the condition of state highways – in particular, in the areas where they plan to go;
- builds confidence in the usefulness of the information and its supplier(s); and
- provides options for road users to consider in their travel plans.

4.2 After a successful pilot, NZTA set up a web portal where a broad range of developers and other third-party users could access and read about the available Application Programming Interfaces (APIs) and view a gallery that showed what other users created. This quickly attracted interested IT businesses and developers. Six months after InfoConnect was set up, 141 users were registered and 15 of them had asked for access to the APIs to start work on new applications.

4.3 In 2010, phase 2 of the InfoConnect initiative was released successfully. Phase 2 included requirements for:

- significantly increasing consumer demand;
- redeveloping the technical solution architecture;
- implementing new feeds; and
- developing and implementing monitoring and reporting tools.

4.4 At May 2012, about 300 users had registered. Developers and other third-party users can be categorised as normal or high-priority users. Examples of applications that use NZTA data are:

- an interactive online map created by the New Zealand Automobile Association;
- a Yahoo New Zealand website service that uses NZTA webcams in Auckland, Wellington, and Christchurch; and
- iPhone and iPad applications.

4.5 The total investment for the phase 1 pilot and phase 2 was $250,000.

4.6 In 2009, NZTA commissioned a study to assess InfoConnect's economic benefits. This study calculated an estimated net benefit from the InfoConnect project of between $6 million and $60 million a year.[4]

4 Opus International Consultants Limited (2009), *The Economic Benefits of InfoConnect*.

Realised benefits

4.7 Direct benefits of the project included being:

- more effective through allowing road users to make informed decisions by having access to a variety of information channels on real-time traffic conditions before and during their travel; and
- cheaper and more efficient through using third parties to provide information services for road users.

4.8 Indirect benefits included:

- developers and third parties having free access to NZTA data;
- new value-added traveller information services being provided to the public;
- more efficient transport;
- shorter travel times;
- more certain and reliable estimates of travel times; and
- better choice of routes.

4.9 Intangible benefits included:

- innovation allowing new business opportunities;
- potential to provide significant economic benefit to the country;
- more commercial and national productivity;
- less pollution;
- safer roads through improving information for road users;
- NZTA building a reputation as an organisation with an innovative approach to disseminating information;
- users having a better experience of the road system; and
- less fuel wastage.

4.10 Unexpected and/or unplanned benefits included:

- users collaborating and sharing information, experiences, and expertise through an online forum set up by NZTA;
- the new market for road information services creating interest among new participants (such as Google), particularly in large urban areas; and
- feedback from users helping to improve data quality.

The dynamic nature of realising benefits

4.11 The benefits of changing NZTA's business model and information services to road users are difficult to plan, measure, and quantify.

4.12 There was no formal in-house monitoring of benefits for the InfoConnect project, which was only a small initiative for NZTA. However, the project team regularly reported about the project's success through the use of statistics (such as how many visits its website got). Users (such as http://transportblog.co.nz/) independently reviewed the InfoConnect initiative and reported the main trends and developments.

Practices that helped achieve benefits

4.13 Since it began, InfoConnect has been business-led, not technology-led.

4.14 After observing international technological developments and a fast-moving industry, and observing development options, NZTA decided to stick to its core business and collaborate with third parties. This meant it could share risks and costs with third parties.

4.15 NZTA minimised risks and cost by using a pilot.

4.16 IT businesses, developers, and other third-party users took a strong interest in the project from the beginning. However, the process to get to a shared and common understanding with developers was long and repetitive, with each party using lots of technical words and phrases with many meanings.

4.17 All users had to register with NZTA. This allowed them to access the structured data feeds and ensured that the developers knew who used the data and what for. NZTA provided free information to registered developers and third parties under Terms of Use. It could monitor uptake and see who delivered the best products, allowing it to cut off access to a party that breached the terms of use.

4.18 Innovation involves learning as you go, continually building knowledge and skills, and learning about new technology and architecture. The iterative, learning nature of testing and deployment meant that much depended on individuals.

4.19 Ensuring that road system data was accurate and of a high quality helped InfoConnect to succeed. Feedback from users about data accuracy and quality helped, as did having a pragmatic and committed team focused on solutions.

4.20 Open-source tools and developers' support for them helped NZTA to save money.

Practices that affected the outcome

4.21 Many unknown factors – such as technology, usage, and requirements – led to NZTA underestimating how many resources InfoConnect would need.

4.22 At first, technical architecture provided by an external party was used but this was changed during the project – continuity in the technical architecture would have been better.

4.23 At first, NZTA did not tap into the web developer community (such as through Google groups). Later, it asked web developers for feedback and what they saw as best or common practice.

Lessons for other projects

4.24 NZTA looked at distributing traveller information services or data directly to customers and through a variety of channels. However, it rejected this option because it believed that it would be inappropriate to use resources for this distributing if the private sector could do it better.

4.25 After scanning the international environment, NZTA:

- acknowledged that deciding about investment was difficult because of fast technological changes and a fast-moving industry;
- decided to stick to its core business – to provide traffic information to the public for free and collaborate with others who have the time, funding, and expertise to find innovative and effective ways to offer technology-enabled traveller information services to meet the demands of road users; and
- decided to share risks and costs with others.

4.26 NZTA minimised risks and cost by first running a pilot before working out the business case. Understanding better how users' responded and what they wanted and required helped NZTA to prepare the business case and technical infrastructure requirements for InfoConnect.

4.27 Throughout the project, business objectives and technical system requirements were in line. From the start, InfoConnect was treated as a business-led, not a technology-led, project.

4.28 From an early stage, there was strong support and commitment from IT businesses and developers. Using a pilot helped NZTA to understand what users wanted and required.

4.29 Innovating means learning. It is important to secure resources for innovating (such as research and discovery, new technology and architecture, and a pilot).

4.30 Registering users meant NZTA:

- controlled who accessed and used the data and what they used it for; and
- could disable access when a user breached the terms of use.

Good practices

4.31 The good practices from this project that we refer to in the discussion in Part 9 are:

- being business-led, flexible, and agile:
  - looking at what is happening nationally and/or internationally before starting the work, to reduce the risks of duplication and investing in new information service applications;
  - being business-led rather than technology-led; and
  - using a pilot;
- using the right technology tools;
  - having registered access to open information; and
  - using open-source tools; and
- working effectively with the right people, including end users:
  - collaborating successfully with third parties who have the expertise, time, and funding to provide effective solutions.

Part 5
Processing passengers faster at airports

What the project was about

5.1 SmartGate is an automated passenger clearance system that is available to eligible Australian and New Zealand passport holders arriving at and leaving major international airports in New Zealand and arriving at Australia's eight international airports. SmartGate is a response to the Government's wish to provide a better, smoother experience for travellers and is seen as helping in the drive to make processing international travellers at the border more effective and efficient.

5.2 New Zealand Customs Service (Customs), the agency responsible for SmartGate, is the Government's agent at the border, where it carries out activities on behalf of many other agencies. SmartGate's introduction had immediate and downstream implications for some or all of these agencies.

5.3 At special kiosks, SmartGate reads a microchip embedded in passports and uses stored biometric data and photo-matching technology to validate passports and travellers to provide accurate and fast automated clearance. In March 2009, Cabinet endorsed Customs' plan to build SmartGate. In December 2009, the first SmartGate went into service in Auckland. SmartGate was progressively installed in the arrival and departure halls of Auckland, Wellington, and Christchurch airports. In August 2011, SmartGate was fully operational in the three airports. By May 2012, Customs was using 22 gates and 54 kiosks continuously.

5.4 The decision to build SmartGate came after:

- the Prime Ministers of New Zealand and Australia agreed to make the movement of their compatriots between their countries more efficient and easier; and
- the awarding of the hosting rights to the 2011 Rugby World Cup to New Zealand meant that more people were expected to visit the country.

5.5 Several factors helped Customs to design and roll out the first SmartGate so quickly. One was the political and organisational priority that SmartGate got.

5.6 Because the Prime Minister and Cabinet had prioritised SmartGate, it was also a priority for the chief executive and Customs. The project team was able to rely on Customs giving it the resources it needed to complete the job on time. The project benefited from:

- organisational commitment;
- being in line with whole-of-organisation strategy;
- organisation-wide planning;

- sound project management methodology; and
- choosing the best people to do the job – the project manager saw this as the most important factor in the project's success.

5.7 A second factor allowing Customs to design and roll out SmartGate effectively and on time was Customs' close relationship with the Australian Customs and Border Protection Service (ACBPS) and interest in the latter's SmartGate. Built by international company Morpho, the ACBPS SmartGate:

- reads biometric information on a microchip in the passenger's passport;
- checks for alerts in ACBPS' main database PACE; and
- takes a photo, which is matched with the biometric information to open the automatic electronic gate and let the traveller through.

5.8 Customs accepted ACBPS' offer to lend it a SmartGate device so that it could explore how well SmartGate would work:

- in New Zealand; and
- with Customs' CusMod database, which was configured differently from its Australian equivalent.

5.9 Customs was able to benefit from Australia's investment in SmartGate's development and design. Customs used the borrowed SmartGate to create a test environment to more fully explore the potential of SmartGate. This experience led Customs to advise the Government to buy SmartGate and meant that Customs:

- had a head start on introducing SmartGate and integrating it with CusMod; and
- was able to design and use SmartGate faster and more cheaply.

5.10 Customs' close collaboration with business partners within government (for whom Customs carries out some aspect of business), with non-government partners such as the airlines and airports, and Morpho allowed Customs to design and roll out SmartGate effectively and on time. Working in this way, Customs had better relationships with the organisations and commitments from them to prepare business improvement strategies to make the most of SmartGate.

5.11 More travellers used SmartGate than had been expected. In the first year of operation, more than 500,000 passengers used SmartGate. By April 2011, more than a million had used SmartGate. By December 2011, 2 million had. The 3 millionth passenger used SmartGate successfully in May 2012. By 2012, SmartGate was fully integrated with CusMod, and more than half of eligible trans-Tasman airline travellers were choosing to use SmartGate at Auckland, Wellington and Christchurch airports and airports in Australia.

5.12 Customs believes that the speed of SmartGate's introduction and the resulting more effective and efficient processing of travellers has enhanced its reputation with the public, airlines, airports, and other important stakeholders. SmartGate created confidence that Customs would do what it said it would do. In the 2012 Randstad awards, Customs was rated as top public sector organisation (and ranked third overall).[5] Customs was asked to demonstrate SmartGate to the United States Secretary of Homeland Security during her May 2012 visit to New Zealand.

5.13 SmartGate's capital cost was $15.9 million. Its operating cost is $7.4 million a year.

Realised benefits

5.14 Direct benefits of the SmartGate project have included:

- more effectiveness and efficiency – SmartGate delivered on the Government's vision for an improved experience for trans-Tasman travellers in line with Australia's automated border processes, a vital step towards the vision of a "domestic-like" travel experience between Australia and New Zealand; and
- quantitative and qualitative improvements that help to process eligible passengers more effectively and efficiently.

5.15 From the perspective of Customs, the Government, and, ultimately, taxpayers:

- primary processing (of passengers at airports) is more accurate;
- the cost of primary processing of arriving passengers has fallen, freeing up resources for assessing more complex risks;
- more arriving passengers are using SmartGate – at May 2012, more than 60% of eligible passengers were using SmartGate;
- more passengers have been processed with no need for extra staffing or space; and
- automating passenger processing to make it faster, more accurate, and more cost-efficient has allowed Customs to focus staff on managing risks at airports and other high-risk border protection areas.

5.16 Indirect benefits of SmartGate for passengers included:

- more effectiveness – in 2010, more than 84% of users reported that they would probably use SmartGate again; in March 2012, 55% of eligible passengers who used SmartGate were repeat users; and
- more efficiency – processing is faster (an average of 16 minutes from aircraft arrival at air-bridge to clearing Customs for SmartGate, compared with 20 minutes for non-SmartGate passengers in March 2012), so queues and waiting times are shorter.

5 The Randstad Award is presented each year to the most attractive employer in various countries around the world. A representative sample of 7000 employees and job-seekers in each of the participating countries are surveyed. The winners are chosen based on the appeal of their employer brand.

5.17 Intangible benefits included Customs' enhanced reputation among the public, airlines, airports, and other stakeholders.

5.18 Unexpected and/or unplanned benefits included new opportunities to rethink transformative benefits, such as providing arrival and departure information and allowing a wider group of passengers to use SmartGate when leaving the country.

The dynamic nature of benefits realisation

5.19 SmartGate's success was a catalyst for Customs to think further about how to exploit its capability, uptake, and performance to do things differently. The SmartGate project programme manager said: "We picked a strategy and now we are aiming to derive the fullest value from it."

5.20 From the start, Customs focused on monitoring SmartGate's performance and making changes to bring about more benefits, such as allowing 16-year-olds and 17-year-olds to use SmartGate. A Benefits Realisation plan stretches to 2015, well beyond the formal life of the project.

5.21 Customs sees the SmartGate technology as a platform to build its next phase of business changes on and continues to invest to get the best performance possible out of it.

5.22 Since Customs decided to learn from how Australia processed electronic passports and passenger validation, it has progressively realised benefits from SmartGate. During the next three years, Customs plans to identify ways to be more productive and make travellers' experiences of arriving in and leaving the country better.

Practices that helped to realise benefits

5.23 Customs' strategic planning indicated that passenger volumes would increase. To process more passengers in the traditional way would require more space at airports, with added costs for Customs, airports, and airlines. Customs sees SmartGate as a technological solution that helped to:

- achieve a business goal of enhanced customer experience;
- better manage risks, and
- manage the costs of processing more passengers.

5.24 Before rolling out SmartGate, Customs knew much about SmartGate's capabilities and the problems it would have to solve. In particular, five practices helped Customs to understand and solve problems. These were:

- organisation-wide planning, good project management methodology, and good people;

- drawing on and using the experience of other countries – in particular, the ACBPS;
- testing an ACBPS device that allowed Customs to work out if and how best to use SmartGate;
- working closely with other government agencies (such as Immigration, the Ministry of Agriculture and Fisheries, the Courts, and the Ministry of Social Development) for which Customs carries out border transactions; and
- working closely with private companies (such as Morpho, airport operators, and airlines), which each shared some of Customs' problems and contributed resources and knowledge to solutions. Customs was able to:
  - learn from Air New Zealand's experience in moving to automated check-in devices because they shared the common goal of passengers having better experiences and being processed faster;
  - work with the airports to position the SmartGate kiosks to maximise the likelihood of eligible passengers using them and minimise the extra space required to process more passengers; and
  - work concurrently with the Department of Internal Affairs on the e-passport and with Immigration on plans to use biometrics.

5.25 Focused on goals and solutions, Customs considered that it had to roll out SmartGate successfully to uphold its reputation.

5.26 The New Zealand and Australian Prime Ministers' commitment to SmartGate helped to motivate other agencies to work with Customs to achieve a solution that worked for them within the time that Government set. This minimised development time and project costs.

5.27 Political priority meant organisational priority. Customs' chief executive gave the project his full support and the whole organisation prioritised the project as a matter of:

- organisational trust; and
- reputational trust – the Customs brand.

Lessons for other projects

5.28 Throughout the project, Customs sought opportunities that could help achieve organisational goals. The benefits of SmartGate stem from its strategic fit and Customs' being determined to maximise the benefits from its deployment.

5.29 A test setup using a device borrowed from Australia allowed Customs to work out if and how best to deploy SmartGate.

5.30 Political and organisational support and commitment to the SmartGate project boosted energy and commitment in staff responsible for designing and delivering on the benefits and their confidence that they would be supported, which in turn helped them to achieve results (mutual reinforcement).

5.31 Good relationships with vendors and others needed to help realise benefits were a powerful contributor to success. The indirect and intangible benefits of these collaborations extend beyond the life of the project. After the design and rollout of SmartGate, Customs had better relationships and commitments to keep working on business improvement strategies to make the most of SmartGate.

5.32 Customs' regard for its reputation and keeping the trust of others led to an organisation-wide commitment to getting the job done.

5.33 Customs was pragmatic enough to avoid obstacles, learn as it went, and take advantage of what it learned. Introducing SmartGate in steps helped learning and kept project management costs down.

5.34 Customs prepared well, picked a strategy, then planned and managed risks to make the strategy work. Customs continues to try to make SmartGate do as much as possible for its business transformation, and uses it as a platform for further business change.

Good practices

5.35 The good practices from this project that we refer to in the discussion in Part 9 are:

- understanding the environment and making the most of the circumstances, including identifying increasing or future demand for services as an impetus for change;
- being business-led, flexible and agile:
  - looking at what is happening nationally and/or internationally before starting the work, to reduce risks of duplication;
  - being business-led rather than technology-led; and
  - using learning iteratively; and
- having strong support from leaders and senior managers.

Part 6
Portal access to Student Loan account information

What the project was about

6.1 Three government departments share responsibility for the Student Loan Scheme (the scheme):

- the Ministry of Education – policy and reporting;
- the Ministry of Social Development/StudyLink – loan agreements and payments to students; and
- the Inland Revenue Department (Inland Revenue) – assessing debt and collection of repayments.

6.2 Student loan borrowers – more than 700,000 and steadily increasing – form a large proportion of Inland Revenue's customers. With a nominal value of about $13 billion, the scheme is a significant Crown asset. The Student Loan System (the System) allows this asset to be effectively and efficiently managed and, in particular, allows borrowers to repay loans more quickly.

6.3 The project aimed to create a new customer interface at Inland Revenue, as part of a wider re-design project. It allowed an individual student loan borrower's information from Studylink and Inland Revenue to be integrated and made a consolidated, up-to-date account visible to the borrower through a single portal. In April 2012, the first phase of the System was completed, in time to meet new legislative requirements. Phase 2, still in design, is due to be implemented in 2013.

6.4 In 2006/07, a two-phase business case to redesign the System was prepared. In 2009/10, funding for it was approved. The business case analysis identified two types of benefits:

- a student loan information system more fully integrated with Inland Revenue tax systems and more access for loan borrowers to real-time and integrated information; and
- transforming and redesigning how Inland Revenue did business to make it:
  - more adaptable to changes in policy;
  - effect change faster; and
  - increase the use of automated and e-channels for customer access.

6.5 In 2009, the Government made further significant changes to student loans policy. Inland Revenue believed that the complexity of the student loan policy design and the rule changes that had been implemented since the policy began in 1992, and the interdependencies with other parts of the tax system (such as income tax and PAYE) made delivery of the redesign in the time available almost impossible.

6.6 Ministers agreed that Inland Revenue should focus on changes needed to meet the requirements of the Student Loan Scheme Act 2011 promptly and cost-effectively. This decision reduced the aims of the system redesign to:

- enhancing the borrower experience, providing services that encourage repaying and allow borrowers to manage their loan;
- provide information about student loans that is accurate and complete and presents a consolidated view of the loan balance;
- automating business processes except where human interaction adds value and is effective, repeatable, and efficient;
- transitioning borrowers to using online services and ensuring that enhanced online services and tools available through the borrower portal are user-friendly, reducing compliance and administrative costs;
- allowing more collaboration between Inland Revenue and Studylink to streamline functions, processes, information transfer, and delivery channels;
- allowing flexible, accurate, and reliable reporting to meet operational, management, and Crown needs and the requirements of external agencies;
- ensuring that business processes accurately reflect as much as is practicable the Government's policy intent and support best practice in managing loans; and
- complying with Inland Revenue's architectural principles and standards and being scalable and flexible enough to meet future business needs.

6.7 After Cabinet's agreement that the focus should be the policy changes, the business case was no longer the primary "driving force" for the design, but the thinking and planning behind the business case remained influential. Some of the achieved benefits helped to transform Inland Revenue's systems. These benefits included:

- customers having better access to account information in an integrated state;
- more use of e-channels; and
- greater flexibility in the system.

6.8 The redesigned project was divided into two phases. In April 2012, the first phase, which included changes needed to meet the requirements of the Student Loan Scheme Act 2011, went live. As a result, all student loan borrowers can access a consolidated, up-to-date loan account through a single portal.

6.9 This consolidated account includes new borrowing through Studylink, repayments through PAYE and other means, and information about total debt and how it can be repaid. This information is refreshed with daily updates of loan draw-downs

from the Studylink system and Inland Revenue's employer tax and loan payments modules. As a result, for the first time, borrowers can have an integrated, up-to-date view of the true position of their loan, through the Inland Revenue portal.

6.10 Inland Revenue estimates that Phase 1 delivered 40%-50% of the project scope of the redesigned project, including some new business process capabilities. These are expected to provide Inland Revenue with greater flexibility to manage policy changes and faster design time so that changes happen faster and more cheaply. Inland Revenue has taken a significant step towards its corporate goals of:

- more people using the e-channel;
- more people managing their loan balance and repayments; and
- more efficient and timelier collecting, with revenue benefits for the Crown.

6.11 The capital costs of the project were estimated as up to $35.9 million. The operating costs were $13.3 million during the four years of the project and $3.2 million a year after that.

Realised benefits

Direct benefits

6.12 The project delivered on the specific changes required by the Student Loan Scheme Act 2011 and increased effectiveness and efficiency by introducing:

- an enhanced single information portal for borrowers;
- a consolidated loan balance available to borrowers;
- automated processes for transferring up-to-date information from Studylink;
- automated processes for verifying and updating identity information; and
- automated processes for tracking workflow between Inland Revenue and Studylink.

6.13 Ninety percent of people using the new channel services (telephone or web) use the online web portal. This is a significant step towards achieving Inland Revenue's corporate goals.

Indirect benefits

6.14 To achieve the single portal view for the borrower, Inland Revenue had to work closely with Studylink to understand the system's processes end-to-end. As a result, Inland Revenue has a much closer relationship with Studylink and each better understands the other's role in managing student loans.

Unexpected and/or unplanned benefits

6.15 The business-to-business interface has wider potential than just student loans.

Practices that contributed to realising benefits

6.16 Inland Revenue reduced the scale of its original project to deliver on time the functionality that legislation required.

6.17 To provide a portal for those with student loans, Inland Revenue had to work closely with Studylink to achieve a more sophisticated understanding of student loans. It needed to ensure that the respective responsibilities of Studylink and Inland Revenue were unchanged and that it managed information flows to support this arrangement. In the first phase of the new system, the business process changed from one transfer of 165,000 records once a year to about 6 million records exchanged, throughout the year. The process had to be automated, exceptions requiring manual intervention had to be minimised, and workflows between the agencies on any exceptions had to be managed. The new System automated this workflow management.

6.18 Inland Revenue has begun to think of the system as the forerunner of new ways of interfacing with other agencies and integrating various systems to provide customers with one integrated single portal. Student Loans is one of several government products that Inland Revenue manages in partnership with another government department. The potential of the new business-to-business interface and the lessons learned from working closely with Studylink have led to Inland Revenue thinking of applications elsewhere.

6.19 About 25% of the project team's analysts and functional designers were subject matter experts from business teams. This meant that those working on the changes understood the operational requirements and the desired changes to the borrower experience and how the Student Loan redesign needed to interface with other Inland Revenue business processes and systems. Inland Revenue believes that good people with knowledge of the business understand the changes that they are making and, therefore, deliver good results.

6.20 Changing the system was put in the context of overall corporate direction about transforming the way Inland Revenue works, including:

- being more focused on customers;
- being more adaptive;
- efficiently capturing the data Inland Revenue needed;
- providing customers with the information they needed and reducing as much as possible customers' need to call or write for further information; and
- increasing compliance through early intervention, faster rulings, and fewer disputes.

6.21 Interdependencies were appreciated, linkages made across projects and trade-offs managed strategically by ongoing strategic overview through project reporting to a Corporate Programme Office and the Corporate Governance Board.

6.22 Project reporting included reporting on benefits realisation. The Corporate Governance Board monitors this.

Lessons for other projects

6.23 Inland Revenue treated the system redesign project as a business project, as well as a technology project. There was a clear sense of the project's interdependencies with corporate strategic goals and business transformation strategies, such as:

- an integrated end-to-end view of the business process across organisational boundaries;
- attractive and easy-to-use interfaces with the customer that promote use of the e-channel and reduce reliance on face-to-face or telephone services; and
- close to real-time information to encourage customers to manage their accounts.

6.24 To deliver a consolidated customer-facing interface to student loans, Inland Revenue worked closely with Studylink to understand student loans more comprehensively.

6.25 Inland Revenue has begun to think of the system as the forerunner of new ways of working with other public entities and integrating systems to provide customers with one integrated single portal.

6.26 There was strong and continuing strategic-level overview of the project through a Corporate Programme Office and a Corporate Governance Board. This allowed links between this project and other projects and managing trade-offs on corporate resources, time, or other priorities where necessary.

6.27 All involved understood the benefits that the project would bring.

6.28 Project monitoring at a programme level focused on benefits realisation.

6.29 There was effective managing of unknowns through flexible innovation within the framework of required policy changes. The Programme Manager at Inland Revenue said:

> *While we started with a particular design in mind, it wasn't until we got into the project that we fully realised the complexity of the Student Loan System, the rule changes that had been implemented over the years since policy inception in 1992, and their interdependency with other parts of the system.*

6.30 Inland Revenue was prepared to go back to the drawing board when necessary.

6.31 A tight timeline and "must do" delivery list to meet the legislation requirements helped focus corporate and project priorities.

6.32 Pragmatism (getting the job done to meet legislated requirements) within a strategic framework of business change resulted in more rather than fewer benefits, because those involved in the project understood what Inland Revenue wanted to achieve in the longer term.

6.33 Good people with knowledge of the business understand the changes they are making and, therefore, deliver good results: people with specialist business knowledge appropriate to the business processes being redesigned understand the system that they are designing as well as the bigger business picture. Therefore, they delivered more than just the bottom-line result.

Good practices

6.34 The main good practice learning is that going back to the "drawing board" when necessary can be critical to success. Having a clear business purpose was also a feature of the project.

Part 7
Managing land title records electronically

What the project was about

7.1 Land Information New Zealand (LINZ) was formed in 1996 following the merger of the Department of Survey and Land Information and the Department of Justice Land Titles Office. LINZ was created to provide government, civil, and military survey mapping and core land information services. Core business functions of LINZ are:

- providing information;
- automating the lodgement process, data acquisition, and land title and survey data storage; and
- processing information.

7.2 In November 1997, the Government decided to develop an electronic titles register and cadastre called Landonline. It was originally planned to be a two-phase project but a third phase was added post the original project. From 2006 to 2010, Landonline Phase 3 was carried out as the concluding project to the larger Landonline project. The three phases for the entire Landonline project were:

- Phase 1 – a $40 million project to develop an electronic titles register and survey cadastre to replace the paper titles register and mature mainframe indexes and non-survey accurate information. This allowed all paper title transactions and survey plans to be imaged on receipt at LINZ and processed in the new electronic register and cadastre. Solicitors and surveyors could now search any records in Landonline anywhere in the country. In parallel, a further $100 million project captured the historical information residing in titles, documents, plans, data, and images.
- Phase 2 – Landonline functionality was added to allow surveyors to lodge their survey plans directly into Landonline by capturing all the data as well as the image. Solicitors could now lodge routine transactions, which make up to 75% of the transaction volumes, directly into Landonline.
- Phase 3 – a $28 million project to develop the remainder of the title transaction functionality. This would then enable LINZ to remove the paper lodgement option that was operating in parallel with the electronic lodgement process. The benefits of this phase were predicated on achieving 100% electronic lodgement uptake of land title instruments by lawyers. Without 100% e-lodgement, the need for a paper delivery service would remain, negating much of the business justification for the new system. For the project to succeed, nearly all the functions that required manual intervention from service staff had to disappear to achieve the benefits of reducing staff and facilities.

7.3 In Phase 3, five consecutive releases of Landonline were needed to achieve the 100% e-lodgement (of titles) and automation components. The business rules for all ways of processing land titles had to be fully encoded for e-lodgement to work. This resulted in the staffed service counters shutting by February 2009 and complete closure of a further three processing centres by 2010. Only about 1% of title transactions are still lodged manually.

7.4 Phase 3 of the project was delivered on a fixed price, fixed term, with IBM as prime vendor and developer. Phase 3 development was built on top of the single application developed in phases 1 and 2. This application was built on systems run by EDS for the existing infrastructure developed as part of phases 1 and 2.

7.5 Most users of Landonline are land professionals such as conveyancers (for example, lawyers), surveyors, or local authorities who transact, define and manage land.

7.6 Before Landonline, land transfer legislation meant the paper record was the legal record. To preserve that record, the statutory register required growing and costly specialist storing and managing. LINZ could have stopped at Phase 1, and accepted the partial step of imaging paper records. Instead, with support from politicians, LINZ wanted the e-record to become the record of authority for land transactions, and for land professionals to have the ability to transact directly on the register. Now, more than 70% of title transactions are registered immediately, making land conveyancing and financial reporting for solicitors and lending institutions easier.

7.7 Having the country's historical and current land title data in an electronically searchable medium means that they can be used or reported on in ways not previously possible. In the past, information was stored as static data or images of paper transactions.

Realised benefits

Direct benefits

7.8 There was more efficiency and cost savings. Automating and transferring data capture to source practitioners while introducing the mandatory 100% e-lodgement phase of Landonline dramatically reduced manual processing and storing and repeated handling of paper records, reducing staff numbers, closing branches, and eliminating storage costs for LINZ.

7.9 The transaction costs for preparing and qualifying data before entry were transferred to users. LINZ eliminated handling costs and steps to transform data, saving money and making operations more efficient.

7.10 More efficiency came from addressing the situation of demand growing faster than resources. By moving to e-lodgement and automating land transfer records, LINZ averted a looming logistical crisis in processing, storing, and retrieving land information documents. For some time, the number of transactions had been increasing. In an environment of manual processing, the only answer to this growth was to add more staff and physical storage.

7.11 LINZ benefited from improved data quality by transferring the capturing of data in an electronic form to as close as possible to the originators of the data (lawyers, surveyors, and local authorities). This eliminated double handling and the data conversion errors that happened when filling in paper forms, vetting, and then typing in data. Also, having data in digital format allows proactive data cleansing and improvement activities.

Indirect benefits

7.12 There were new business opportunities for LINZ and external partners. When the land information data was available in an electronic and consistent format, LINZ and commercial partners were able to create new information-centred products (such as geographical information system data for spatial analysis products).

7.13 The main financial beneficiaries of Landonline are legal service providers and surveyors who do conveyancing work. In many instances, the time required for land title processing was reduced from hours to minutes. However, LINZ could not directly affect whether the legal service providers and surveyors would pass on savings to their customers.

7.14 LINZ created an opportunity for legal service providers and surveyors to become more efficient internally, because of simplified procedures and more flexibility. However, LINZ could not influence whether those practitioners took the opportunity to work more efficiently.

7.15 The time taken to complete a land transfer transaction was reduced dramatically. This provides LINZ with near real-time activity and means that land title information is available to surveyors and legal practitioners almost as soon as a lawyer or surveyor enters it. It used to take days or weeks for some records to be updated and become available.

7.16 Compared to those in manual delivery, fees to practitioners are mostly lower. This results in savings to stakeholders. However, fees are still linked to the volume of land transactions. When there is a boom in house sales, transaction costs reduce but, when fewer houses are sold, transaction costs rise. Fees are legislated, so there is a lag in the change in transaction fees.

Intangible benefits

7.17 By building a mutual trust relationship with legal service providers and surveyors, LINZ has an enhanced reputation as an effective innovator.

7.18 New legislation has been introduced. Working with the Government to revise and update legislation to say that the document of record was an electronic register, not a paper register, helped make back-office work more efficient and created the opportunity to better interact with customers.

The dynamic nature of benefits realisation

7.19 After delivering the programme, the project teams and programme office were disbanded. Benefits monitoring and reporting that had been strong all through the project were neither documented in a formal sense nor transferred to an IT governance board or similar.

7.20 When Landonline was being phased in, LINZ staff considered it to be multiple major systems. Now they consider it a single business-as-usual (BAU) system. As BAU, projects to maintain and enhance systems (typically in the $20,000-$50,000 range) do not follow formal project and business case processes in the same way as a major project would. There is no long-term scrutiny of benefits realisation for Landonline.

Practices that helped to achieve benefits

7.21 Setting up a properly resourced project office helped Landonline to succeed. The office provided a dedicated focal point for making decisions and managing finances and schedules. Mandating the office to identify and review benefits realisation ensured that it effectively monitored and controlled project outcomes. As a result, it set about identifying more benefits and prepared reporting cycles for Landonline's systems.

7.22 Benefits monitoring was built into project practices at LINZ. For Landonline, LINZ had a strong focus on project methodology and emphasised managing programmes (the Projects In Controlled Environments toolkit for managing successful programmes). The Project Management Institute's Project Management, Body of Knowledge methodology was used for project schedule and reporting control. Mixing these methods created challenges for configuring the project office, where different methodologies had inconsistent language and expectations. To address this, elements of benefits realisation approaches were pragmatically "cherry picked" from the toolkits. This was a pragmatic use of formal governance, programme, and project methodologies to establish clear project mandate, accountability, and change management structures that helped project communications to be effective at a whole-of-organisation level.

7.23 Although the programme team did not continuously monitor for benefits realisation, it was never far from sight and was triggered through stakeholders, reference groups, and similar mechanisms. The 100% e-lodgement imperative and the full automation capstone for Landonline incrementally built on the lessons learned during the previous phases.

7.24 Phasing the programme sensibly into achievable stages and embedding the learning resulting from those stages of Landonline during the paper-based automation (Phase 1) and the back capture of paper records (Phase 2) meant that there was the capability maturity and depth of knowledge to achieve Phase 3.

7.25 Strongly committed and involved stakeholders, especially the law societies and surveyors' professional bodies, helped in understanding more deeply and in more detail what Landonline was required to do. Landonline project teams included paid stakeholder representatives in the project office. Stakeholders have supported ongoing work to improve the automatic systems.

7.26 Using technically skilled LINZ staff who know a lot about the business when setting up systems meant that new capability was linked to established practice. Landonline project teams used subject matter experts seconded from BAU teams, and business needs were made known quickly within the project, without specific consultation.

7.27 LINZ set up control practices to manage relationships with the main vendors in Landonline projects. Where vendor contracts were in place with organisations such as IBM, EDS, and Gen-i, the project used norms and standard practices so that new systems could be set up alongside old ones.

7.28 Having engaged and active sponsorship from the chief executive ensured that project success was in line with organisational success.

7.29 The full attention of business and technical leaders ensured that decisions about the project were made decisively.

7.30 The external advisory board that represented stakeholder interests at a governance level provided invaluable support to the project team's success and ability to set and maintain focus on priorities by helping to prioritise project areas and to resolve conflicting purposes.

7.31 LINZ is an organisation of subject-matter experts. That expertise was essential for the programme, creating a need to plan successions and a way of keeping and managing tacit and explicit knowledge, especially when there had to be long-term monitoring and review of benefits.

Lessons for other projects

7.32 Benefits realisation, especially monitoring, reporting, and governance, needs to be managed beyond the project. Once Landonline was in place, the project teams and office were disbanded.

7.33 Having stakeholder groups strongly committed and involved from early in the project was carried out by using embedded stakeholder subject-matter experts (such as from the New Zealand Law Society) in the project environment.

7.34 Stakeholders were represented at the project's governance level.

7.35 The Landonline project office's strong communications culture reinforced good practice. Stakeholder maps and analysis were reviewed often and used to monitor and plan change management actions to keep the project focused on outcomes and benefits. For example, a weekly communications briefing kept level three managers at LINZ informed and there were weekly email updates.

7.36 When setting up Landonline, LINZ did not set baseline data to make before and after comparisons. Since then, LINZ has learned that setting baseline data is good practice and data capture projects now use such data when reporting.

7.37 LINZ set up control practices to effectively manage relationships with main vendors in the Landonline projects.

Good practices

7.38 The good practices from this case study that we refer to in Part 9 are:

- understanding the environment and making the most of circumstances, including identifying increasing or future demand for services as an impetus for change;
- being business-led, flexible, and agile, including involving people with good knowledge of the business;
- having strong support from senior leaders;
- working effectively with the right people, including end users;
  - having external stakeholders' strong support and involvement; and
- clearly stating, monitoring, and understanding the desired benefits.

Part 8
The 111 text service for the deaf

What the project was about

8.1 Since the 1960s, deaf people have interacted with the New Zealand Police (the Police) through technology such as fixed-base computers and fax machines. However, these technologies were characterised by their fixed location and slowness compared to voice equivalents.

8.2 Because it was difficult to access appropriate technology, deaf people had to rely on family, friends, or neighbours to access emergency services. The emergency services considered this unsatisfactory.

8.3 In 2007, the death of deaf woman Emma Agnew and the subsequent homicide inquiry brought to the attention of police communications specialists the extent to which deaf people communicate effectively using the cellphone short message service (SMS).

8.4 An international check found no other jurisdictions with suitable solutions, and international advice was that SMS was not designed or suitable for high-reliability communications. However, police operations are traditional users and experts in radio communications and understand telecommunications as part of their core operations. Because of this, and an understanding of the risks involved, the Police felt that the SMS text service, while not perfect, was the best alternative available.

8.5 Motivated to explore and analyse further, the Police first talked with the 9000-strong group of "culturally deaf" people that Deaf Aotearoa New Zealand (DANZ) represents. Culturally deaf people communicate mainly using visual language (especially New Zealand Sign Language). If the Police could address the needs of this group, then other variations on the concept should be comparatively straightforward.

8.6 After developing the capability to meet the needs of the culturally deaf, the Police extended the service to meet the needs of the wider hearing-impaired community (such as citizens with significant age or accident-related hearing loss) who use both voice and visual communications. This includes about 240,000 people the National Foundation for the Deaf represents.

8.7 The Police's experience with the 111 service suggested that opening up a text-for-all 111 service to the public would mean operations centres would have to deal with many hoax calls. Therefore, the Police decided to design an SMS emergency response system based on closed subscriptions. The system's specifications were prepared by closely consulting members of the deaf community through community meetings and stakeholders helping to design the new system. For

example, as a result of DANZ feedback, the website interface was simplified and made suitable for visual communicators by using video.

8.8 The resulting system allows subscribers to send a 111 text message from their mobile devices and communicate with first-responder contacts using text messages. This has meant that, for the first time, deaf people can access emergency support directly while away from their home , with access to support at a comparable speed to those who can speak on telephones.

8.9 During the design, the website used in signing up for the system emerged as a critically important part of the 111 Deaf Text Service. This is the interface that potential users of the system use to learn what the system is, how it can help them, and how to subscribe. Designing an online experience suitable for deaf people was a main success factor.

8.10 There was a $290,000 investment required. It cost about $20,000 a year to run the website and for licences, and there are fees for each transaction to telecommunications providers.

Realised benefits

Direct benefits

8.11 The Police communicate more effectively as a result of addressing equity-of-access issues for a particular group. The 111 Deaf Text Service has met the specific needs of the culturally deaf community that were identified and addressed in consultation with those involved. The stakeholders have described the service as creating "self-determination" and as a "tangible advance in human rights".

8.12 The Police have made their communications more efficient. Emergency centres manage 111 messages from deaf subscribers directly, avoiding the delays and miscommunications introduced by third parties that characterised the previous options. As a result, response times for emergency services to the deaf community are on a par with what the wider public expects of the 111 service.

8.13 Emergency call communications have been reported to be more accurate. Emergency response staff are able to exchange text messages with a distressed deaf person without excessive time delays. This has led to better operational decisions throughout the emergency response.

Indirect benefits

8.14 The Police have reported better understanding customers' needs by being more aware of what cultural deafness means. This has led to better understanding of a specific community's needs and has resulted in operational practices being adjusted to suit.

Intangible benefits

8.15 The Police's reputation among a culturally distinct minority has improved.

8.16 The Police have achieved new organisational knowledge about how to effectively communicate with culturally deaf people face-to-face and using other channels.

8.17 Better Police understanding of one minority group has training and cultural-awareness benefits for similar Police activities with other groups that have specific communications challenges.

Unexpected and/or unplanned benefits

8.18 The flexible Whispir technology platform for deaf 111 systems has provided the Police with a new core communications capability that goes far beyond the 111 text service. When the first deaf text service was being set up, the Police did not try to identify how the new capability would be used in other applications. Instead, it saw the new capability as something to be used when the need arose. The Police did not have to wait long to use it again – Whispir was deployed overnight in response to the September 2010 and February 2011 Canterbury earthquakes for communications between the Police, international emergency personnel, and others.

8.19 The system was used again during the 2011 Rugby World cup events in Auckland, where it was used to maintain text-based communications with the Police and other personnel managing crowds by being able to send the same message to many people at the same time. The crowded stadium environment, a difficult noisy environment for traditional phone communications, was managed effectively using Whispir.

8.20 Another example came from Counties-Manukau Police, where targeted text communications from the Police to shopping mall security staff have been used to improve crime detection and apprehend criminals in the event of reported crimes such as shoplifting or bag snatches. Using Whispir, the whole security infrastructure at a particular site can be alerted promptly.

8.21 The learning from engaging with the culturally deaf led to the Police making informed design decisions when it came to extending the scope of the deaf text system to the wider hearing-impaired community.

8.22 On top of this, other groups with communications challenges are able to benefit from the Police's deeper understanding of how to use SMS. For example, the Police are planning to use the Whispir platform to address the needs of those with physical disabilities that inhibit asynchronous voice communications, such as members of the community with cerebral palsy or similar conditions.

Dynamic nature of benefits realisation

8.23 Realising benefits is seen as an ongoing part of the "business-as-usual" operation of this system. However, the generic system's wider capability means benefits that go beyond the scope of the initial project are being sought. For example, while engaging with deaf people, the Police learned the essential difference between the culturally deaf community and the hearing-impaired deaf community and the need to address the needs of groups within that community of stakeholders differently.

8.24 In choosing Whispir, the Police looked beyond the initial benefits of the deaf text application and instead sought to understand the potential benefits of using the technology in their wider communications. Taking the wider view helped them to choose a system that could address emerging needs and spread Whispir's ongoing operational costs.

8.25 Identifying multiple uses for the generic capability gave the Police a way to scale the learning benefits of training staff and developing skills to use deaf text services. Training for the 111 Deaf Text Service was more than just using the technology. It helped create more cultural awareness among operational responders within the Police.

Practices that helped achieve benefits

8.26 Reflective practice led to the Police recruiting non-police staff and police officers with special skills to engage with the community. For example, the practice of sending a police officer and an ambulance officer fluent in New Zealand Sign Language to community consultation meetings increased engagement significantly.

8.27 The Police have a strong capability maturity in telecommunications and IT through being long-term users and early adopters of ICT. In the 111 Deaf Text Service project, the Police were able to put these core capabilities in line with operational policing needs. This means that the technology is well understood and is being used for more than originally intended.

8.28 The Police analysed the project's requirements and chose the technology platform so that the system could be integrated easily into the wider police communication infrastructure.

8.29 At the same time as the Police addressed the specific needs of the project at hand, they stayed aware of the possible future uses of the technology. Being so aware has paid off. By taking this platform-orientated architecture approach, the Police have used the Whispir platform to design and set up a successful generic capability for a registration-based SMS gateway.

8.30 The deaf text project team responded quickly to feedback about website usability in the registration process and adapted the site to meeting users' needs. This was seen as a critical factor in achieving ongoing confidence and uptake among users. This was especially true when dealing with a community that had traditionally felt disenfranchised.

8.31 The project took a holistic approach to working with many agencies to understand and develop the 111 Deaf Text Service and the Whispir platform. This flexible and innovative thinking carried out in consultation with the Police and the fire and ambulance services built on a history of shared services and common capability and led to successful collaboration between agencies.

Lessons for other projects

8.32 Checking for available solutions in use around the world can help to make better decisions about what benefits are achievable and what is needed to effectively design and set up a similar ICT-enabled project in a different institutional setting. If international good practice is not available, assess further local experience and risks.

8.33 Build upon internal expertise and look for solutions from outside the organisation. The Police's depth of knowledge about telecommunications practices allowed them to rightly reject conventional wisdom.

8.34 Using reflective practices, recruiting non-police expertise when needed, and building on talents in the police community (such as identifying officers who knew New Zealand Sign Language) helped to engage the community enough to contribute directly to the project's success.

8.35 From as early as the design phase, the Police organised ongoing engagement with a representative group of target customers and invested in methods and resources to improve that engagement and further build understanding of the specific needs of customers. For example, the practice of sending a police officer and ambulance officer who were fluent in New Zealand Sign Language to community consultation meetings made a big difference to engagement. Another example is the quick response from the deaf text project team to feedback about how usable the website was for registration, leading to quickly adapting the site to the needs of users. This was a critical factor in attracting users to the service.

8.36 Start small when setting up an ICT-enabled innovation initiative to reduce complexity and potential risks. Use local knowledge and expertise.

8.37 Pay attention to the design of what online users see to ensure that it is targeted at the intended audience with enough information but not too much.

8.38 Being flexibly innovative helped in designing and setting up the technical solution and to identify more uses for the capability in police communications. This will help to deliver other solutions targeted at different customer groups and other problems.

Good practices

8.39 The good practices from this project that we refer to in the discussion in Part 9 are:

- being business-led, flexible, and agile:
  - looking at what is being used nationally and/or internationally before starting the project to reduce risks of duplication; and
  - learning iteratively; and
- working effectively with stakeholders, including end users, and paying a lot of attention to users' experiences.

Part 9
Lessons from the six projects

9.1 In this Part, we discuss lessons from the six projects that may be relevant for other ICT-enabled projects in the public sector.

Good benefits realisation in practice

9.2 We researched models of managing benefits realisation. We then created our own model, drawing, in particular, on the work of the New South Wales Department of Finance and Services. Our contractor then reviewed and amended this model. The amended model is shown in Figure 2. We used the model in Figure 2 to help us identify elements of good practice in the six projects and to develop the six themes that we discuss in this Part.

9.3 A critical feature of the model is the continuous process of planning, reviewing, reporting, and updating of the benefits being and to be realised.

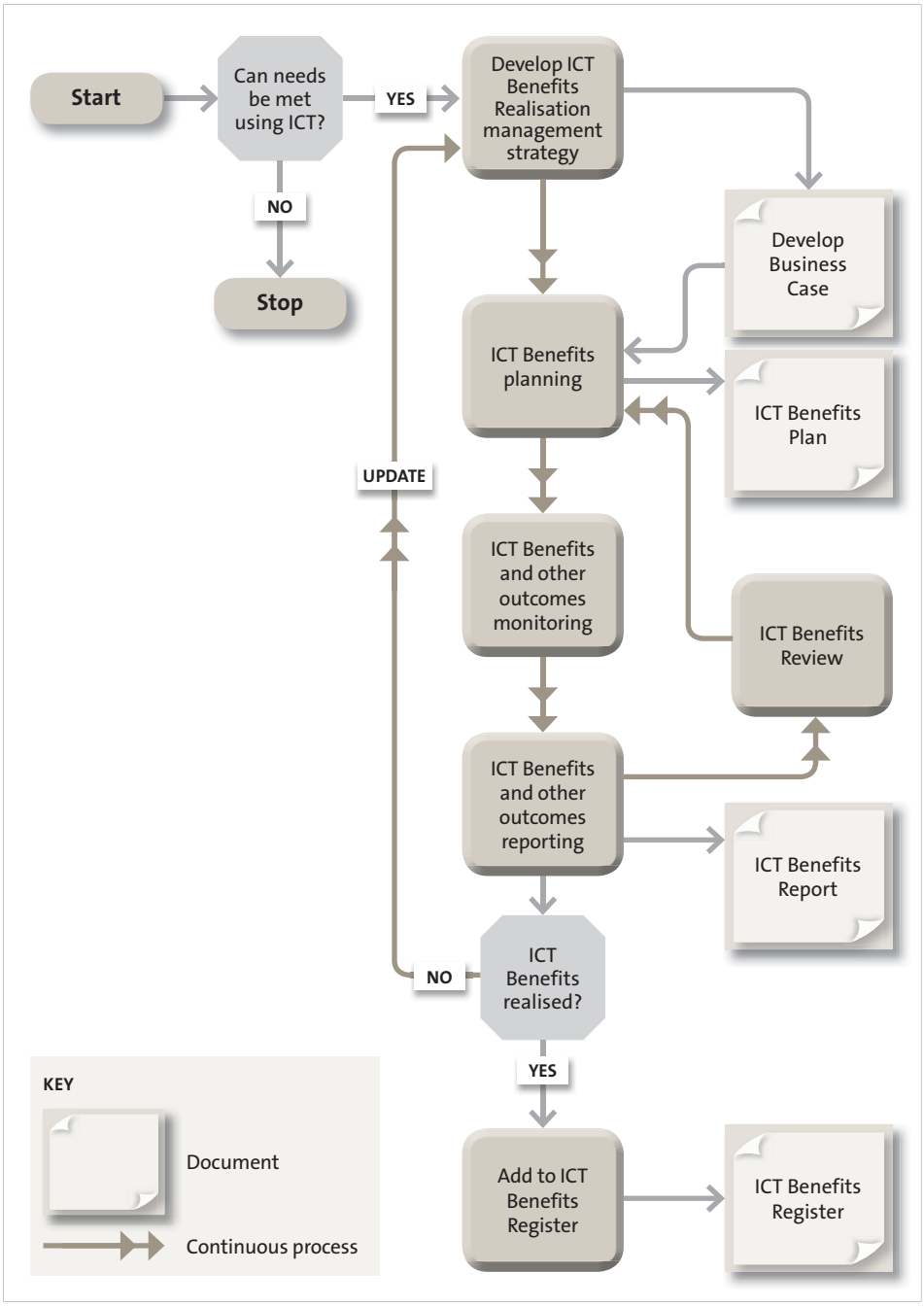
9.4 We have identified six themes and lessons from the projects:

- understanding the environment and making the most of circumstances;
- using a business-led, flexible, and agile approach;
- having strong support from leaders and senior managers;
- working effectively with the right people, including end users;
- using the right technology tools; and
- monitoring and understanding the benefits.

9.5 It is important to consider four things when looking at the common themes and lessons:

- having elements of good benefits realisation practice should not be interpreted as meaning all aspects of a project were best practice – none of the projects showed good practice in all respects;
- good benefits realisation practice for a given case study was good practice in the context of that case study, but may not be good practice in all contexts – good practice cannot necessarily be "cut and paste" from one project to another;
- good benefits realisation practice should not come at the expense of other aspects of managing successful projects, such as working within the available time and resources – good practice is not good practice when delivered at all cost; and
- some of the good benefits realisation practice is closely linked to wider good management practices and may not be specific to the technology.

Figure 2
Using information and communication technology to realise benefits



Source: School of Government, Victoria University of Wellington.

Understand the environment and make the most of circumstances

9.6 From the six projects we have drawn two factors that show an understanding of the environment and making the most of the circumstances. These are:

- identifying increasing or future demand for services as an impetus for change; and
- recognising extreme or special circumstances of a given situation, including the impetus of limited time.

9.7 These factors relate to the benefits realisation management strategy stage of the process outlined in Figure 2.

9.8 Acting strategically is about an organisation fitting its services to the environment in which it works and the changes forecast to that environment. Fitting with the environment and being able to capitalise on the opportunities that the environment presents were a feature of some of the six projects.

9.9 Fitting with the environment included using limited time as an opportunity, not a constraint. This was particularly a feature of the Christchurch Earthquake Support System, where services had to be delivered within a few days of the 22 February 2011 earthquake.

9.10 Another feature of the Christchurch earthquake project was the unique circumstances leading to Cabinet agreeing to special privacy legislation. This legislation was a strong enabler of the project, and might not have happened in other circumstances. The Ministry of Social Development's identifying the need for special cross-agency information sharing arrangements, and getting these put in place, were important contributors to realising benefits.

9.11 In SmartGate and Landonline, Customs and LINZ foresaw large increases in demand for their services. These increases could not be met if the services continued to be delivered in the same way. Both public entities understood that the changing nature of the demand for their services would make their services unsustainable. This led to a clear business purpose and pre-emptive action, using ICT as an enabler, to prevent a crisis.

Be business-led, flexible, and agile

9.12 The six projects show that a business-led, flexible and agile approach:

- has a focused business purpose;
- has people with detailed knowledge of the business involved;
- does not try to solve everything at the same time;
- follows an iterative or pilot approach; and
- uses current technology where it makes sense to and does not reinvent solutions.

9.13 These factors relate to the benefits realisation management strategy and benefit planning stages outlined in Figure 2.

9.14 Technology is not an end in itself. To effectively realise benefits using ICT, it is important that a clear business purpose guides how we use technology. Often, this business purpose may mean that people do things differently.

9.15 A clear business purpose was a notable practice in three of the projects:

- InfoConnect's clear business purpose was to give road users accurate, timely, and relevant traffic information. Giving third parties access to the information to distribute it has achieved this. This has meant that the purpose was achieved without NZTA having to get into non-core business (developing software applications) and having to directly manage all the risks that would entail.
- SmartGate's clear business purpose was to give effect to the Australian and New Zealand Prime Ministers' commitment to make the border between their countries more efficient and make it easier for Australians and New Zealanders to move between the two countries.
- The business purpose of the Student Loan System was complex. The first purpose was to make more real-time integrated information available to borrowers, specifically the current balance of their loan. A second, and more transformational purpose, was to redesign Inland Revenue's systems. This was to make them more adaptable to policy changes, able to incorporate changes more quickly, and be more automated for customers. This second purpose is yet to be met.

9.16 Because ICT-enabled projects have a business focus, it is important to involve people who know a lot about the business. This involvement was notable in the Student Loan System and Landonline projects. These projects covered complex business practices that required specialised business knowledge, including detailed knowledge of the history of business practices. In the case of Landonline, subject matter experts were seconded to the project teams. This reduced the time needed to consult with other parts of the business.

9.17 Having a flexible and agile approach is perhaps the most critical aspect of good practice that we saw. This is because it is at the heart of the continuous nature of managing benefits realisation shown in Figure 2. This is the dynamic process of planning, reviewing, reporting, and updating the benefits being and to be realised. At the heart of this are the business benefits being sought.

9.18 There is no need to solve everything at once. Often, this is important because of the long time that some of the projects can take to set up, given their complexity, and the changes to technology and the demands on the project that can happen

during that time. In certain situations, taking a flexible and iterative approach can be good way to manage risks, reducing the amount of unnecessary work and rework that might otherwise result.

9.19 Elements of a flexible and iterative approach to the work were a notable feature of three of the projects:

- The InfoConnect initiative was piloted before being rolled out and the work was phased.
- In effect, SmartGate was piloted. Customs borrowed a SmartGate device from Australia before committing to the technology. This allowed Customs to test and investigate the device, and allowed Customs to use the SmartGate technology quickly. There were only nine months between Cabinet's endorsement of Customs' SmartGate plans and the first SmartGate device going into use in Auckland.
- The approach used for the 111 Deaf Text Service has given the Police a technology platform that can be used for mass text communication with a defined community. For example, the platform was used to communicate with the Police and emergency service staff in Christchurch after the 22 February 2011 earthquake. In effect, the 111 Deaf Text Service piloted the technology, first with the culturally deaf community and then with the wider hearing-impaired community.

9.20 Working on new technology or solving technology problems already solved by someone else is not always cost-effective and can result in unnecessary risks.

9.21 The InfoConnect, SmartGate, and 111 Deaf Text Service projects involved entities performing a national and/or international scan of how other entities had addressed the service challenges that they faced. With SmartGate, this resulted in adopting "off the shelf" technology. With the 111 Deaf Text Service, it meant using a technology that other police forces had not used for this purpose.

Have strong leadership and senior support

9.22 Strong leadership and support from main stakeholders, such as Ministers and senior managers:

- are critical to effectively realise benefits in ICT-enabled projects;
- can help to accelerate critical decisions, resolve resource blockages, set and manage realistic expectations, and add impetus to a project; and
- are particularly important for the reporting stages, when information about the project is given to people outside the project for them to make decisions – this includes the business case and benefits planning and reporting stages outlined in Figure 2.

9.23 Some of the projects had strong support from politicians. With the Christchurch Earthquake Employment Support System, the Minister of Social Development reported daily to the media how many employers and employees had received payments. This gave the Minister a direct stake in the project.

9.24 The New Zealand and Australian Prime Ministers made a commitment to SmartGate. Because the Prime Minister and Cabinet prioritised SmartGate, it was a priority for the chief executive and Customs. The project team could rely on having the resources they needed from the organisation to complete the project on time.

9.25 With Landonline, the chief executive's active and engaged sponsorship was important for communicating the importance of the project.

Work effectively with the right people, including end users

9.26 The six projects show that successful project teams work effectively with the right people. In particular, they:

- pay a lot of attention to users' experiences; and
- have strong and collaborative relationships within the project team, with vendors, and with principal stakeholders, including other public entities involved.

9.27 These factors relate to all the stages of the benefits realisation process outlined in Figure 2.

9.28 The complexities of the environments in which public entities work mean that many parties may have an interest in their business. This includes end users, the providers of technology, and politicians. Achieving benefits through technology can depend on all of these people.

9.29 In planning and setting up the 111 Deaf Text System, the Police worked closely with the culturally deaf community. This means that the Police better understand what cultural deafness means in a practical sense. They have adjusted operational practices, not just the provision of 111 services, to the needs of this specific community.

9.30 Strong support from external stakeholders was a feature of the Landonline project. Strongly committed stakeholder groups, including law societies and surveyors, contributed to understanding better what users required. Landonline project teams included paid stakeholder representatives.

9.31 Because business benefits are derived when people, enabled by technology, do things differently, having strong collaboration and commitment among

those involved within a public entity is important. Strong collaboration and commitment were notable in:

- the Christchurch Earthquake Employment Support System, with staff being co-located and doing the initial design for the system during a weekend; and
- InfoConnect, where NZTA collaborated successfully with third parties that had the expertise, time, and funding to provide effective solutions.

Use the right technology tools

9.32 These six projects show that it is important to use the right technology tools for a given set of circumstances. The tools we have highlighted are:

- agile methodologies;
- making information open; and
- open-source technology tools.

9.33 These factors primarily relate to the benefits realisation management strategy and benefits planning stages outlined in Figure 2.

9.34 Many agencies and individuals faced extreme challenges after the large Canterbury earthquakes. This included the Ministry of Social Development, which the Government wanted to distribute financial support to employers and employees immediately after the 22 February 2011 Christchurch earthquake. The purpose of providing this support was to reduce uncertainty about jobs and businesses in Christchurch, and to help people to pay their bills. Therefore, haste was important.

9.35 In response to this challenge, Ministry of Social Development staff designed and built the online Earthquake Employment Support System over a weekend. This was possible because of their choice of rapid development methodologies for system development. The Kanban method and the Ruby on Rails open-source web development framework were used and $53 million in payments were made in the first week of the system being in place.

9.36 The InfoConnect initiative used open-source software tools. This kept costs down and brought support from application developers. Having the support of application developers was critical, as these developers were relied on to distribute NZTA's information.

9.37 NZTA made its road user data largely open. It was freely available to application developers who registered with NZTA. Registration gave the agency some control over misuse of the data. But it did not stop developers adding further value to the data. Making data available in this way had the added benefit of improving data quality through feedback from users.

Monitor and understand the benefits

9.38 The factors we have drawn from the six projects that demonstrate effective monitoring and understanding of the benefits are:

- clear articulation of the benefits; and
- routine monitoring of the benefits being realised.

9.39 These factors primarily relate to the benefits planning and benefits monitoring stages outlined in Figure 2.

9.40 Documentation that specifically planned, reported, or catalogued the benefits being realised was not a strong feature in the projects. We consider such documentation to be good benefits realisation practice because it is a critical part of monitoring and evaluating the benefits of a given project.

9.41 Four projects did not follow the benefits realisation cycle outlined in Figure 2 in terms of the continuous process of documentation and review of benefits. This is clearly an area for improvement in managing benefits realisation in public sector ICT-enabled projects.

9.42 Inland Revenue clearly stated the benefits to be achieved as part of its Student Loan System project and monitoring of the project at a programme level focused on benefits realisation. This helped to identify that the initial project would not realise the intended benefits and an informed decision was made to redesign the project to deliver a more realistic set of outcomes. Inland Revenue's decision to redesign the project was sensible in the context of the benefits yet to be realised and resources used.

9.43 Monitoring of benefits was a feature of Landonline. In practice, this was achieved by picking elements of benefits realisation management from the methodologies used in the project. A pragmatic approach was required because of inconsistent language and expectations.

Consider the themes identified

9.44 The themes that we have identified should not be considered as all-encompassing, mutually exclusive, or unique to the process of realising benefits.

9.45 In our view, the themes are practical and useful and should be considered carefully when planning to realise benefits using ICT.

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