Deloitte Access Economics

Digital government transformation

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Contents

Executive summary

Adobe engaged Deloitte Access Economics to study the economic benefits of digitising customer transaction services for Australian federal and state government departments. Customer transaction services are a substantial area of interaction between citizens and the public sector, covering activities such as the payment of taxes and bills, applying for government benefits, drivers' licences and the registration of names. They are very important for the daily lives of members of the public and represent a significant draw on public resources.

Australia has experienced the effects of digital innovation over recent years and the public sector has already moved to digitise many customer transactions. However, traditional channels for customer transactions such as face-to-face (or over-the-counter), telephone and mail continue to play a role. Although some government transactions may be difficult to replace with digital options due to their complexity, there is still room for growth because citizens have either not transitioned over or governments have not yet transformed their processes to allow for digital options.

This report finds that of the estimated 811 million transactions at the federal and state levels each year, approximately 40% are still completed using traditional channels. If this figure could be reduced to 20% over a ten-year period, productivity, efficiency and other benefits to government worth around $17.9 billion (in real terms) would be realised along with savings in time, convenience and out-of-pocket costs to citizens worth a further $8.7 billion – and all at a cost of $6.1 billion in new ICT and transitional arrangements. Taking benefits to governments and citizens together, the next stages of digital transformation deliver benefits worth around four times as much as they cost.

Our assessment is based on publicly available data covering government digitisation efforts and experiences of the South Australian Department of Premier and Cabinet, the Australian Taxation Office, the Department of Human Services, the Digital Transformation Office and Service NSW. Additionally, we draw on the experience of The Hills Shire and Brimbank City councils to gain a perspective of digital transformation at the local government level.

Along with the direct costs of digital transformation, we recognise other impediments, including various policy, security and process barriers and difficulties reaching citizens with lower levels of digital literacy. The report concludes with some directions and next steps for government action.

Transaction services

According to the UK Digital Efficiency Report (2012), government transaction services are "services involving an exchange of money, goods, services, permissions, licences or information between the government and a service user, resulting in a change to a government system". Examples include completing tax returns with the Australian Taxation Office, applying to the Department of Immigration and Citizenship for a passport and receiving Centrelink or Medicare benefits through the Department of Human Services.

Government benefits

Productivity and efficiency

Digitising customer transactions can unlock a range of productivity and efficiency benefits for government. Because digital transactions are generally faster, more convenient and mobile, they are fast becoming the preferred channel for citizens to access government services.

Table A: Total transaction volume and cost per transaction by channel[1]

Channel	Total annual volume (millions)	Forecast channel volume in ten years (millions)	Cost per transaction (AUD)
Face-to-face	84.1	42.6	$16.90
Telephone	139.0	70.3	$6.60
Postal	97.4	49.3	$12.79
Online	490.0	648.4	$0.40
Total	**810.6**	**810.6**	

1. Full details are provided in Chapter 3 of the report. Totals may vary due to rounding.

In this report, we use channel level transaction volumes where available (from annual reports or consultations) and calculations based on our channel-split assumptions. From these data we estimate total government customer transactions at 811 million per annum. Using a discount rate of 7% (based on NSW Treasury discount rate guidelines) and a forecast reduction in traditional channel volume due to digital transformation which is unlocked gradually over a period of 10 years, we estimate the lifetime present value benefit to government at $17.5 billion.

We also estimate the savings in labour cost from reducing traditional activities (such as data entry, shop front customer service and mail sorting). This represents a lifetime present value benefit of around $14.9 billion to government. Using the midpoint of our two approaches, we estimate that the lifetime present value of productivity and efficiency related benefits to government at $16.2 billion.

Other benefits
We also quantify revenue collection benefits for government from earlier payments, the potential value of using digital channels for advertising and sharing information, as well as the cost savings from digital data storage. Ignoring benefits that net out across the economy, these combined benefits are estimated to be worth $1.7 billion in lifetime present value terms.

Benefits to citizens
Citizen engagement benefits include time savings from reduced travel and waiting, and avoided out-of-pocket transport and postage costs. These benefits are estimated at $8.7 billion in lifetime present value terms.

We also analyse the collaboration, engagement, satisfaction and trust benefits from digital government. High-quality digital experiences are valued by citizens but improvements in user experience typically only become viable for organisations once there is sufficient citizen take-up, scale is therefore very important.

The key factors we identify as being important for improving digital experiences in government include:
• Seamless integration of digital with existing channels
• Keeping things simple and driving digital take-up
• Good design processes

• Automation and fewer interactions
• Governments working with the broader eco-system, such as the private sector.

Costs and net present value
Digital transformation will involve substantial investment in ICT, transitional and redundancy costs as well as outlays on improving digital literacy. We estimate these combined costs at $6.1 billion in lifetime present value terms.

Placed alongside estimated total benefits of $26.6 billion in present value terms ($16.2b + $1.7b + $8.7b), an estimate that still excludes a range of qualitative benefits such as improved customer satisfaction, it is clear that digital transformation is likely to deliver significant net economic benefits for governments and citizens.

At $20.5 billion in present value terms ($26.6b less $6.1b), the estimated net benefit represents 1.3% of annual Gross Domestic Product or approximately $880 in net benefits per Australian citizen or $2,000 per household.

Current challenges and barriers to change
There are many challenges facing digital transformation. We identify six main barriers to change in government as well as recommendations for policymakers.

Policy bottlenecks and bureaucratic inertia
Legislative and regulatory frictions may impose significant time and resource costs on organisations; digital change often requires changes to business processes.

Recommendations:
• Improve digital regulation, which may involve a major 'root and branch' review

• Give greater attention to more customer-focused and whole-of-government agencies such as Service NSW or the Digital Transformation Office

Budget and capability constraints

Budget constraints can block governments from investing in the right digital solutions.

Recommendations:
- Design business cases that allow agencies to offset agency savings against ICT investments (where not currently possible)

- Design agile and innovative projects that require lower specifications and lead to direct efficiency savings.

Digital exclusion and divide

Although digital accessibility has improved over recent years, governments have an obligation to be accessible to citizens and so minimising digital exclusion is critical.

Recommendations:
- Reducing the digital divide may involve: improving the level of digital skills for certain groups and reducing the difficulty of using digital services, by improving user experiences.

Lack of competition

Many transactions are only available through government

Recommendations:
- Appoint leaders with previous experience of digital transformation such as digital officers and managers from the private sector

- Increase the accountability of managers by improving the transparency of their progress in digitisation.

Privacy and security

The government regularly deals with highly sensitive information.

Recommendations:
- Undertake a sober and transparent assessment of privacy and security and instigate a risk management approach that accounts for vulnerabilities

- Provide citizens with single token identifiers, additional security checks and establish information-sharing arrangements.

- Investigate the benefits of digital voice recognition and content centric networking, which allows users to access the content they need rather than reference the location where data is retrieved.

Transitioning government staff to new roles

Labour-related time savings from digitising government customer transactions can be substantial but the government needs to consider how to transition people displaced by digitisation to new roles.

Recommendations:
- Train personnel with customer service backgrounds to become digital customer representatives at shopfronts such as the Department of Human Services and Service NSW
- Provide job search assistance or education allowances in areas of documented skill shortage in Australia.

1 | Introduction

Adobe engaged Deloitte Access Economics to study the economic benefits of digitising government customer transaction services in Australia. While governments have adopted a range of digital innovations in recent years and are gradually moving services online, in general, the citizens and private sector's take-up of digital technologies has been faster. This is for a range of reasons including the complexity of government tasks, organisational inertia and the lack of competition in service delivery.

Although the government has made strong progress in digital transformation, taking around half of their total transactions online, there is still room to improve although the next steps may be significantly more challenging than the past. This report seeks to renew the digital transformation agenda by quantifying the benefits of faster digital adoption by government and outlining future directions.

▶ *Unlocking the benefits of digital transformation*

Government benefits

Citizen benefits

The cost to government
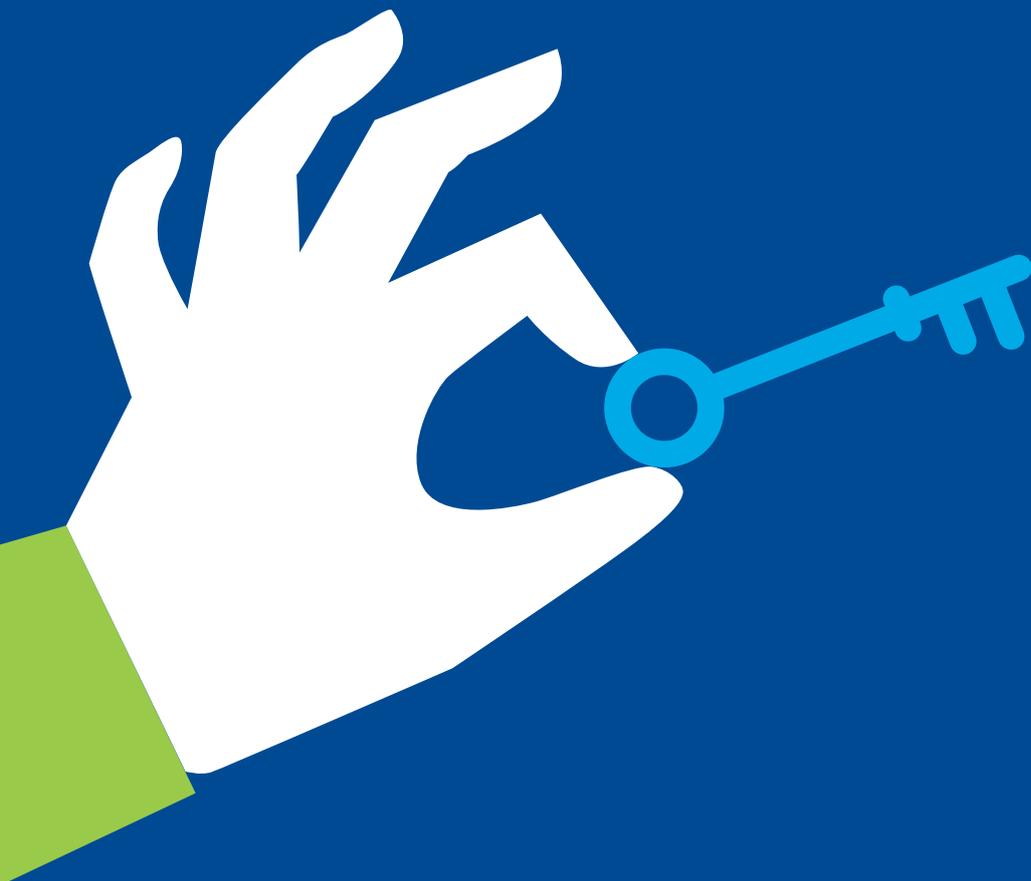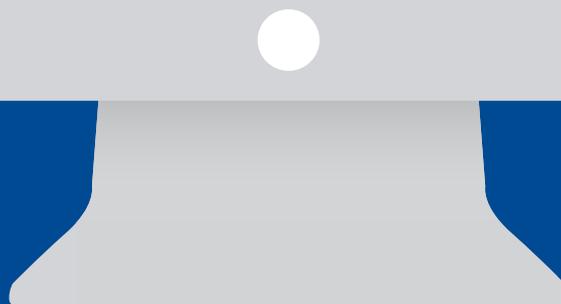
Rationale and scope of report

The report aims to quantify the net economic benefits of digitising government customer transaction services by looking at government and citizen benefits, and costs to government.

Figure 1.1: Unlocking the benefits of digital transformation

Government benefits

The impact of digitisation on productivity and efficiency as well as process savings and lowering storage costs.

Citizen benefits

The value of time savings and convenience through using more efficent online services. We also analyse a range of benefits that cannot be quantified such as trust, satisfaction, transparency, collaboration and engagement.

The cost to goverment

This summarises the main costs involved to unlock the benefits to goverment and citizens, including ICT capital, operational expenses, staff transition costs and digital education programs.

The scope of the report focuses on government customer transaction services in federal and state departments. We do not focus on local government, government business enterprises such as Sydney Water or digital service delivery such as eHealth, digital education or smart infrastructure initiatives.

To add depth to our analysis and the credibility of our data, we provide specific examples of digital success and challenges from various government organisations from our case studies with the South Australian Department of Premier and Cabinet, the Australian Taxation Office, the Department of Human Services and Services NSW.

Additionally, we share insights from The Hills Shire and Brimbank City councils to gain a local perspective of digital government.

This report also delivers insights into both current and upcoming developments in digital government which will shape Australia's future in government transaction services. This involves looking at international case studies of countries at the forefront of e-Government success as well as emerging opportunities in e-Government.

Finally, policy recommendations will be directed at the significant barriers to change affecting the Australian government's transition to digital transaction services.
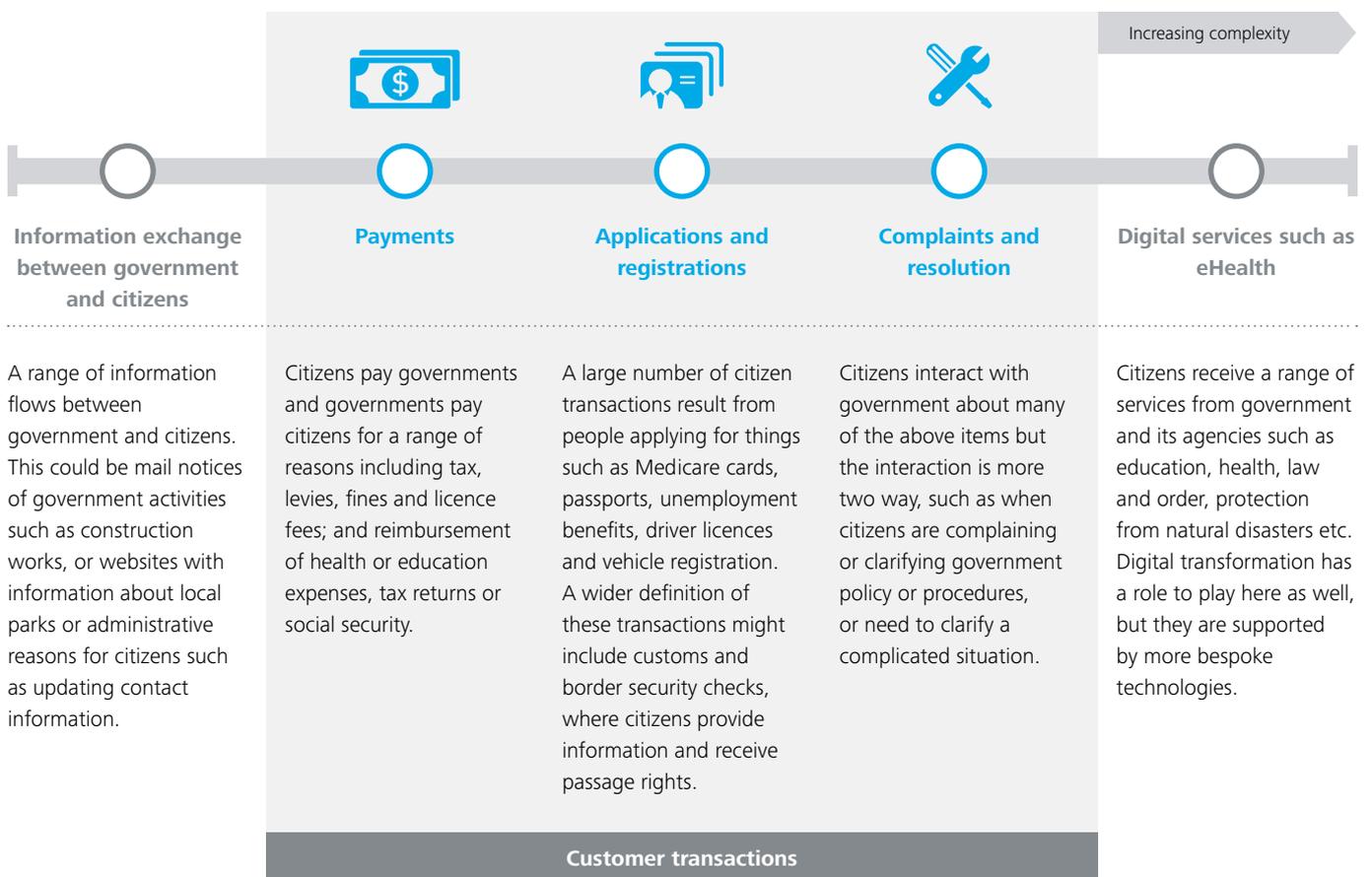
What are government transaction services?

According to the UK Digital Efficiency Report (2012), government transaction services are "services involving an exchange of money, goods, services, permissions, licenses or information between the government and a service user, resulting in a change to a government system".

There is no simple taxonomy of citizen interactions with government. Across different levels of government, and portfolios, all interactions are different, which have different capabilities to be done digitally.

At a minimum, we identify five levels of interactions, with rising level of complexity:

Figure 1.2: Different types of government transactions

Increasing complexity

Information exchange between government and citizens	Payments	Applications and registrations	Complaints and resolution	Digital services such as eHealth
A range of information flows between government and citizens. This could be mail notices of government activities such as construction works, or websites with information about local parks or administrative reasons for citizens such as updating contact information.	Citizens pay governments and governments pay citizens for a range of reasons including tax, levies, fines and licence fees; and reimbursement of health or education expenses, tax returns or social security.	A large number of citizen transactions result from people applying for things such as Medicare cards, passports, unemployment benefits, driver licences and vehicle registration. A wider definition of these transactions might include customs and border security checks, where citizens provide information and receive passage rights.	Citizens interact with government about many of the above items but the interaction is more two way, such as when citizens are complaining or clarifying government policy or procedures, or need to clarify a complicated situation.	Citizens receive a range of services from government and its agencies such as education, health, law and order, protection from natural disasters etc. Digital transformation has a role to play here as well, but they are supported by more bespoke technologies.

Customer transactions

The focus for this report are items 2, 3, 4. These include the assessment of information to process applications and documentation such as: tax forms, immigration documentation, licence registrations, Centrelink and Medicare forms as well as payment transactions between government, people and organisations. We understand that the transaction volumes that are included in this report primarily relate to these items. However, it is possible that there are some blurred lines – a citizen entering a government shop front to change their address details would count as a transaction in this case, even though it was essentially just information provision. Online, such activity may not be captured by our transactions data. While some complaints may be able to be registered through multiple channels, such as telephone, face-to-face or online, complex case management situations may only be able to be dealt with extensive human hours of effort.

There are thousands of different government transactions too comprehensive to discuss here. A few common examples however are summarised below:

Table 1.1: Examples of government customer transactions

Organisation	Example of transaction
Department of Human Services	Service centre to receive Centrelink payments or Medicare benefits
The Australian Taxation Office	Completing tax returns
Department of Immigration and Citizenship	Passport documentation processing at an airport; visa application payment
Roads and Maritime Services / VicRoads / Department of Transport and Main Roads	Driver license registration or renewal
Registry of Births, Deaths and Marriages	Birth registration or change of name
Motor Accidents Authority	Completing an accident notification or personal injury claim form

Customer transactions can be conducted through four broad channels; face-to-face (at a service centre), by telephone, by mail (sending your application through the mail) and online (web and mobile). However, there will be some variation between different transactions within the same channel such as: proof of identity at a counter compared to a face-to-face interview to discuss eligibility of Centrelink payments or doing your tax return using a mobile app or through the website, and these aspects will factor into its cost.

Generally however, traditional channels such as face-to-face, by telephone or mail are significantly more costly than using the digital option as they require more time and resources, thus there is a strong incentive to replace reliance on offline channels and encourage digital use through digital transformation.

Framework for analysis and report structure

To estimate the net economic benefit of digitising government customer transaction services in Australia, we conduct a cost benefit analysis by considering the benefits to both government and citizens. In cases where data is available, we consider more than one approach to calculate our costs and benefits; such as by using both a 'shift in channels' and 'labour resourcing approach' for our productivity and efficiency benefit for government in Chapter 3.

Additionally, the process of digitising transaction services is both a difficult and long-term one. This is because the benefit of investments in technology are not immediately realised and some government transactions are currently not available digitally from end-to-end, for example photo licensing and proof of identification which require a stage of human interaction. There are also other barriers that may lead to a lower adoption rate, which are discussed in Chapter 7.

The remainder of this report is structured as follows:

Chapter 2 discusses the current economic trends and concerns for the Australian government as well as its recent progress to date in adopting digital services and future opportunities.

Chapter 3 assesses the benefits gained through digitising transaction services for government, which include productivity gains and data storage benefits.

Chapter 4 focuses on the impact of digitising transactions for citizens. This includes savings in time and out-of-pocket costs as well as a range of qualitative benefits such as improved collaboration, engagement, satisfaction and trust.

Chapter 5 discusses the outlays associated with unlocking these benefits; which includes investment and labour transitioning costs.

Chapter 6 presents a perspective of digital transformation at the local government level.

Finally, **Chapter 7** examines the difficult and challenging task of digitisation and the barriers to digital transformation in government.
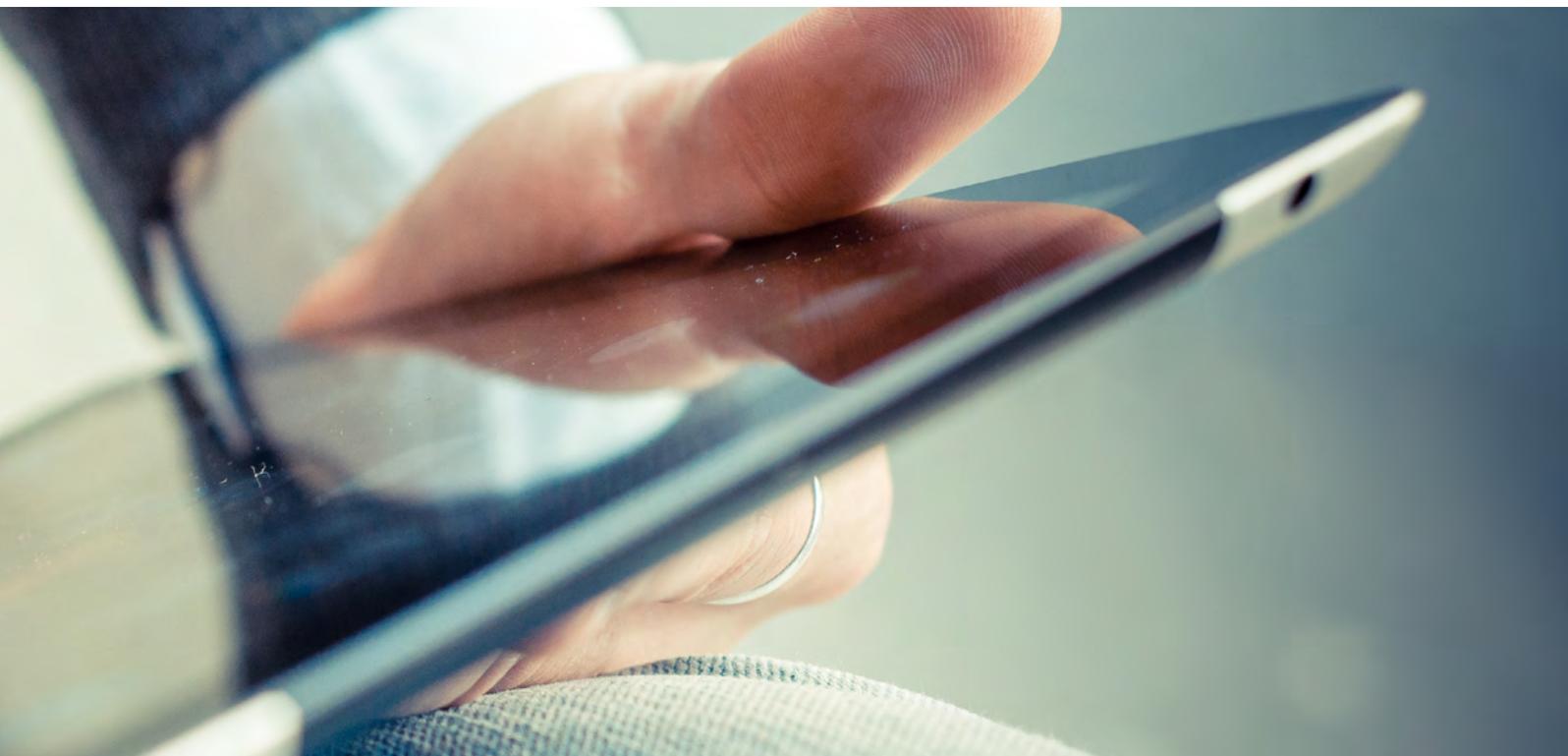
2 Australian economy and trends in digital government

With the rapid development of digital capabilities occurring in both government and the Australian economy, this section provides contextual background of recent digital successes in government, digital opportunities for the future and the implications of recent economic trends on the federal Budget.

▼ *Unlocking the benefits of digital transformation*

Digital transformation in government

The proliferation of computers, smart phones, tablets, software and internet over the past few decades has fuelled the development of a range of new digital technologies including mobile applications, smart devices and cloud computing. Digital technology has become such an integral part of our lives and economy that it has become a mandatory unit of our national education curriculum from Foundation to Year 8.

Digital changes have extended from the ICT sector itself to many other industries. Previous research has found that some industries have been more affected in the short term while others have had slower levels of adoption.

Deloitte's 2012 report, 'Digital disruption: short fuse, big bang?' emphasised that the trajectory of Australia's future economic prosperity hinges on how effectively businesses and government organisations respond and react to 'digital disruption'. Although 'government services' were classified as having a long fuse and big bang (time to adjust, high impact), the wick has shortened since that report was written and the time for change has now arrived.

Figure 2.1: Digital disruption map

Source: 'Building a lucky country #2 – Digital disruption: Short fuse, big bang?' 2012; Deloitte Access Economics

Traditionally, customers have driven the private sector's embrace of digital technologies. Market pressure creates the urgency for commercial firms to stay entrepreneurial, incorporating new technologies and innovations to boost efficiency and productivity. In contrast, government agencies often do not face competition in the traditional sense. Complexities and multiple obligations have often led to either delayed adoption or the provision of basic digital services, which leaves some to use old but more reliable offline channels such as calling service centres to deal with an issue or find information. Demonstrated examples of time savings and productivity benefits in the past however has given the government the vision to create a better digital environment, as there are many compelling economic benefits that they have begun to recognise.

Productivity and digital innovation have been a significant point for discussion in government. The UK Digital Efficiency Report (2012) found that the average cost of a government digital transaction is almost 20 times lower than the cost of a telephone transaction, about 30 times lower than the cost of postal transaction and about 50 times lower than a face-to-face transaction. Similar conclusions were reached by many equivalent studies such as the Norwegian government's e-Government program report in 2012, which estimated that digital transactions will cost less than 5% of the equivalent face-to-face interaction.

However, building digital momentum remains a challenging task. The customers of today are a demanding audience with a limited patience. Digital experience optimisation has been crucial in the around the clock transformation of businesses and organisations to remain up to date with customer expectations online. Capgemini (2014) found that 67% of online shoppers turn away from a retailer or service provider (including mid-transaction) and that 17% of page views last less than four seconds. Key contributing factors to this abandonment include poor customer experiences caused by interfaces and menus that are difficult and clumsy to navigate, inefficient search functions, lengthy processing times as well as a smorgasbord of choice and price competition in today's online marketspace.

The urgency to constantly improve user experience does not usually translate to government services since citizens are typically constrained with only one choice. Poorly designed digital services have the potential to drive customers to less efficient channels, such as telephone, face-to-face and mail to complete the transaction. This inefficiency is costly for government as it wastes valuable employee time that could be directed to more productive activities. In order to improve the level of contestability in government customer transaction services they need to ensure that the right competition principles are committed to by ensuring that:

- User choice should be the centrepiece of service delivery
- Innovation in service provision should be encouraged, while ensuring that quality and access to human services at least meets minimum standards
- Legislative frameworks and government policies and regulations should not restrict competition in the public sector
- Government provision or procurement of goods and services should separate the interest of policy, regulation and service provision and should encourage a diverse set of providers
- Governments should promote consumer choice when funding, procuring or providing different channels of transaction services (e.g. mobile and tablet apps, website, software)
- Third party access to significant bottleneck infrastructure or data should be granted if it will lead to material increases in competition (for example open government initiatives to drive competition within the private sector to create digital apps).

As such, these two narratives of lost potential output due to inefficiencies and growing customer expectations pressure governments to continually improve their efficiency and productivity, lower costs and improve ease of service.

Economic and fiscal context of Australia

Recently, productivity has been highlighted as an area of focus for prosperity in the future. Australia's multi-factor productivity (MFP) — the amount produced given the number of hours worked and capital employed in production — has not increased over the past decade.

As one of the key drivers for improving living standards in Australia, it has become increasingly apparent that embracing the role of digital technologies in improving the level of productivity is crucial for a developed economy such as Australia in the challenge of maintaining economic growth in living standards in years to come.

Figure 2.2: Average Australian annual national income growth per capita
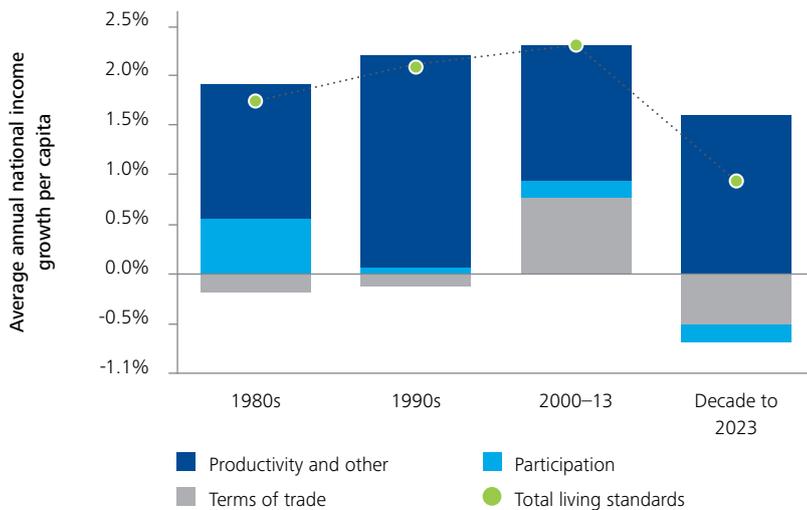
Source: Dr Martin Parkinson, Secretary to the Treasury, 'The 2014-15 Budget and sustaining broad-based growth in living standards' speech, 20 May 2014; Deloitte Access Economics

This directs attention to Information, Communications and Technology (ICT) government spending as it can improve its productivity both in terms of capabilities (by enhancing the efficiency and effectiveness with which governments can deliver services) and flexibility (e.g. improving the ability for government employees to access data remotely). The contribution of ICT to MFP growth was last estimated by the Productivity Commission in 2004. This report found that ICT use in the late 1990s had accounted for around 1.5 to 2 tenths of a percentage point of the increase in MFP growth.

In addition, Kyoji et al. (2009) finds that the ICT-producing sector is the leading sector for enhancing productivity growth in Korea, with ICT capital accounting for 0.8% of the growth in the economy between 2000-2005.

Like governments in many other developed countries, the Australian government currently faces significant fiscal stress. With eight consecutive years of budget deficits, there are concerns whether the current budget problem is a cyclical or partly structural one.

The resources boom over the past decade has helped our gross domestic product and level of employment remain strong comparative to other governments, which has had a positive impact on the budget. However, with resource prices declining and growth in Asia beginning to relax, this cyclical benefit will soon be gone.

**Figure 2.3: Impact of the economy on the Budget**
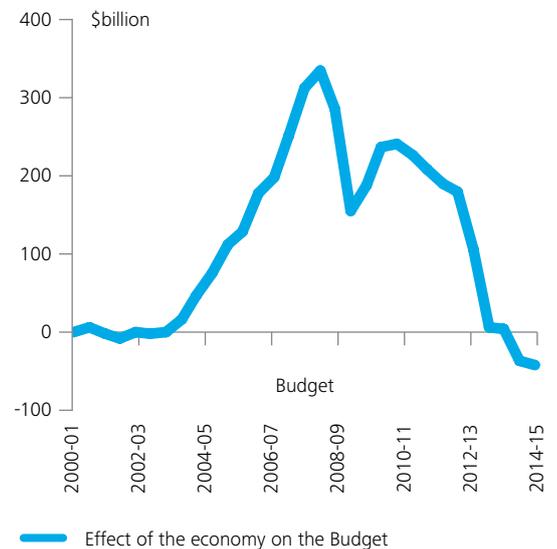
Source: Budget Monitor: The wheels fall off, 2015; Deloitte Access Economics

Demographic trends such as an ageing population, which is mainly structural, will drive up government expenditures and reduce taxation inflows in generations to come. With the participation rate in the workforce forecast to fall from 65% to 56% by 2044-5 according to the Productivity Commission (2005), the shifting age structure presents numerous challenges for our economy. Negative effects include reductions in aggregate output, government taxation revenue and GDP per capita as well as concerns of increasing costs in welfare, health and aged care.

Regardless of whether policymakers should consider these deficits as a growth stabilisation exercise or an indication to alter their receipts and payments through changes in taxes and expenditures in the future, there are substantial economic benefits through digitisation of government customer transactions waiting to be unlocked.

With the potential to improve efficiency by reducing processing time and labour costs in the future, digital transformation yields two main benefits for government. It will improve the level of productivity, leading to increased economic growth in the future; and lowers the cost of delivering public services as more transactions are completed online, which alleviates budget stress through reduced government outlays.

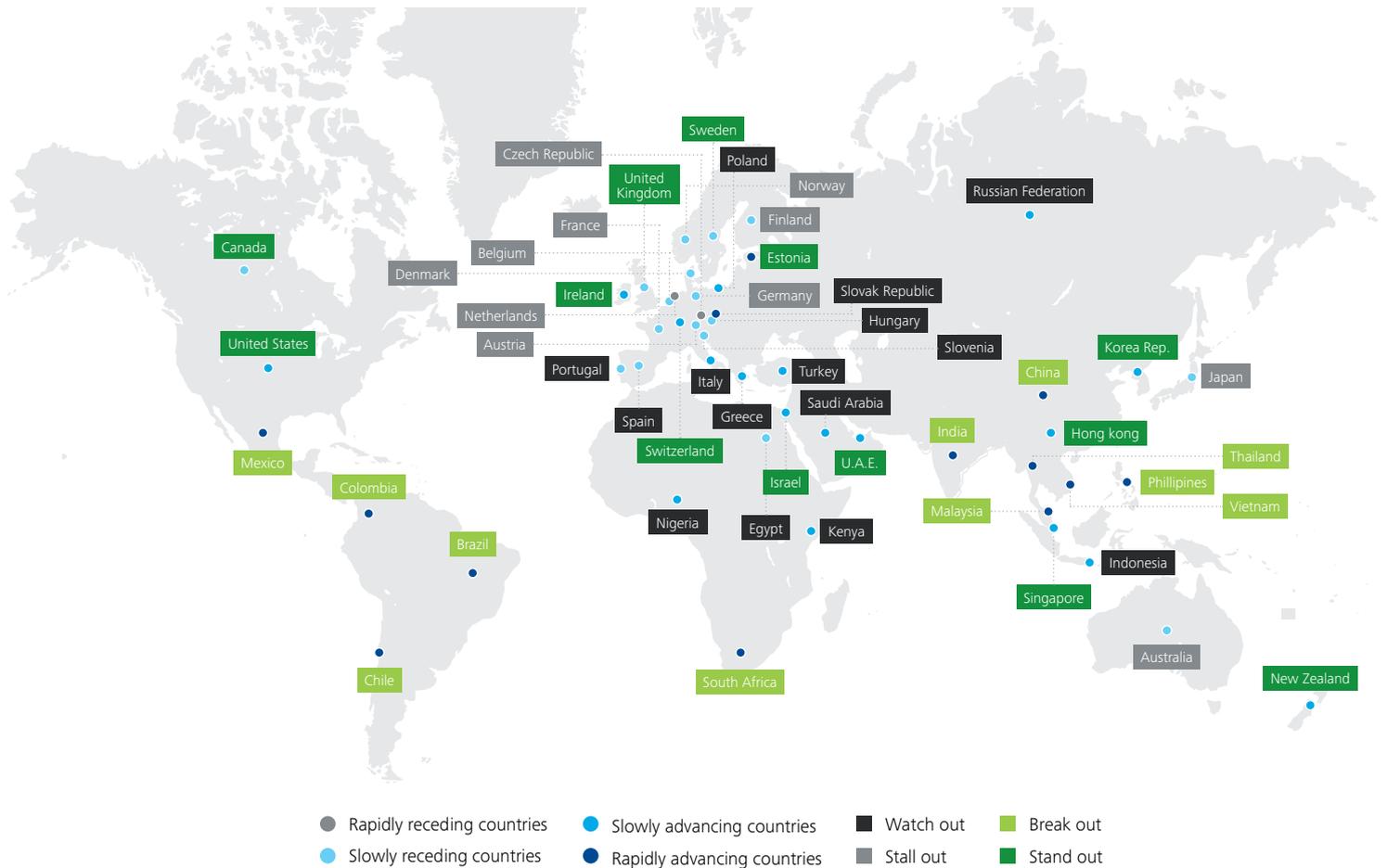**Figure 2.4: Fiscal budget deficits ($ billions)**

Fiscal balance ($ billions)
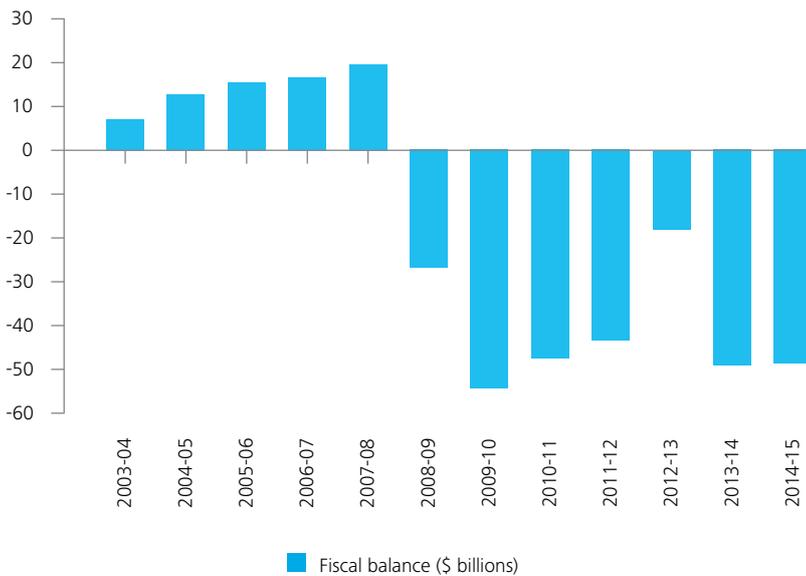
Source: Budget Monitor: The wheels fall off, 2015;
Deloitte Access Economics

Current digital developments in government

This section outlines recent trends in Australia's government in terms of digital development as well as provides key examples of successful adoption of digital innovations and technologies for government transactional services.

According to the Digital Evolution Index created by Tufts University which gives a forward looking perspective of how well prepared a country's digital market place is by observing supply, demand, innovation and institutional factors, Australia was ranked 12th in the world in 2013. Australia was classified as a 'stall out' country, which suggests that although we possess a high level of innovation and digital development, we have recently lost momentum in digital innovation.

Figure 2.5: Digital Evolution Index 2013

- Rapidly receding countries
- Slowly receding countries
- Slowly advancing countries
- Rapidly advancing countries
- Watch out
- Stall out
- Break out
- Stand out

Source: Tufts University, Digital Evolution Index (2014)

Historically Australia has performed well compared to other governments in terms of digital government. In the United Nations (UN) e-Government survey of 2014 Australia ranked second globally behind South Korea, a significant jump after more than a decade of rankings decline in the e-Government development index. This is due to Australia's recent establishment of robust telecommunications infrastructure, expanded usage of e-government facilities and extended service delivery.

However, with many government transaction services still currently being completed in non-digital channels, there is still significant room for improvement in digital migration where Australia's UN Online Service Index ranking was 8th globally behind France, Singapore, Korea, Japan, Spain, United States and Bahrain in 2014.

ICT spending

Information and Communication Technology (ICT) has been a fundamental part of government expenditure since the 1980s. From 2008 to 2013 however ICT spending has remained relatively unchanged with expenditures classified as 'business per usual' comprising around 67% of total spending. In a resource constrained economy, there is mounting pressure to reduce costs while still investing in ICT.

One way to achieve this is by improving the efficiency of investments within IT. This is hard to measure since ICT results from expenditure can be affected by efficiencies in procurement or reductions in prices. However, previous reviews have detected substantial budget issues (not meeting original expectations, spending above budget) and timetabling issues (not completed on time) during the implementation of large and complicated ICT projects. A key finding of the NSW Commission of Audit's Report (2012) was the need to reduce resource wastage through the consolidation of ICT systems and processes to achieve scaling benefits. This could include standardisation as well as a data centre reform that achieves a unified framework and connected platform in which to provide services.

Table 2.1: Annual Government ICT spending

	2008-09	2009-10	2010-11	2011-12	2012-13
$ billions	5.18	5.36	5.36	5.59	4.93

Source: Department of Finance, ICT Expenditure Report 2008-09 to 2012-13

myGov

myGov is an initiative launched in 2013 that allows citizens to access a growing list of government services online and at myGov shopfronts via a single portal including services from:
• Medicare and Centrelink
• The Australian Taxation Office
• Australian JobSearch
• Child Support
• The Department of Veteran Affairs
• The National Disability Insurance Scheme.

With over five million current users, the benefits of using this single-login portal is that citizens can now conduct a range of common government transactions all in one place, as well as receive frequent and timely updates of its obligations to and interactions with government through the myGov Inbox. The Digital Transformation Office also plans to extend a new digital account that will enable businesses to receive messages from government via a single portal and complete digital transactions in 2016.

e-Tax and myTax

One of the most significant cases of digitalisation of a government transactional service that has improved the lives of Australians is the introduction of the electronic-tax system. The Australian Taxation Office (ATO) developed the e-tax web-based service platform in 1999, which has continually been under development. Broadly, it aims to offer a comprehensive, secure and convenient way to lodge complicated tax affairs online rather than through paper documentation. This has significantly cut the time spent on filing tax for taxpayers, tax consultants and legal staff in Australia, time that can be used for activities that boost economic output.

Additionally, the recent development of myTax by the ATO has further improved the convenience of this technology, which will replace e-Tax by the financial year of 2015-16. It promises additional streamlining and time savings as an individual's tax return is pre-filled with information from previous tax returns. Also, myTax offers taxpayers the flexibility to file tax forms from tablets, mobile devices or computers.

Cloud computing policy

Since the government's Cloud Computing Strategic Direction Paper in 2011 and the focus to allocate government ICT expenditure more efficiently, there has been an increased adoption of cloud services by government agencies to eliminate duplication, reduce fragmentation in government and offer significant cost savings over existing ICT services.

State governments have also recently taken advantage of cloud services. For example, the QLD government in 2014 employed a cloud-based mail service across the state, with estimated savings of $13.7 million over three years in IT expenses.

One-stop shops

Visiting and queuing up in multiple service centres to achieve one purpose can be a frustrating customer experience. It can be even more frustrating if you took the time to visit a service centre only to learn that you have went through the 'wrong door'.

Along with digital and other changes there has been a movement in government to consolidate service centres to offer a wider range of transactions in 'one-stop shops' and developing a customer-centric approach. For example the Department of Human Services now has over 170 service centres that allow customers to do business with Centrelink, Medicare and youth services under one roof. Also, the newly opened shopfronts of Service NSW have been successful in allowing citizens to currently engage in over 800 different transactions from 28 different agencies in any of its 36 different locations.

Other initiatives

Digital transformation has not only improved the efficiency of our government transactions but also a range of other services and areas that are beyond the scope of this report.

Some examples include the launch of eHealth.gov.au, which has allowed citizens to regularly and conveniently monitor a summary of their health information, and the development of a Fire and Rescue NSW tool that uses geographic information and variable data including weather forecasts to make predictions on the risk of disasters such as flood or fire.

The future of digital transformation in government

Although significant progress has been made by government in addressing the growing needs of today's digitally engaged citizens, there is still room for improvement and many untapped opportunities.

The future of government services will be aimed more towards offering personalised or individual-orientated services rather than 'citizen-orientated' services in government. In this section we briefly discuss some of the concepts in digital government that will help improve transaction services in the future.

Figure 2.7: The future of digital Government

Source: *The National Information Society Agency (2008), Concepts and Features of Government 2.0 and 3.0*

Open data and information sharing

Open data is data is freely available for people to use without restrictions. It is a concept that has been considered by many governments globally including the United Kingdom (data.gov.uk), the European commission data portal (open-data.europa.eu), the Ghana Open Data initiative and Japan. For Australia, data.gov.au has provided access to over 6,700 different datasets from 164 organisations.

The rationale behind having open data is that it promotes government transparency and accountability as well as leveraging the wisdom of third parties to use the data in a productive way by developing new applications and services.

One-way services and the need to complete the same information with different agencies (such as when you do a tax return and when you register for a licence) is an area that has scope for improvement in the future through data sharing across government agencies. With myGov and the recently opened Digital Transformation Office planning to make this a reality in the near future, it can yield significant convenience and time saving benefits for citizens as well as lower transaction volumes and greater compliance benefits for government.

Integrated channels

There is a goal to reduce the total number of government transactions each year by consolidating multiple transaction processes. For example the Australian Taxation Office is considering a single touch payroll system where the obligations of payroll, tax and super can be consolidated with auto-fill functionality to be all completed on the same day.

Additionally, the United Kingdom has implemented a cross-government program called 'Tell us once', which allows citizens to report a birth or death through a single point of contact and has significantly reduced the complexity of citizen interaction with government. Before this change, citizens were required to make up to 44 contacts to report a death to government bodies and local authorities. The Digital Transformation Office is planning to implement a similar program in Australia.

Government interaction and social media

Social media use has been growing amongst governments in the Organisation for Economic Co-operation and Development (OECD). Twenty-two out of 34 OECD countries now have an active Twitter account that represents the highest executive institution according to OECD (2012). Accenture (2013) found that out of ten countries, 64% of citizens stated that they already use social media or would like to use it as a means of interaction with government in the near future. However, more developed countries were a little more hesitant to engage in social media platforms, reflecting data privacy concerns.

The benefit of using social media is that it facilitates more collaboration between government and its citizens; promoting a more effective democracy. Additionally, it can be used as a source for disseminating information to citizens to make them more engaged, which was an advantage that the Department of Human Services is interested to explore. The Department of Communications has been incorporating hashtags (a metadata tag used in social networks such as Twitter) through its social media channels to engage with citizens.

This two-way engagement can also provide the government with timely and frequent feedback, which can help drive innovations in service delivery and form the basis for a new participative society.

Electronic verification and e-societies

The future of technology could mean that government transactional services can be mostly digital and widely available for all citizens without the use of computers or mobile technologies. In Estonia electronic verification allows people to engage in over 160 different government transactions electronically including:

- Multiple identification purposes (e.g. use as a travel document within EU, health insurance, digital signatures, banking and transport purposes)
- For accessing government databases to check medical records, file taxes etc.
- Electronic voting and picking up e-Prescriptions
- Various payment services such as banking, utilities (water, gas and electricity) and review accumulated pension contributions and values.

Establishing a credible e-society for Estonia was not a short process. It started in 2001 and focused on bringing together citizens, government and business and combining security and appropriate data ownership. The main principles behind Estonia's digital government success involved:

- Decentralisation combined with interconnectivity. This allows freedom for government departments, businesses and individuals to choose and design their own systems and to collaborate together
- A secure open platform approach where any institution or individual is allowed to use publically provided key infrastructure
- An open-ended process where capabilities are allowed to evolve and improve naturally
- Investment into long-term ICT infrastructure.

In Asia, Singapore launched 'SingPass' in 2003, a single sign-on system that provides citizens with convenient access to a range of government services and a common password to interact with all government agencies online for services such as company registration, income tax return filing, and new passport application submission and renewals. Currently, 57 government agencies authenticate users with SingPass for access to about 270 e-services that require secure user identification.

Although electronic verification does improve convenience and interoperability between services for citizens internationally, there may be some reluctance from Australians who do not wish to have governments too closely involved in their lives. To ensure personal information is protected, a democratic and clear assessment of privacy, security and restrictions against information use may need to be considered.

Possibilities for the future: Government 2020 from Deloitte University Press

Overall, the initiatives of open data, integrated channels, citizen interaction and electronic identification cards all encourage a more collaborative and seamless relationship between government and its citizens.

According to Government 2020 from Deloitte University Press, growth in data analytics will help organisations make more informed decisions. In the future, crowd-aided analytics that tap into the power of the citizen base in the analytics process will create processes that are more efficient, accurate, optimised and democratic.

Due to improvements in digital technology, real time data analysis is also available for Governments to explore more in the future especially for creating seamless interactions with big analytical and visualisation systems in the cloud.

For digital education there is a shift to move away from 'content' based to 'connections' based learning that personalises and securely delivers instructional content such as Khan Academy's 'anytime, anywhere' educational model. Integrated next generation technologies will allow parents, teachers, peers and administrators and individuals outside the formal educational system such as mentors and potential employers to form a collaborative network during the learning cycle. This can also be applied to the context of government transactions where governments and citizens can improve collaboration with each other to co-design and deliver more effective solutions to current interactions.

Finally, as mobile technology becomes more ubiquitous continued refinements in mobile applications will allow users to access more sophisticated government services regardless of their location, which will reduce the need for fixed point service centres.

3 | Government benefits
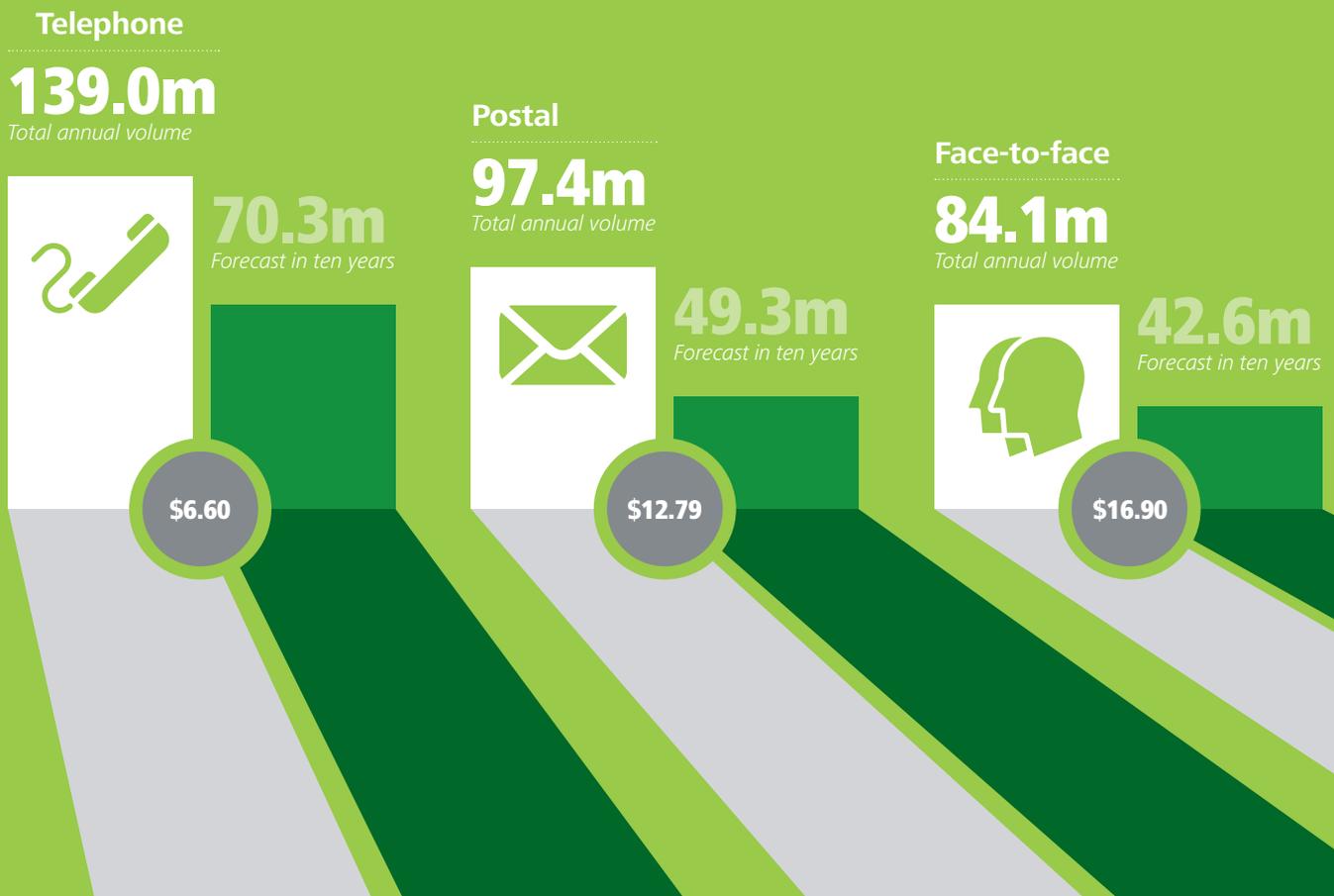
648.4m
Forecast in ten years

Online

490m
Total annual volume

$0.40

Traditionally, government transactions can require a lot of time and resources to process and complete. This could range from interacting with someone at a counter; speaking to them on the phone; to time taken for staff to sort through mailed in forms and process the information required to complete a transaction. Compared to a digital channel which is much quicker and is based on self-compliance, there is room for significant time savings for government.

▼ *Total transaction volume and cost per transaction by channel*

Telephone

139.0m
Total annual volume

70.3m
Forecast in ten years

$6.60

Postal

97.4m
Total annual volume

49.3m
Forecast in ten years

$12.79

Face-to-face

84.1m
Total annual volume

42.6m
Forecast in ten years

$16.90

Government benefits

With the amount of digital data forecast to exceed 40 zettabytes or 5,200 gigabytes for every person living on earth by 2020, there is also an opportunity for government to benefit through reductions in data storage costs and the use of data analytics to design better operational processes to further reduce transaction costs within channels.

Productivity and efficiency benefits

The digital transformation of customer transactions unlocks a range of productivity and efficiency benefits for government. In terms of costs, a digital transaction is almost 50 times cheaper than a face-to-face transaction. The internet has now become commonplace in everyday lives and is a preferred channel for citizens to access government services according to the Australian Government Information Management Office.

It is difficult to keep track of the thousands of forms available in government let alone the total number of transactions. These transactions can all be very different (for example waiting in line at Centrelink compared to a council regulatory check on a mobile app), which can lead to different costs and resource needs. For our analysis however, we categorise our transactions under four broad channels; face-to-face, telephone, postal and online.

We estimate the productivity and efficiency benefits of digitisation using two different approaches. First, we consider a shift in customer transactions from more expensive traditional channels to online channels. Second, we estimate the time saving benefit from the cost of jobs associated with tasks that connected with traditional transaction channels.

A shift in channels

Government customer transactions include seeking, exchanging or providing information with a government organisation and/or if a payment to or from government was involved. This could include the processing of applications and forms on visa and immigration documentation, licencing registrations, Centrelink and Medicare forms.

Because there are difficulties with obtaining the total number of customer transactions at the channel level across all federal and state government organisations, we estimate this number by calculating the total number of transactions from the largest contributors to government customer transactions.

The federal government organisations that are major contributors to the total level of customer transactions each year and which we use in our analysis include:

- The Department of Human Services (DHS)
- The Australian Taxation Office (ATO)
- The Department of Immigration.

At the state level, a large proportion of transactions will be based on licensing, identification and registrations; for example with Roads and Maritime Services, NSW Fair Trading and the Registry of Births, Deaths and Marriages. We estimate the amount of state level transactions nationally by scaling total transaction volumes from Service NSW by the reciprocal NSW's share of Australian population from the ABS.

We acknowledge that this will underestimate the total amount of transactions that are not currently digitised and downwardly bias our productivity and efficiency benefit for two main reasons: it does not include *all* federal and state government customer transactions; and the organisations we focus on in our report may be ahead of other government organisations in terms of digital development.

In cases where the total number of transactions within a channel (such as face-to-face) is not available through public sources or our case studies, this number is estimated by using the average channel split from the Australian Government Information Management Office's *Interacting with government* survey (AGIMO 2011) which was conducted on a sample of over 3,000 Australians on how they engaged in customer transactions with government, against the total number of transactions. Based on trends within channels between 2006 and 2011, we estimate the channel split for all government transactions in 2015.

Table 3.1: Average cost of transaction by channel

Channel	Cost*
Face-to-face	$16.90
Telephone	$6.60
Postal	$12.79
Online	$0.40

* This is a Deloitte Access Economics calculation based on three international sources for government channel costs and our consultations with government

Overall, AGIMO found strong growth in use for both online and phone channels, while face-to-face and postal transactions declined over this period. Additionally, its survey takes into account customers who engage in more than one channel to complete a transaction; finding that this number has been steadily increasing over time from 6% in 2006 to around 22% in 2011 as digital services become more readily available. Our estimate of total government customer transactions is 811 million.

The variation in costs between the four channels occurs due to different staff time and resourcing costs associated with each transaction. A range of literature has estimated these costs for government transaction services globally. We base our estimation of channel costs using the average of three separate sources that include the Norwegian e-Government program (2012); Society of Information Technology Management (2013) and the UK Digital Efficiency report (2012).

The private sector has been effective in transforming its customer transactions to digital channels. According to

Telstra's Sustainability Report in 2014, the private sector increased the total number of online transactions from 30% in 2012 to 46% in 2014. The retail banks have also made significant progress in digital transformation since introducing automated teller machines (ATMs) in the late 1960s with online banking services, mobile apps, contactless payments and peer-to-peer banking. ANZ Bank's 2014 Adult Financial Literacy Survey found that nearly 75% of people bank online (up from 63% in 2011), with the Commonwealth Bank of Australia estimating that 3.5 million customers or 46% of all transactions are currently being completed through their website or mobile app as their *primary* point of interface.

In the retail industry, the introduction of digital self-scanners in Woolworths supermarkets has allowed citizens to self-pay since 2008. Now 83% of Australians regularly use self-scanners according to Woolworths' *Future of Fresh Report* in 2014. Coles also estimates that 75% of its payment transactions with MasterCard are currently contactless.

With many customers utilising multiple channels to complete transactions as online options become more convenient for users, it is difficult to distinguish the precise percentage of transactions conducted through a digital channel. Additionally, there is a positive relationship between the value-add or sophistication of the transaction with the requirement for more human interaction, which has been a barrier in the past for digitising some government services. Simple transactions such as payments may be easier to transition into digital channels, however more complicated interactions such as proof of identity or complaints assessment, may require more attention.

Although there are currently around 320 million government customer transactions being completed each
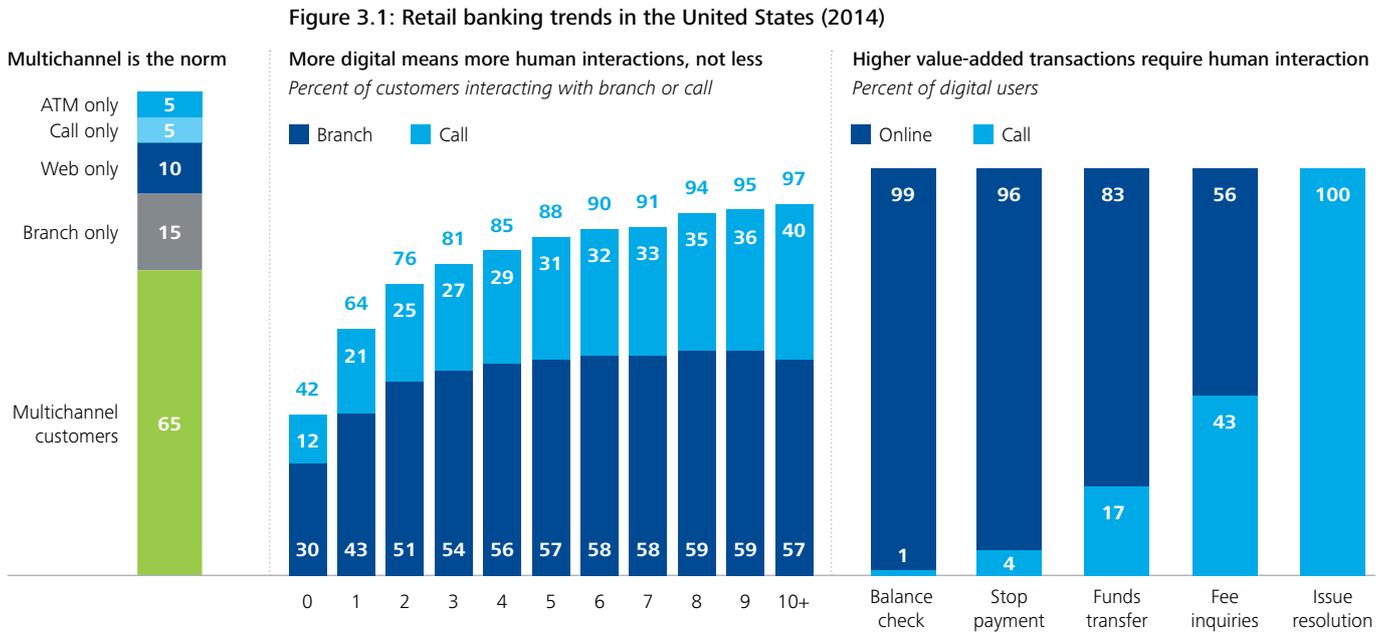
Table 3.2: Average cost of transaction and use by channel

Channel	Total annual volume (millions)*	Forecast channel volume in ten years (millions)**
Face-to-face	84.1	42.6
Telephone	139.0	70.3
Postal	97.4	49.3
Online	490.0	648.4
Total	**810.6**	**810.6*****

* Based on estimated total transaction volume for the three largest federal departments and state level transactions

** Based on estimates of only 20% of total transactions being required through traditional channels in ten years from 39.5% based on trend digital channel growth from AGIMO (2011)

*** Our analysis is about the benefits from a shift in channels on existing transaction levels; we also discuss multi-channel interactions and overall transaction growth in this section

Figure 3.1: Retail banking trends in the United States (2014)

Multichannel is the norm

ATM only	5
Call only	5
Web only	10
Branch only	15
Multichannel customers	65

More digital means more human interactions, not less
Percent of customers interacting with branch or call

■ Branch ■ Call

	0	1	2	3	4	5	6	7	8	9	10+
Total	42	64	76	81	85	88	90	91	94	95	97
Call	12	21	25	27	29	31	32	33	35	36	40
Branch	30	43	51	54	56	57	58	58	59	59	57

Higher value-added transactions require human interaction
Percent of digital users

■ Online ■ Call

	Balance check	Stop payment	Funds transfer	Fee inquiries	Issue resolution
Online	99	96	83	56	
Call	1	4	17	43	100

* *Using at least two channels out of: branch, agent call, IUR contained, web, ATM, mobile banking*
Source: ClickFox

year using traditional channels, representing 39.5% of total transactions, there has been good digital progress made in recent years.

The South Australian Department of Premier and Cabinet now conducts 70% of its payment transactions online with an aim to increase this figure to 95% in the next three years. They have set goals to improve online service transactions by taking over one million transactions online across 25 categories, including disabled parking permits and photo licensing. The Australian Taxation Office has also made significant progress in transitioning its customers to using digital services with around 82% of its customer base currently completing its tax returns online. It has also reduced its paper reliance in its day-to-day business, reducing its annual 2,500 tonne usage of paper to just 800 tonnes in just three years.

There are challenges however with just observing the increased use of online channels. During our consultation with the Department of Human Services, they mentioned that it is difficult to understand how transactions in traditional channels have changed over time since many customers engage in multiple channels in order to complete a single transaction. The AGIMO (2011) channel-split survey data to some

degree accounts for this by capturing customers who engage in multiple channels however the strong growth in the use of digital transactions may in some cases override the story behind the reduced proportion of use of traditional transaction methods if offline volumes have remained relatively constant over time.

With 320 million transactions still left to be replaced with online options, there is room for a potential digital productivity and efficiency saving of $1.7 billion each year for government if this number is halved. Although the total number of transactions may be changing over time due to increased digital take-up (as it becomes more convenient to conduct transactions online) we use static forecast total transaction volumes for our calculations as we are primarily concerned with the cost savings from reduced traditional channel volumes rather than trends in total transaction volumes over time. For our calculation we assume that increased digital use drives a reduction in the transaction volume of traditional channels (i.e. will be a *replacement* rather than a complementary channel).

For this assumption to hold, the government needs to consider growing its digital presence through three main

streams:

- **By raising awareness of which transactions are available digitally**. There are still customers who are visiting service centres to conduct a transaction using a traditional channel who are not aware that an online alternative exists. This may require more expenditure on awareness and marketing programs for online services; or encouraging a mail subscription service on websites that provides regular updates of when process changes occur
- **Allowing more transactions to be available online**. To bring more transaction services online and making them easy to use, investment and procurement into hardware and software may be required
- **Increasing the proportion of people who can use online transaction services**. This growth will need to be obtained through two main sources: either by investments into user experience and interfacing, which makes digital services easier for people to use, and/or further government expenditure into digital education services to improve digital literacy, which will be discussed in Chapter 7.

We realise that this growth will be expected to plateau at some point due to both technological constraints and certain cohorts having a preference for transacting through traditional channels (e.g. the elderly, disabled or disadvantaged). The Australian Bureau of Statistics (ABS) estimates that roughly one in five Australians currently do not have household access to the internet, which has been trending downwards over time due to improvements in affordability. However, there may be some limitations that restrict certain transactions from being completed using a digital system, such as face-to-face interviews at Centrelink to evaluate a customer or scanning through a foreign passport to check for inconsistencies at an airport. To account for this, we set an upper bound of 80% for digital take up with 20% of the remaining transactions still requiring human interaction from a traditional channel (i.e. are not fully available end-to-end on the digital channel), reducing the total number of face-to-face, postal and telephone customer transactions by roughly half.

Using a discount rate of 7% (based on NSW Treasury discount rate guidelines) and anticipating that these benefits will be unlocked gradually rather than immediately, we obtain a present value of this benefit equating to $17.5 billion over a project lifetime.

The Australian Taxation Office – ambitions for automated services, breaking government silos, solving key problems

The Australian Taxation Office (ATO) has been on a reinvention journey which has included an ambitious digital agenda. "We understand that if we design the future properly, we can reduce the burden for clients trying to meet their tax obligations whilst also providing platforms that enable broader digital government outcomes for clients" says John Dardo, the acting Deputy Commissioner of Customer Service & Solutions and the Chief Digital Officer of the ATO.

Over the last few years, the ATO recognised it had some catching up to do and thus invested in several key leverage areas, including:

- Reducing inbound or outbound paper as digital alternatives became available
- Developing or leveraging digital identity and authentication systems to enable clients to access authenticated services
- Developing contemporary digital interfaces that were more consistent with client expectations (including a mobile app
- Exploring the use of "natural systems", thus reducing the dependence on clients to do additional "things" to meet their obligations.

These ATO investments delivered significant outcomes for clients. The ATO has:

- Reduced outbound paper from 2,500 tons to less than 800 tons
- Increased outbound electronic payments to individual clients from 70% to over 99%, thus stopping millions of outbound cheques
- Partnered with other agencies, such as DHS, to help drive adoption of the myGov digital credential, with over 3.5m ATO clients linking their myGov account to the ATO
- Enabled over 750,000 clients to enrol and use their Voice Biometric to authenticate with the ATO
- Created a new "ATO Online" environment that offers millions of individuals and sole traders the opportunity to transact securely online, with over 3.5m unique clients already using their myGov credential to access and transact in this secure environment in excess of 14m times
- Allowed millions of clients the opportunity to do a streamlined 10 screen myTax return in as little as 5 minutes (with over 1m clients using myTax during the 2014/15 year)
- Started sending digital mail to clients via their myGov inbox
- Developed and delivered a mobile app which enables millions of clients to transact securely with the ATO

"We are not interested in digitised paper, for example, we do not want to turn every paper form into an online PDF" says John Dardo. "A digital experience should be more streamlined than paper can ever be because we prefill or we can use expert systems and calculators to offer a differentiated end to end digital experience". For example, this is the first year that many individuals and sole traders can:

- Use one credential (their myGov account) to log into a secure digital environment
- See a customised client screen which highlights their status (eg. any lodgement or payment obligations that are due or overdue)
- View and complete individual and business transactions digitally (with prefill if the data is available)

- Make payments without leaving the online channel
- Receive correspondence and notifications digitally
- Transact from any web connected device (eg. their PC, tablet, smartphone or smart TV).

Many of these previous initiatives were self-funded by the ATO because the improved client experiences and the cost reductions in paper, in processing and in call handling easily justified the required investments. However the ATO understands that there are many more digital opportunities that are yet to be realised, particularly as it works with other agencies under the guidance of the Government's Digital Transformation Agenda.

Some of these digital initiatives will leverage other natural systems without requiring clients to log into "government portals". For example, the ATO is currently consulting broadly on the implementation of "Single Touch Payroll". This would enable employers to report (with the option of also paying) all of their payroll obligations during every payroll event. This would happen automatically via their payroll system or their payroll provider. Initially this would streamline the administration of tax and super. In the longer term, this real time payroll data could also be used by other agencies to streamline the administration of welfare and child support by reducing the reporting obligations of individuals and reducing the risk of overpayments. It could also be used to provide real time national labour and industry statistics. In the longer term, a system like this could also be used to fulfil State based payroll tax obligations in real time. Other countries are already on this broader digital journey.

The journey towards a broader digital future will have to overcome several challenges. For example, Government agencies, businesses and software providers often feel constrained by their "legacy" investments and systems. A digital future requires organisations to challenge the status quo that is often reinforced by these legacy systems. There are also the challenges of organisational or agency silos. These challenges often reflect existing legislative provisions (eg. around data sharing) or funding and accountability models. Perhaps the most sensitive issue is the issue of community readiness.

John Dardo recognises that community readiness can be an emotive issue. "We must always provide a safety net for those that cannot move into digital channels, but sometimes we underestimate the community's readiness for "digital". Within a few months the ATO migrated 3m clients into electronic refunds and we had less than a handful of complaints. We migrated 3.5m tax clients into an enduring online credential (ie. myGov) with less than a 0.01% complaint rate; and this was lower than the complaints associated with our legacy practises. Over 750,000 clients chose to enrol their voiceprints and they are now providing us with awesome positive feedback. All of these initiatives were considered to be "high risk", but the community adopted them faster than we ever imagined and these initiatives are now providing the foundation for a wider range of fast streamlined digital experiences. In fact, our biggest mistake has been that we have sometimes underestimated the demand for contemporary digital services and we need to make sure we learn from that as we move forward, because the community rightly expects a lot more from us."

Labour resourcing approach

We now consider an alternative approach to estimating the productivity and efficiency benefit of digitisation by evaluating the cost savings of staff time used for traditional activities (such as data entry, shop front customer service, mail sorting etc.) in a future digital environment.

The list of government roles that can be supported by digital technology are identified using the four digit Australian and New Zealand Standard Classification of Occupations (ANZCO) group codes from the Australian Bureau of Statistics (ABS) which includes: 'keyboard operators', 'call and contact centre information workers and managers', 'inspectors and regulatory officers', 'mail sorters', 'enquiry clerks', 'switchboard operators' and 'filing and registry clerks'[2]. Since the ANZSCO four digit group level code for 'inspectors and regulatory officers' includes some job roles that are irrelevant to our study such as 'noxious weeds and pest inspectors', we obtain a subset of the number of government employees under this group level code that includes: customs and immigration officers, social security assessors and taxation inspectors. To obtain our annualised cost, we calculate the average full time equivalent (FTE) and respective annual salaries of category using data from the government's Job Outlook website, which is sourced from the ABS.

The combined time savings related to these job duties equates to an annual benefit of $2.4 billion. These labour savings however are not inclusive of associated capital costs related to the job such as office desk space, real estate, electricity, computers and infrastructure as well as intermediate use costs that include external labour costs.

As this industry is quite labour intensive, labour costs account for roughly 81% of total labour, capital and intermediate use costs which can be translated to a gross value added (GVA) multiple of 1.23. We multiply this GVA multiple with our annual government labour cost to obtain an annual cost of $2.9 billion, which is inclusive of capital and intermediate use costs. Accounting for the fact that this potential will not be 100% realised due to some roles being irreplaceable with digital technology over the next decade, if labour resourcing needs in traditional roles are halved due to less traditional transaction volumes, and using a discount rate of 7%, this equates to a present value lifetime benefit of $14.9 billion for government.

Table 3.3: Annual wage cost of labour in traditional roles for public administration and safety ($ millions)

ANZSCO Code	Job group	Number of public administration and safety staff	Annual wage costs ($ millions)
1492	Call and contact centre information managers	2,715	143.5
5321	Keyboard operators	8,229	333.6
5411	Call and contact centre information workers	4,514	187.9
5412	Enquiry clerks	15,774	656.7
5613	Filing and registry clerks	3,821	154.3
5614	Mail sorters	705	30.6
5616	Switchboard operators	800	25.5
5995	Inspectors and regulatory officers	13,580*	832.4
	Total	**50,138**	**$2.4 billion**

This is based on a proportionate estimate of the total customs and immigration officers, social security assessors and taxation inspectors at the 6 digit level working in government. For more details refer to Appendix B.

Source: ABS (2013), ANZSCO - Australian and New Zealand Standard Classification of Occupations, cat (1220.0)

2. A summary of their job duties are provided in Appendix B

The Department of Human Services – improving citizen interactions, replacing manual staff work, providing digital education to citizens

The Department of Human Services (the department) has continued its focus on delivering services that are centred around the user, moving from traditional face-to-face and telephony services to those services that are digital by design according to Mr Grant Tidswell, Deputy Secretary – Service Delivery Operations.

The department recognises that many of its customers now expect to interact in modern and convenient ways. The department is continuing to identify new and emerging technologies to support quick and easy access to services, at time that suits them. This has led to an improvement in accuracy as well as fraud detection through using more up to date electronic records.

There has been an ongoing focus on transforming the department's physical sites (these sites provide Medicare and Centrelink services) to provide digital options for customers who walk through the doors. Self Service Terminals in the offices that allow customers to log on and complete their business online, support from staff to create a myGov account and encouraging customers to use the suite of Express Plus mobile apps has helped manage performance in the department's very large telephony and face to face channels which still handles over 26 million face to face contacts. New digital services such as online claiming have seen impressive take up rates, for example Parenting Payment – 75 per cent; Newstart Allowance – 77 per cent; Youth Allowance (job seeker) – 81 per cent and Youth Allowance (student) at 98 per cent.

The department also raised data sharing as an important initiative in giving customers the choice of being able to share their information across government agencies (for example when they need to update their address with Medicare, Centrelink, Child Support and the Australian Taxation Office (ATO). With the introduction of the Australian Government's myGov digital service in 2013, customers now have one secure account to access online services provided by Centrelink, Medicare and Child Support, the Australian Taxation Office, the Department of Health (the Personally Controlled Electronic Health Record), the Department of Veterans' Affairs, the National Disability Insurance Scheme, and the Department of Employment's Australian JobSearch which became the eighth myGov member service on 13 December 2014.

myGov shopfronts, currently located in Brisbane, Sydney, Adelaide and Perth are providing additional support to encourage customers to 'go digital' – that is accessing online and digital services as the first channel choice. Customers can access all myGov member services in the self service area, learn about the Express Plus mobile apps and the ATO app, and much more.

If customers are unable to use digital services, or if their transactions are not available through digital channels, staff are available to help them with Medicare and ATO transactions.

Customers are able to do the following at myGov shopfronts:
- Self-manage their transactions through myGov using the self-service computers
- Learn about the Express Plus mobile apps and the ATO app
- Learn about self-managing their transactions through digital channels in the learning hub
- Complete Medicare and ATO transactions in person.

The department is also focused on fixing the current complexities of the welfare system and working across government on what it is calling the Simplification Agenda.

To understand how it really impacts individuals and families, take the hypothetical case of Jon. Jon is a 20-year-old full-time university student in his second year of study. He was supported by his parents through his first year of Uni, but as they start moving into retirement Jon decides to apply for Youth Allowance.

Under today's system, Jon and his parents will have to answer more than 390 questions, spread over 8 different forms, both online and in paper. He will experience some of the typical challenges faced by young people interacting with the Centrelink system, like trying to understand his study details against concepts we created in times of more traditional study. This also puts significant pressure on DHS staff to understand how the rules should apply to individual cases.

What many of you may not know, as I didn't until recently, is that this process will involve over 1,000 legislative rules from the time Jon claims, until the time he's paid. Under current and retrospective rules, we will use 8 calculation methods to assess Jon's simple scenario.

Our current way of managing Jon's situation – and thousands of others like him – is overly complicated and simply unsustainable. We've started addressing this by announcing that we will replace the back-end Centrelink ICT system. This technology is now more than 30 years old and has become extremely inflexible and costly to maintain. A new system will give Australians greater digital access to government, with services that are better connected and delivered end-to-end online.

This Centrelink ICT replacement programme also creates a unique opportunity for government to simplify the legislation and policy behind welfare and social services. We will work to remove unnecessary complexity which is confusing for people and difficult to administer. We will seek to standardise definitions and rules across payments as much as possible, and make it easier for government to achieve highly targeted welfare outcomes in the most efficient and effective means possible.

Using the midway point between the shift in channels and labour resourcing approaches we obtain a present value productivity and efficiency benefit of $16.2 billion over a project lifetime.

Revenue collection benefits

Digitising customer transactions can also lead to revenue collection benefits for government as payments using digital channels incur less opportunity costs on the citizen (to travel to a storefront or send through mail); encouraging more timely payment and less reliance on additional labour resources to collect late fees.

The Office of State Revenue collects around $20 billion per year and has a late revenue collection rate of 6% with 80% of their late payments fulfilled within the first year and the remaining 20% of late payments fulfilled within the second year according to their annual report. Because these late payments are more likely to be paid earlier rather than later due to late payment notices, we assume that the distribution of late payments fulfilled will generally follow a geometric series where 80% of late payments paid in the first year will be paid during the first half with the remaining 20% of late payments fulfilled during the sixth and twelfth month; this continues with 80% of late payments in the first six months being paid within the first three months (64%) and the remaining 16% paid during the third and sixth months and so on. Using a risk free interest rate of 3%, this yields a potential dollar saving of $25.9 million each year, which is a present value lifetime benefit of $264.9 million.

This benefit is small compared to the Australian Taxation Office, which collects roughly $330 billion in revenue each year with a late payment rate of 18.3%. If 80% of late tax revenues are collected within the first three months and the remaining 20% are paid during the following three months, this is a potential interest saving of $543.5 million each year, which is a present value lifetime benefit of $5.6 billion.

Although early revenue collection can be beneficial for government, the benefits are netted out in the economy (because it involves citizens paying earlier) therefore will not be used in our overall net economic benefits calculations.

Creates opportunities for new revenues and reduces advertising costs

Advertising revenues have always been considered by organisations as a potential revenue stream. Although the concept of advertising on government websites may be a sensitive issue for policymakers, online traffic can still be used as a channel for knowledge sharing or private advertising in specific situations (e.g. train time information in a mobile app).

The Commonwealth Government currently sends out 250 million pieces of mail ranging from useful information to forms, which costs around $253 million annually in postage. The Department of Human Services also noted that there is potential for exploring social media as an additional channel to update its customers with valuable information on rule changes and policy for entitlements as well as a means to interact with citizens.

There are 290 million government website views per year in Victoria according to Vic.gov.au. Based on this, we estimate that there are around 1.2 billion government website views Australia wide annually. Converting this volume to advertise content for managed ads using MarginHound, an advertising revenue model, we obtain an annual advertising benefit of $15.1 million and present value lifetime benefit of $154.4 million.

Although this potential does not necessarily need to be unlocked through selected advertising revenue from third parties, it can be used as an additional channel for government to reduce its advertising expenditure each year. According to Standard Media Index numbers in 2014, the government spends roughly $20 million on advertising per month, which equates to $240 million annually. Utilising its digital presence, the government can provide website information subscription services, inbox notifications and a social media presence to disseminate information to reduce its reliance on traditional advertising channels such as television and newspapers.

Cost savings from data storage

The rate of advancements in digital technology over the past three decades has been revolutionary in improving the lives of individuals globally. We can now capture videos anywhere and anytime using a smart phone, communicate and connect with people boundlessly, and store up to 120,000 excel spreadsheets in a small 16-gigabyte USB stick. Conducting government transactions involves an exchange of tremendous amounts of information and this data needs to be stored somewhere. However, even in 2015, there is still a large amount of data being stored in paper form, occupying many kilometres of real estate.

Organisations such as the State Records Authority of NSW are anticipating significant changes in the way records are managed and will be accessed in coming years. Already The Authority is seeing increased demand from public sector clients for new digital services as we start the shift from paper to digital. With the launch of the NSW Government Digital and ICT Strategy in 2014, State Records is proactively reshaping its organisation and the services offered, to guide and drive this transformation to digital government and the delivery of more client focussed digital services making access easier on an anywhere anytime basis.

The National Archives of Australia estimated that the annual cost of paper data storage based on property operating expenses for 160 of the 189 commonwealth entities from its Agency Survey in 2013 was $148 million annually.

This equates to a present value lifetime benefit of $1.5 billion from data storage cost savings for government.

The potential to reduce channel costs

For data to be useable it must be machine readable, which means that it must be made available in formats that can be utilised in third-party applications. Digitised customer transactions can more easily be stored and potentially analysed than paper forms. This can help government agencies understand how people find, access and use government services to better serve the public.
These insights will then provide the basis for management and ICT strategies to yield reductions in process inefficiencies.

A simple example is the Hills Shire local council using process tracking for its digital transactions to understand which processes in its engagement required the most time (such as the time taken to re-sheet a pothole after a service call) and to design policies and strategies to deal with these issues. Service NSW has also been analysing its transaction data to change its processes to reduce processing and waiting times from 70,000 customers in 2012-13 with an average waiting time of 7:13 to 1 million customers in 2013-14 with an average customer wait time of 6:30 minutes.

If the increased availability of digital data and analytics leads to strategies that can incrementally reduce inefficiencies, this can help reduce our current channel costs, which is an additional productivity benefit.

Although advanced data analytics in government transaction services have not been explored extensively in Australia, there is potential for its use in the future to yield even more granular data insights. These may include tools that provide anomaly detection as well as contribution analysis to analyse real time issues in government. Anomaly detection can be used to analyse when peaks and troughs in demand occur, which can be used to optimise resources such as staffing requirements (e.g. customer service at a shopfront) or electricity, which can further save costs and reduce inefficiencies.

Contribution analysis is an approach to assessing the performance of policies and programs towards an outcome or outcomes using data science techniques. This allows the government to obtain data driven evaluations of the success of its digital strategies.

Total benefits for government
By combining all these various government benefits that are not accounting related benefits (such as revenue collection benefits), we obtain a present value benefit of $17.9 billion.

4 | Benefits to citizens

Governments are unique in the field of service providers, because citizens are required to interact with the government, not as a matter of choice, but as a matter of necessity. Often, these transactions involve providing information about the most intimate details of a person's life and can arise at times when individuals are most vulnerable and least able to act independently.

Key features of high quality digital experiences:

Seamless integration of digital with existing channels — **1**

Keeping things simple and driving digital take-up — **2**

Good design processes — **3**

Automation and fewer interactions — **4**

Governments working with the broader ecosystem — **5**

Travel and waiting time savings

Governments are unique in the field of service providers, because citizens are required to interact with the government, not as a matter of choice, but as a matter of necessity. Often, these transactions involve providing information about the most intimate details of a person's life and can arise at times when individuals are most vulnerable and least able to act independently.

Fast, efficient and transparent access to government services should be available to all citizens, however some of these services as they are currently delivered often impose significant costs on users and render them inaccessible. Digitisation of government services can unlock significant benefits to citizens engaging in these transactions by making things easier and more convenient.

The citizen engagement benefits quantified in this section include:

• Travel and waiting time savings due to self-service
• Avoided out of pocket transport and postage costs.

This totals to a $8.7 billion present value benefit (calculated using a 7% discount rate). It highlights that quantifiable citizen engagement benefits, while not as high as efficiency and productivity benefits to government, are still very significant.

We also analyse the collaboration, engagement, satisfaction and trust benefits from digital government. We conclude with a discussion of why governments must invest in high quality digital experiences – to drive the shift in channel use by citizens and unlock the benefits of digital transformation.

One significant advantage associated with the digitisation of government services is the ability for citizens to perform transactions more quickly through self-service. This benefit is primarily driven by the avoided cost of travel to and from a particular location, as is necessary for a face-to-face transaction.

To estimate the value of this benefit to citizens, we considered the time savings that citizens would achieve, if 41.6 million of the 84.1 million face-to-face transactions (to achieve a total 20% share of transactions conducted through traditional channels) that occur each year were conducted digitally over the next decade. Using an average value of 1.21 hours to represent the two-way travel time of each citizen[3] and an average waiting time of ten minutes[4], this provided an estimated peak time saving of up to 57.6 million hours annually.

Using a valuation of time that was benchmarked against the value of leisure time ($10.61/hour[5]), this equates to a peak time saving worth $610.6 million in ten years, which is a present value lifetime benefit of around $6.2 billion.

Processing delays
A corollary benefit through digitising government transaction services is that it could reduce processing delays and approval times, e.g. visa application approved in 14 days rather than 30 days. This of course is a positive benefit to citizens that will be partially reflected in their overall satisfaction and impression of government services.

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3. Based on average two-way travel times for citizens to engage with various government agencies.
4. Based on midpoint of average waiting times of 15 minutes at the Department of Human Services and 6-7 minutes at Service NSW
5. Details are in Appendix A

Out of pocket transport and postage costs

Citizens also often spend money attempting to prepare and engage in a government transaction. This includes the cost and materials associated with gathering the right information as well as the cost required to engage in the transaction itself.

Based on a current volume of 84.1 million face to face transactions per year with the potential to reduce this by 41.6 million over ten years, with an average out of pocket cost of $4.22 based on the average cost incurred for public transport services, this equates to a peak out of pocket cost worth $176.0 million to citizens, which is a present value lifetime benefit of around $1.8 billion.

Currently, citizens are required to mail an enormous quantity of material to governments. By using digital services, the cost of mail itself can be avoided. In the case of citizens sending mail to governments, the savings from avoided costs accrue to citizens.

Based on the forecast reduction in mail related transactions from 97.4 million to 49.3 million over the next ten years, this equates to a peak postage cost saving of $60.2 million for citizens, which is a present value lifetime benefit of $615.4 million.

Service NSW – Transforming the customer experience, consolidating transaction services across agencies and hiring the right digital leaders

The creation of Service NSW has allowed the citizens and businesses of NSW to undertake over 800 multiple government transactions via one digital service, one phone number and a network of one-stop shops.

Between its launch in March 2013 until June 2015, Service NSW has 36 one-stop shops trading around the state, complemented by other outlets such as new concept digital stores in key customer hubs.

Service NSW has been growing fast and is expected to complete around 50 million transactions each year with a focus to migrate transactions to digital. Its story has been driven predominantly by its core values of technology, process and culture transformation where traditional processes such as printed forms are removed from the customer experience. A common problem in government is that silos are created between agencies, which can lead to a frustrating series of transactions for a customer. The Service NSW 'one-stop shop' design concept is about breaking this barrier and allowing customers access to multiple transactions in one place – one digital service, one phone number and one physical channel.

Additionally, employees at Service NSW have a focus on accountability with, for example, each service centre manager being measured on and reporting on their customer experience performance. This has allowed Service NSW to deliver an exceptional customer experience, which has resulted in an average positive customer rating of 98 per cent. Learning and reacting to customer demands is also a priority at Service NSW, with many of its digital services being co-designed with citizens, which has been successful. Service NSW staff are also encouraged to embrace continuous improvement and to provide input to the implementation of the Service NSW digital transformation program. This has seen more than 1,000 improvement ideas shared in the last six months.

Although the availability of self-assistance in shopfronts such as telephone and digital kiosks is an important first step towards digital change, many customers coming into a physical service centre are there because either the transaction still requires a face-to-face service or they are not aware of the service online. Currently, about one in four face-to-face customers are now being offered the option of being shown how to complete their transaction online within the service centre. Service NSW has been employing Digital Customer Service Representatives to help people who have come in to a service centre to use online services as well as providing useful 'did you know' articles across a range of facilities to raise awareness of available digital services and how to use them. Staff are also engaged in the digital movement via the Service NSW internal social media platform – Yammer – where staff regularly post digital hints to help colleagues inform customers of what is available to them online.

With average wait times of around seven minutes, Service NSW has recently implemented changes to its mobile app and website to publish, in near real time, current queue wait times at each of its service centres. This allows customers to decide when and which service centre to visit. This gives customers more control of when to do their transactions and results in spending less time waiting. With dynamically changing storefronts aimed to improve its customer service based on customer feedback, the future looks promising for Service NSW and the citizens and businesses of NSW.

Collaboration, engagement, satisfaction, transparency and trust

Digital transactions provide a basis on which the private sector can interact with government collaboratively. By digitising government transactions, governments make it possible for private firms to alter, amend or affect the ways in which citizens interact and participate with those transactions.

At the state and federal level, access to government information and services is often mediated by private sector entities that build apps, forms, and platforms that serve as superior user interfaces for government transactions. This provides a layer of competition in user interface design that improves the standard of citizen interaction.

As an example, Sydney Trains no longer has a monopoly on public transport time tables, and instead allows private companies to produce apps to help citizens access public transport information such as NextThere, TransitTimes+ and TripView.

An excellent example of how the private sector is providing a superior interface for government is Waterfind. Waterfind provides a platform for trading water licences and competes by providing a user friendly and simple interface while ensuring compliance with over 27,000 government rules (Johnson, 2015). By allowing private sector entities to intermediate the relationship between a citizen and regulation, governments can improve the experience associated with compliance.

An estimate for the total revenue earned by app developers who reproduce public transport data and other government data is $1.8 million per year. This is derived by taking estimates of paid app download numbers on the Google Play Store, and scaling those values for the entire smartphone market. This figure can be treated as a conservative proxy for the citizen's valuation of convenience and real time information (based on the volume and price they are willing to pay).

This is particularly relevant for citizens with accessibility requirements, as the standardised one-sized-fits-all approach to citizen engagement may not be sufficient to meet its needs. By digitising government services, the full capabilities of accessibility software can be brought to bear on the user interfaces of government services.

Satisfaction

In the government sector, satisfaction with services varies significantly by channel. Recent empirical analysis of satisfaction reveals that there is a stable hierarchy of satisfaction across channels. AGIMO (2011) examined citizen satisfaction in relation to achieving what was intended, the outcome actually achieved, waiting for a reply and finding specific information. For all these tasks, citizen satisfaction with in-person and internet channels were broadly similar and significantly higher than satisfaction with telephone and mail channels.

Table 4.1: Average ratings (out of 10) for achieving what was intended

Year	Internet	Telephone	In-person	Mail
2006	8.7	8.1	8.8	8.8
2007	8.9	8.3	8.7	8.5
2008	8.6	8.1	8.7	8.1
2009	8.7	8.0	8.8	8.4
2011	8.1	7.6	8.6	7.7

Source: AGIMO (2011)

The internet is by far the preferred channel for remote interaction, with higher satisfaction than either telephone or mail. On the other hand, the fact that satisfaction between in-person and internet channels is broadly similar suggests that factors other than satisfaction with outcomes will drive the choice of channel in consumers.

Trust

The digitisation of government interactions is affected by and in turn affects trust in government. Citizen willingness to perform transactions through a digital channel is significantly affected by the perceived level of risk associated with a digital transaction, which in turn influences measures of trust (Alsaghier et al., 2009). The quality of the experience in a government-citizen interaction can also influence a citizen's trust with government.

The provision of high quality digital government interactions is important in building a virtuous cycle of higher take-up rates and increased trust in government.

Trust in the Australian government declined from 56% to 49% between 2014 and 2015 according to the Edelman Trust Index (Edelman, 2015). This shifts Australia from being one of 10 trusted governments in 2014 to one of 17 countries that have more individuals that distrust the government in 2015. The same survey found that a majority of Australians (53%) believed that the pace of change in business and industry in Australia was "too fast". Government decision makers are now beginning to concern themselves with the apparent decline in trust and willingness to engage with the government during the process of digital transformation (Fletcher, 2015).

Critically, investment in creating positive digital government experiences provides spill over benefits to other digital government initiatives due to the influence of trust. Investment into digital government improves the take up of future digital government initiatives and makes them easier to roll out and implement. One auxiliary benefit that citizens achieve as a result of digital government is that it allows citizens to transparently observe the progress of its application as it occurs as continuous and free updates are sent out.

Unlike paper, phone or face-to face interactions, citizens interacting digitally can choose to interact continuously over a period of time, rather than episodically. In the past, citizens would perform a transaction, wait for an indefinite period of time, and then perform secondary interactions when prompted. Now digital transactions allow citizens to be continuously updated on the progress and status of a matter. An analogue for this type of engagement is how consumers greatly prefer parcel tracking for deliveries, even if it does not speed up parcel delivery.

Transactions that require interaction at several points in time often feel opaque to citizens, as they have no visibility on the progress or status of its applications and only tentative, non-binding timelines to provide guidance on the wait time associated with a particular transaction.

Transparency through status updates can also reduce telephone and in-person inquiries.

With digital transactions, citizens can receive automatic updates on the progress of an application or check in on the status of an application. This provides citizens with a feeling of control over the process, as well as an ability to immediately identify mistakes, errors or problems with an application. This also avoids the issue of a transaction "falling through the cracks" and being neglected.

High quality digital experiences

Digitisation projects often have high fixed costs associated with setting up a system, and low marginal costs associated with adding additional users. Therefore, the success of a digitisation strategy will be heavily dependent on the take up by citizens of a particular digital channel of interaction. Thus, applications with high usage rates, such as e-Tax and myTax can achieve extremely low cost per interaction levels.

Low citizen take up for a digital transformation is a significant problem. The Controlled Electronic Health Record system (PECHR or eHealth) is an example of a government digitisation project that faced significant challenges. By 1 July 2013, the system achieved 397,742 user registrations, which was under the 500,000 registration target in the 2012-13 Budget target and dramatically below the 1,200,000 registration target projection from the "NCAP Bottom-up Uptake Projections - Limited provider support scenario". By then government expenditure on the scheme had reached $467m with maintenance costs of $80m per year, or $201.14 per user per year.

Citizens want to interact digitally. Several consumer research surveys into satisfaction with customer interactions by channel rate live chat and email as the preferred means of interaction, with post, phone and SMS being the least preferred modes of communication (Smart Insights, 2015). Importantly, the surveys indicate differences in satisfaction rates of over 20% between the most popular and least popular channels.

The key to driving citizen take up is high quality digital experiences. Digital experiences must be seamless, simple, look and feel intuitive, personalised and intelligently designed. Experiences can be delivered directly by government, especially where there is security or contracting complexity concerns, or delivered through a private sector application, where it is sensible to do so.

Seamless integration of digital with existing channels

In order to encourage digital use, governments need to ensure that every segment of the transaction process can work effectively with one another. Currently, many transactions within government may involve multiple stages involving different channels to complete the process according to NSW Finance and Services (2014): for example, photo licencing requires face-to-face interaction in order to physically validate identity and create the licence card for the citizen. Even if a digital channel to book an appointment is available, a process that is not seamless or end-to-end can drive customers away from its use or have them 'drop-out' of the digital channel, and increase telephone or in-person queries.

Digitisation needs to begin when citizens understand that they need to perform a particular task. In the case of registrations, it is important to ensure that a digitisation strategy begins with the reminder notification itself. Similarly, the digitisation of information which directs individuals to the relevant interaction is required.

Observing and learning from user behaviour shapes the service to fit what people need and how they behave. It can also help identify specific segments during the digital engagement with which users struggle or spend more time on to continually improve the ease of use of the digital service.

Creating a simpler interface and structure for a transaction service greatly helps to reduce the number of steps needed to navigate and input the information needed to complete the transaction. Digitisation is not just about digitising manual processes; it's about redesigning them. Governments will need to redesign their back-end processes to support lean delivery.

Keeping things simple and driving digital take-up

High quality digital experiences start with simple authentication mechanisms. Digital interactions that are split across multiple account logins force citizens to create and manage multiple IDs and require government departments to maintain multiple databases. Integration of authentication systems also makes data sharing easier within government.

High quality digital experiences involve simple communication – plain English language.

Good visual designs are also very important. Digital interactions should at times sacrifice functionality for simplicity. Digital interactions should at times sacrifice functionality for simplicity. In order to drive digital take-up it may be appropriate to target the high volume government transactions for the mainstream population such as tax returns, social benefits, visa processing and licensing. This will allow government to create a simpler structure for its services that caters to the majority of people. Websites or mobile apps that encompass the complexity of government programs and eligibility may make digital interactions complex, resulting in lower take up.

Users will appreciate personalised digital experiences that filter and prioritise information and services based on their job, location, career stage or other factors. This makes digital experiences simpler for users.

Of course, governments have an obligation to maximise accessibility for all groups in society and may need other digital options with full functionality (that adjusts and simplifies to personal details and preferences) or a short survey to detect what information will be needed by the user.

There may be other more complicated accessibility issues for citizens with varying aptitudes such as those with disabilities. The Australian government has currently made compliance with the Web Content Accessibility Guidelines 2.0 (WCAG 2.0) a mandatory requirement for all government websites, both internal and external. (Australian government, 2011). Other technologies geared towards assisting users with visual or manoeuvrability limitations include integrating text-to-speech (TTS) and speech-to-text (STT) technology as well as OrCam, a camera that converts text or visual cues to speech for the visually impaired.

Another key qualifier to improving accessibility for users is design and visual stimulus. Basic design guidelines that are freely available from Apple, Google, Adobe UX Magazine and Microsoft[7] can be used as a general framework for government to simplify and create a more engaging transaction experience that is user-led and intuitive.

Good design processes

A good digital experience is one that is intuitive, familiar and user-centric. Governments need to employ the build / measure / learn methods that have emerged from the start-up scene. By releasing Minimum Viable Products early, testing them with users, and progressively adding features and refinements based on feedback, governments can improve digital interactions. Iteration delivers outcomes sooner, and by flushing out problems early in the process, makes big failures unlikely.

The Digital Transformation Office in the Commonwealth Government, for example, aims to establish a digital service standard to ensure that government services are simpler, faster and easier to use. This will involve additional research into extracting an in-depth knowledge of who the service users are and to adopt a user-centred design approach that is iterative, improving and agile. It will also involve creating web service APIs and open standards in order to create open source code to allow computer programmers and citizens to improve and redesign the process. To streamline the process, there is also the aim to remove URLs, links and attachments to improve navigation and reduce the number of additional inputs and steps required by the user.

7. https://developer.apple.com/library/ios/documentation/UserExperience/Conceptual/MobileHIG/
   https://www.google.com/accessibility/
   http://www.microsoft.com/enable/products/windows8/default.aspx
   https://uxmag.com/topics/adobe

Automation and fewer interactions

Data sharing between government departments and agencies, provided citizens have authorised this, offers a huge potential for governments to reduce the number of transactions and interactions citizens have with government.

At its simplest, data reuse can involve pre-filling forms to help alleviate some of this burden from the citizen. This process can potentially be further streamlined by consolidating many similar transactions during a particular life or business event to reduce the need for repeated and separate interactions. An example is the proposed single-touch payroll system of the ATO where multiple obligations such as payroll tax, income tax and super are completed with auto-fill functionality on the same day. Additionally, this concept can be extended to a range of other scenarios such as creating a dormant tax file number at birth (when information is filled on medical documentation) and registering for human services benefits on the same day.

By creating a unique recognisable digital entity, information can be shared across different government organisations reducing the need to duplicate information and the obligations required from the citizen. Through data analytics, it is also possible for the government to be more intelligent at identifying the wants and needs of its citizens, which allows them to offer transaction services proactively for individuals based on the stage of their life to drive a better overall experience as well as improve compliance.

Many retail business websites use third-party cookies to store personal details, which can be used to autofill fields in repeated interactions. Due to the sensitivities of sharing some personal information, third-party cookies are not always feasible for government websites. However, internal data analytics and creating a dynamic and flexible digital interface by enabling Application Programming Interfaces (APIs) can create a digital environment that tracks user behaviour and preferences and designs a unique digital product that is most appropriate for the specific user.

Governments working with the broader eco-system

Governments do not have to own all digital interfaces and can work with the broader stakeholder and private sector ecosystem to deliver high quality experiences.

By making data openly available it can drive innovation and extend the reach and value of agency information. Making it easy for third parties to integrate agency data into their services by providing application programming interfaces (APIs) can redraw the boundaries of government – and change its role from doer to facilitator.

The example mentioned earlier is Sydney Trains, which no longer has a monopoly on public transport time tables, and instead allows private companies to produce apps to help citizens access public transport information such as NextThere, TransitTimes+ and TripView.

The Digital Transformation Office — a whole-of-government approach to improving the user experience with government services

The newly established Digital Transformation Office (DTO) aims to deliver digital transformation at the whole of government level. Although there is an enormous range of government customer transactions available, the majority of transaction volumes at the Commonwealth government level are concentrated within a handful of departments. These include the Department of Human Services (DHS), The Australian Taxation Office (ATO) and the Department of Immigration according to David Hazlehurst, Acting CEO

Close cooperation between DHS and ATO in recent years, including the ATO onboarding to the myGov, single login platform in 2014 has positioned Australia well for whole of government transformation.

The Digital Transformation Agenda announced in the 2015-16 Federal Budget allocated $254 million over four years to implement:

1. A Digital Service Standard that sets the governing rules and frameworks to develop services that are simpler and easier to use;
2. Enhancements to myGov to include:

   - Voice authentication, saving time and improving convenience for citizens
   - A new digital account for all Australian businesses (for example, sole traders)
   - A 'tell us once' function, based on the United Kingdom, to significantly reduce duplicated information provision.
3. A Trusted Digital Identity Framework to create mutually recognised credentials across government and improve interoperability; and
4. A simpler and more efficient business grants administration process across government.

A great digital experience that feels and looks good to the user means designs that are intuitive, easy to navigate and feel familiar. The Digital Service Standard aims for greater consistency in digital government services that will help standardise digital layouts and improve familiarity. The DTO also aims to minimise complexity, by reducing unnecessary rules and steps in the process of interacting with government.

Some key factors in creating a good user-centric digital experience include:

- Removing additional steps involving URLs or attachments to complete the interaction
- Creating real time interaction in a common interface
- Making the process interoperable across organisations through auto-filling forms and recognisable digital entities
- Using Application Programming Interface (API) enabled channels that allow definitions and implementations to vary without compromising the interface, and the creation of personalised, tailored services.

The DTO's team of designers, developers, researchers and content specialists are focusing their efforts on the needs of the end user rather than individual agencies. The DTO will adopt and champion AGILE methodologies for developing services and information involving intensive user testing, rapid development of a minimum viable product and then rapid iteration of the product based on feedback.

Digital transformation faces many challenges. At the agency level, resistance to change is a possibility due to funding restraints and the consequences of disrupting existing service models. Staff culture and capability will be key considerations. Leadership across government will be critical to the success of the Digital Transformation Agenda.

5 | Overall costs

The government will need to continually invest in ICT infrastructure, software and technology. Additionally, there are flow-on related costs from improved efficiency such as redundancy and transition costs for replaced government staff and educational costs for resolving the digital divide problem. This section summarises the key costs involved for government to unlock the benefits of digital transformation.

Investment and additional operational costs

The government spends around $5.3 billion each year on ICT according to the ICT Expenditure 2008-09 to 2012-13 Report from the Department of Finance and Deregulation. We assume that the Australian Government's current one third allocation on 'non-business as usual' activities which includes 'capital and operating expenditure on applications and systems used to process information and transactions' are reflective of the amount of spending required to generate a trend 3.2% increase in digital adoption in transactions each year according to AGIMO (2011), which is roughly $1.7 billion.

The total federal government customer transaction volume we used to calculate our benefits was based on the three largest transaction based departments – the Department of Human Services, Australian Taxation Office and Department of Immigration. We take their (25.1%) share of employment to calculate their approximate share of 'non-business as usual' ICT spending, which includes capital expenditure on transformation as well as operational costs such as labour. To account for digital transformation costs at the state level, we scale up

these costs based on the state's proportional take up of estimated total transactions (both federal and state). This results in an annual non-BAU cost of around $534 million.

Digital transformation however may include additional operational costs to our 'non business as usual' estimate post implementation. These include ongoing ICT management, mainframe, midrange, storage, WAN, gateway and LAN costs and are estimated as 42% of our annual transformation cost (see Appendix A for details) or $224 million annually after the tenth year.

Our total lifetime benefits are based on 10 years worth of non-BAU costs, followed by ongoing costs from the eleventh year. The lifetime present value cost is $5.6 billion.

The government expenditure on 'non-business as usual' activities is however unlikely to be representative of total ICT infrastructure investments or developments for implementing digital technologies across government to improve transaction services. We use this upper bound figure as the annual cost to maintain trend growth in digital adoption in order to obtain a conservative estimation of our economic benefits.

Figure 5.1: Net capital stock, gross capital formation and capital consumption for IT in public administration and safety ($billions), 2004-2014
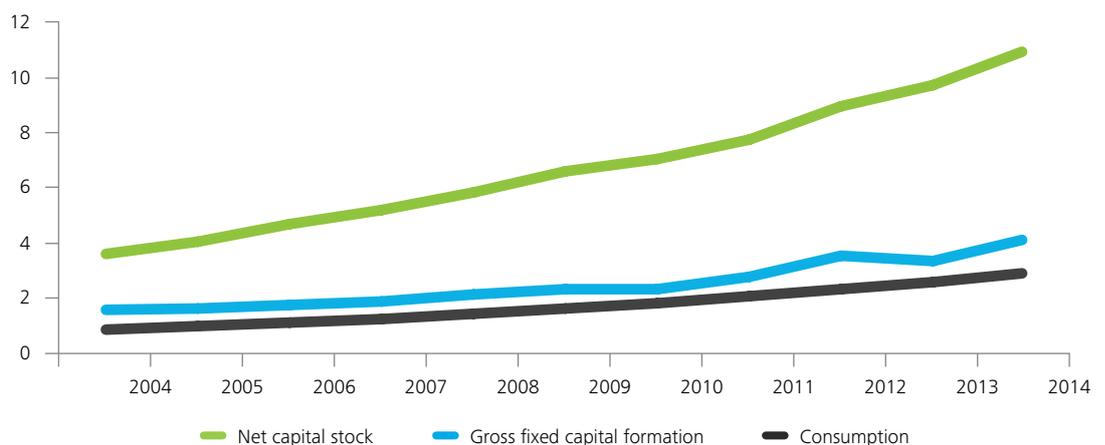
Source: Australian Bureau of Statistics: Australian System of National Accounts catalogue (5204)

As an additional observation, we obtained trends in the net capital stock for ICT in public administration and safety from the Australian Bureau of Statistics, which has been steadily increasing by roughly half a billion each year.

Transitional and redundancy costs

With the potential to reduce staff time required on traditional activities by roughly half for 50,138 government staff over ten years, there may be some costs required to smoothly transition 2,507 individuals each year into new job roles in Australia.

One option is a redundancy cost. With the average Australian Public Service (APS) Commission employee working for a length of 8.5 years[8] this entitles them to a redundancy benefit of 16 weeks[9]. Based on the current average annual salary for these various roles, it will cost the government roughly $16.9 thousand in redundancy costs per individual or an annual cost of $42.4 million for ten years. This is a net present value cost of $318.7 million for government.

Another option is to utilise this additional staff time as an opportunity to transition government staff into exciting new digital roles. The Department of Human Services and Service NSW have been growing its emphasis on digital education in its shopfronts by hiring employees to assist people in completing transactions in their digital and phone kiosks as well as making them more aware of available online services. Therefore the government can consider transitioning staff such as those with a more customer service focused background to become digital leaders in these service centres.

The precise training costs required are difficult to estimate as different roles may encounter varying training requirements or credentials from workers. To estimate our transitional cost, we assume that no additional capital requirements are needed to train these staff and two weeks of training time and a cost of $2,000 for facilitating training will be required. By calculating the average annualised salary of these transitioning workers ($54,974, adjusted by proportional take up and ANZSCO salaries) we estimate that the government will incur a lump sum training cost of $4,114, which equates to a transitioning cost of $10.3 million annually for a period of

10 years and a present value cost of $77.5 million.

The actual costs of transitioning staff and redundancy will be a combination between both these costs. We use the midpoint of our estimations to obtain a present value cost of $198.1 million.

Integration costs and costs of ICT contingency or blowout

Integration costs can be quite significant when ICT developments are made. For example the Queensland Commissioner's Audit of government ICT estimates that implementation costs can account for 39% of the total costs of replacing ICT.

Government ICT investments in Australia have been notorious for going over budget, over project timelines or being less effective than originally promised. This includes the Auditor-General's performance audit on the government licensing project in 2009 as well as the ICT blowout of $1.4 billion in Victoria in 2011 by the Victorian ombudsman on 10 major ICT projects.

Although these two costs are important in considering the high cost nature of ICT investments, the figures we use in our calculations are total figures that take into account all of these implications and are included in our investment cost.

Cost of improving digital literacy

Governments invest in a range of programs to lift digital literacy in Australia. For example:
- Service centres in both Service NSW and the Department of Human Services now have digital kiosks as well as Digital Customer Service Representatives to assist individuals in completing government transactions on digital channels
- The Broadband for Seniors initiative has also provided tutorials and kiosks for anyone 50 years or over to learn how to use a computer (word processing) and surf the internet (web browsing and emailing), free of charge
- The government has also been helping small-to-medium enterprises and not-for-profit organisations improve their productivity with new technologies and reaching a wider market through digital channels with

8. http://www.foodstandards.gov.au/publications/pages/annualreport/annualreport2012/chapter3peopleandorganisationalcapability2012/Default.aspx
9. http://www.apsc.gov.au/aps-employment-policy-and-advice/recruitment-and-selection/reengagement

its Digital Enterprise program
- The government is also revising the National Curriculum by including two new subjects: Digital Technologies and Design and Technologies to help students use computational thinking and information systems to define, design and implement digital solutions.

As a quantifiable and scalable example, the Digital Hubs program at the Commonwealth level aims to 'enable local communities to increase their online engagement and better understand the opportunities of the digital economy.' Digital Hubs have been established in 40 communities across Australia at a program cost of $13.6 million.

According to the Department, the program assists local residents to:

- Access online government, health and education services
- Increase their digital literacy skills and build confidence in the use of digital technology and online services
- Learn how to connect to broadband, including internet connectivity options
- Experience broadband-enabled services and technology
- Stay in touch with family and friends using social media and videoconferencing technology
- Participate safely online.

According to Departmental data, as at 30 June 2015 Digital Hubs delivered over 19,600 group training sessions and over 52,500 one-on-one mentoring sessions. This is about $100 per person of Commonwealth funding.

A preliminary study suggests that the Digital Hubs have been effective in increasing online knowledge and skills. In our view, this is likely to increase customer acceptance of digital customer transactions. If this program was extended to a population of four million people who currently have a low level of digital familiarity, this would be a cost of $400 million. If this was rolled out over ten years, it would have a present value cost of $301 million.

Overall costs estimate
By combining the various costs involved in digital transformation in government such as investment in ICT, costs for transitioning and making staff redundant, and digital literacy we obtain a present value cost of $6.1 billion.

Net present value of economic benefits for government and citizens
Although digitising customer transactions in government is costly, it can yield benefits for both government and citizens such as less resourcing costs due to increased productivity and efficiency, reduced travel and out of pocket related costs and less wastage on data storage costs.

With government and citizen benefits of $26.6 billion ($17.9b + $8.7b) from digitising customer transactions in government, and costs of $6.1 billion, we obtain a lifetime net present value of $20.5 billion. The estimated net benefit represents 1.3% of annual Gross Domestic Product or approximately $880 in net benefits per Australian citizen or $2,000 per household.

6 | Transactions in local government

Although the scope of this report focuses on transactions for Federal and State government organisations, we acknowledge that the 565 local councils in Australia employing 195,500 people and raising over $30 billion in revenue annual also provide a range of important services and offerings. Based on the Australian government's annual allocation on ICT expenditure of roughly 1.3%, local government councils are estimated to spend over $300 million on ICT each year.

Because they engage with citizens at the ground level, local councils play a strong role in the community's perception of government therefore keeping up to date with digital trends is a particularly important.

Examples of some of the transaction services they provide include:
- Collecting rates e.g. municipal rates
- Providing parking permits
- Registering fixed and mobile businesses
- Processing development applications (when using or subdividing land, erecting a building, pruning or removing trees, demolition)
- Licensing and management for animals (such as dog licences).

Local councils also help the community by servicing roads, providing meals to home care recipients, inspecting and visiting tobacco retailers, restaurants and licenced premises as well as cleaning and maintaining kerbside waste and sports services.

To help gain an understanding of the progress and challenges facing local councils to move transactions to digital channels, we gathered case study insights from the Hills Shire Council in New South Wales and Brimbank City Council in Victoria.

The Hills Shire Council – creating new digital solutions, improving transparency and reducing red tape for customers

The Hills Shire Council is looking to broaden its digital presence by providing online tools to make it easier for customers to comply with regulations, ultimately speeding up approval times, according to Warwick Purdy, head of IT.

With development applications for property modifications a common source of frustration for residents, the issue is one many local councils are looking to address. The Hills Shire Council plans to provide an online tool that helps its residents comply by giving them real time evaluations as they interactively design the layout of their property.

Residents will have the opportunity to know up front if they have set their boundaries within council guidelines, as well as discovering the estimated time for approval.

The goal is to improve the customer interaction with the system, ensuring compliance, reducing the rejection rate and improving the time needed for council officers to evaluate submissions.

The Hills Shire Council is also working to reduce the number of forms on its website and streamline customer transactions. A 12-month study revealed that the most downloaded form had a very low submission rate indicating that the current system was not meeting the customer's needs.

Another challenge facing customers is locating the correct form and to address this, The Hills Shire Council is introducing an online application form portal, keeping forms on permanent static links and using auto-fill in some parts of the form to ensure customers can conveniently complete their transaction. The new system also discerns the attachments required and links to an appropriate payment gateway.

As residents are increasingly using mobile technology for their transactions, The Hills Shire Council has recently launched a new 'responsive' website that adjusts automatically to the preferred device of the customer - as well as a CityWatch site that allows mobile customer service and payment capabilities.

Employing a citizen-centric approach, the website allows Hills residents to easily search for news, events, venues, parks and even check the availability of sportsgrounds nearby. These positive customer experiences assist Council to communicate via residents preferred mediums. By building a responsive adaptive website, customers no longer need to install and maintain a separate Council app.

The Hills Shire Council has been providing customer service through its document management to property management systems since the start of 2015. Now transactions have the status of a customer request (lodged, in progress, or completed) with the appropriate officer notified of a request much faster.

This has created further transparency as customers can obtain updates of the status of their request through email or SMS, allowing them to provide feedback through a survey at the end of the engagement.

Benefits have included reducing the average time taken to complete a request and streamlining each transaction.

The total number of walk-ins to the customer contact centre has decreased over time; however phone calls have increased indicating there may still be scope for improvement especially in the accessibility and ease of online transactions before digital options can fully replace traditional channels.

Brimbank City Council – putting the customer first, ambitions to take more transaction services online

Brimbank City Council, the second largest local council in Victoria, has been redirecting its focus to provide better customer experiences for its residents according to Carol Brooks, IT Project Officer and Justine Resta, Organisational Development Coordinator.

With business cases to develop the right digital infrastructure being very costly and hard to implement, Brimbank has meanwhile taken a customer-centric approach through #communityfirst to makes lives easier for citizens when dealing with government, rather than placing primary importance on what is beneficial for the government. They realised that most people in the community lead busy lives and typically do not seek to engage with the local council unless it was required, making customer experience very important. This has meant that some staff members have increased the quality of services that they provide to customers to improve their experience such as scanning relevant documentation for the community and setting goals to transition around half of its transaction services to be available online by April 2016.

Driving this cultural and digital change has been initially challenging due to differing mindsets. A digitisation program is currently being rolled out across the organisation, with Brimbank completing workshops across all its departments to identify the key problems and areas that require change. This has initiated goals to develop a new transaction based and mobile responsive website, a payment gateway and master customer database that will enable 'one view of customer'. Moreover, there have been goals to improve interoperability between the roughly 40 different systems that are operating in Brimbank to better connect information sources so that customers will eventually be able to register, login and have a 360 degree view of self. (ie rates payments due, library books borrowed, memberships to leisure centres etc.)

Implementing these actions however can be challenging. It first requires collective changes in thinking amongst staff to foster a digital and customer focused culture which may be difficult. Brimbank has aimed to solve this problem by involving senior staff in their 'Business Transformation Project #CommunityFirst', to attend relevant digital and technology based conferences and meetings to better understand their potential. At the same time there are legislative and procurement barriers which raise the difficulty for digital change as governments are restricted from directly reaching the market and need to undergo a tendering process.

However, by advancing a strong digital and customer focused agenda Brimbank City Council has shown that it will yield many benefits for enriching the lives of its residents.

7 | Current barriers to change and policy recommendations

Digital transformation is a long and difficult task. This section summarises the six main barriers to change identified from our research and consultations with government departments and agencies, as well as our recommendations for policymakers.

Government strategies

Australia's digital future

Policy bottlenecks and bureaucratic inertia

Budget and capability constraints

Digital exclusion and divide

Lack of competition

Privacy and security

Transitioning government staff to new roles

South Australian Department of the Premier and Cabinet – digital efficiencies and reducing policy bottlenecks

The South Australian Department of Premier and Cabinet (DPC) has a vision to make connecting with government easy through digital communication. The Office of Digital Government has been enhancing how governments connect and collaborate with citizens through SA Connected, which is setting the strategic direction for the use of ICT in the SA government.

With over ten million customer transactions per year, the services divisions of DPC have made significant progress in driving digital transformation. 70% of its payment transactions are conducted online with an aim to increase to 95% in the next three years according to Phil McMahon, Chief Operating Officer, Services. Further growth is expected in its online service transactions, driven by taking over one million transactions online across 25 categories, including disabled parking permits and photo licensing.

A contributor to transformation is allowing senior staff to have a deeper ground level understanding of inefficiencies in its products and services through frontline experience. This has the potential to convey a different message than traditional feedback responses as well as understand customer behaviour and the need to pre-empt what citizens would want in the future before making ICT investments today.

Additionally, recent DPC projects that provide citizen benefits include the provision of bill smoothing payment options that mitigate unexpected bill spikes as well as 'My Invoice' for vendors, which decreases cash flow anxiety by giving process transparency and updates on where payments are tracking.

Governments need to keep up to date with the rapidly evolving nature of digital innovations and technologies, but departments face significant legislative and regulatory bottlenecks to allow this to happen. Also, agencies require new funding to move forward its digital agenda. Current budget pressures have led many to consider improving efficiency with how they use current resources.

Government mobile apps have achieved citizen time savings, but are typically only a 'point solution' for a subset of total available services. They should not fully replace other traditional digital channels (e.g. websites) but rather be used in conjunction. Further development and improvements in ease of use for government websites will be required in the future, which could be instigated by, for example, a ratings system on websites that encourage regular feedback and transparency to stimulate improvements and change.

Another significant policy issue is the issue of 'digital divide' where less advantaged households prefer to use offline channels due to lack of access to internet or insufficient digital skills. For governments to fully integrate transactional services online, further consideration is needed to reduce barriers to internet and education and training programs for computer literacy in disadvantaged areas.

Policy bottlenecks and bureaucratic inertia

The impact of policy barriers against digital change was a consistent message across our case studies with various government agencies.

First, there are legislative and regulatory frictions that cost significant periods of time and resources for organisations before a digital transformation strategy can be implemented. This leads to policy decisions for digital strategy that may be outdated compared to a private organisation that faces less legislative hurdles.

Some aspects of digital transformation such as data sharing may require collective action between agencies and states within government before the benefits can potentially be realised, which is challenging for some forward looking departments such as the Department of Human Services and the Australian Taxation Office.

In other cases, it is simply a case of current business processes being structured around an analogue model and there is considerable work required to rewrite rules and processes so that customer transactions can be delivered digitally.

Recommendations:

To reduce policy bottlenecks in government we need to improve our digital regulation. This may involve a major root or branch review of regulations and processes to identify the highest priority areas for change as well as allowing for greater collaboration between jurisdictions to ensure a nationwide approach in the technology space.

New customer-focused agencies such as Service NSW which consolidates multiple transactions through one service centre and whole-of-government digital agencies such as the Digital Transformation Office are effective steps to driving process change and improving coordination. This momentum can be further driven by new ways of thinking from digital leaders from both the public and private sector that have ambitions to create a modern digital environment in government.

Budget and capability constraints

There are significant budget constraints that restrict government organisations from investing in the right hardware infrastructure and software to transition away from its reliance on traditional systems and thinking. Deloitte's 2015 Premier's Digital Landscape Report found that 56% of public sector executives pointed to insufficient funding as its main barrier from taking advantage of digital trends, with 43% also agreeing that there are too many competing priorities to focus on investing in digital technologies. Because the investment costs of digital transformation can be very high initially with benefits only slowly realised over time, this leads many organisations to concentrate on short-term digital strategies with more immediate benefits instead of longer term and larger scale system change options.

Another barrier to digital transformation is that some departments and agencies may not have all the relevant capabilities internally (such as user experience designers and programmers) in order to deliver high quality digital products. Combined with budget constraints to invest in systems level digital changes, it can be a significant challenge for government organisations.

Recommendations:

To encourage long-term digital transformation, business cases should allow agencies to offset agency savings against ICT investments (where they cannot already do so). In cases where this is not viable, government agencies can consider new forms of ICT project management and implementations that require lower specifications that are agile and innovative and lead to direct efficiency savings, which can be utilised to yield larger investments in the future.

Additionally, governments can consider more agile and standardised approaches to digital delivery (such as digitalservice standards) that smaller agencies can adopt without the need for substantial outlays into digital transformation. This may involve a whole-of-government digital team that can implement these technologies over time.

Digital exclusion and divide in Australia

Digital literacy is the awareness and ability to appropriately use digital tools and facilities in a functional way during daily situations to enhance the completion of tasks. Although the affordability of hardware such as computers, laptops and smartphones and the costs of connecting to the internet have reduced markedly in recent years, digital exclusion is still a significant problem in Australia.

Figure 7.1: Household internet and broadband usage over time (%)
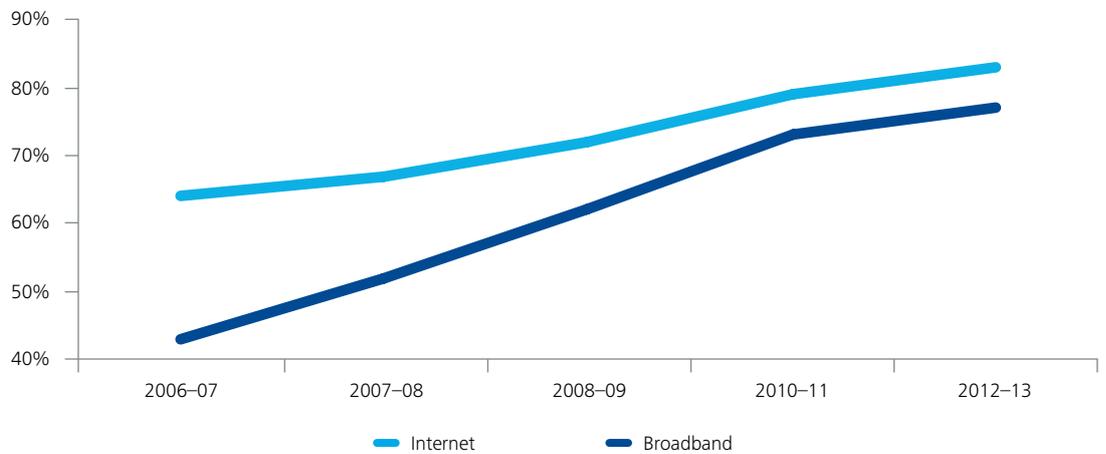
Source: ABS (cat. 8146), Household use of information technology, Australia 2012-13 (2014)

Currently around one in five Australians is not accessing the internet at home. Many of these 4.1 million people are often disabled, from disadvantaged backgrounds or older cohorts. The ABS estimates that for the disabled and the elderly (aged above 60), the percentage of individuals without household internet access increases to 38% and 46% respectively. This represents a significant challenge for policy makers to ensure that digitisation does not widen the digital divide problem for these cohorts in the economy as have been experienced at the shopfront by organisations such as Department of Human Services and the Hills Shire council.

Having digital access is only one small factor to the overall problem, as the ability to navigate and adapt to constant changes in digital technologies is an equally important prerequisite for citizens before they can confidently replace its reliance on traditional customer transaction channels.

Australia consistently performs in the top countries globally for digital literacy, which means it is well prepared for digital transformation within government. Although at the aggregate level digital literacy has consistently improved over the years, the rate of growth has been weaker in rural and remote regions. The 'National Assessment Program' in 2010 found that there has been very little improvement in the computer skills of the poorest performers in the year 6 and year 10 national computer literacy examinations over time.

These results indicate that the benefits (such as time saved) from digitising government transaction services to citizens are unlikely to be homogenous especially for those that are computer illiterate such as people from disadvantaged backgrounds or older generations.

Table 7.1: Proportion of year 6 and 10 students with computer proficiency[10]

Location	% of computer proficient students
Metropolitan	61%
Rural	48%
Remote	38%

Moreover, developing proficient skills in other digital technologies such as smartphones, tablets and personal digital assistants are becoming growingly important in an environment where high broadband penetration is leading to more applications that allow mobile functionality. The younger generations have been strong adopters of new technologies, with 98% of children from the ages of 12-14 having accessed the internet and 73% owning a mobile phone according to the Australian Bureau of Statistics (cat 4901). However, to communicate the benefits of these technologies to less technology savvy individuals, organisations such as the Australian Communications and Media Authority (ACMA) have to broaden their reach in promoting digital media literacy.

Although investments into digital education, awareness and training provide a simple solution towards addressing this problem, there is also a need to develop a culture of acknowledging the vast benefits of digital technology across all citizens. Implementation of tablets and computers into schooling has led to positive flow on benefits for today's generation of students however some cohorts, for example disadvantaged communities, the disabled and the elderly, do not experience the same network effect benefits.

These issues cause resistance for full replacement of government transactions from traditional channels as some cohorts may still not be sufficiently prepared for using only digital options, which may lead to further inefficiency in traditional channels due to a higher proportion of fixed costs and reduced economic scale.

Recommendations:

To reduce the digital divide the government can consider two main options: improving the level of digital skills for certain cohorts and reducing the difficulty of use for certain digital services.

Improving the overall level of computer skills in certain cohorts may require increased government ICT expenditure in disadvantaged regions such as educational programs or creating centres of excellence on computer literacy or scholarships for students falling behind in computer skills at disadvantaged schools. For specific digital skills, digital assistance and training in kiosks at service centres such as the Department of Human Services and Service NSW have been effective in helping customers gain confidence in using online channels to complete transactions in other staffed environments such as libraries. Although initial labour costs may be high for providing this service, it could lead to efficiency benefits in the future as these customers transition from using traditional channels to complete their transactions.

To improve the ease of use of online channels which encourages online take-up, the government can consider user experience (UX) designers and programmers to improve the interfacing, interactivity and perception of the online service. This will reduce the minimum threshold of computer skills required to use the channel as well as improve the speed in which important information can be navigated.

10. National Assessment Program – ICT literacy years 6 and 10 report (2011)

Lack of competition

Many government customer transactions can only be completed through one organisation e.g. registration of a driver license from Roads and Maritime Services, meaning that negative customer experiences such as long queuing times or inefficient processes are unlikely to impact the level of demand for their services, especially if some obligations are legally required such as completing a tax return.

In areas where it is not possible to increase competition for service delivery, government can look for ways to improve accountability such as through effective reporting, measurement and benchmarking.

Recommendations:

Effective leadership that recognises the potential of digital transformation is an ideal starting point to ensure that operational processes are constantly improved. This requires hiring leaders who have previous experience with digital transformation such as digital officers and managers from the private sector.

Increasing the level of accountability has also been demonstrated to be effective in driving digital change and the quality of service according to Service NSW, who have been tracking the profit and loss of its individual service centres. This could involve increasing the amount of transparency of process efficiency (such as waiting or engagement times per transaction) by setting new metric requirements in certain government organisations as well as correctly aligning incentives for digital transformation leaders (through career advancement or bonus schemes) who have exceeded set objectives.

Collaboration is also an additional driver for competition. Open government and open data in the United States and United Kingdom have led to many exciting solutions for citizens.

Privacy and security

The Deloitte Australian Privacy Index 2015 report analysed 104 of Australia's leading consumer brands across 11 sectors including government and found that the government sector is the most trusted industry with the best perceived governance and regulatory approach. These results are somewhat driven by transparent supporting material explaining different aspects of privacy as well as a low number of third party cookies compared to other sectors[11]. However, with plans to utilise data analytics, automated procedures (such as auto-filling) and open data sharing in the horizon there are concerns on how this may affect the privacy and security of government data.

The government regularly deals with highly sensitive information. Besides credit card details (67%), passport numbers (46%) and driver licenses (43%) were found to be the most sensitive types of personal information for citizens according to the Deloitte Australian Privacy Index survey in 2015. Although there have been strong advances in security and privacy (such as encryption) and fraud detection, every algorithm is potentially vulnerable.

With the possibility of open data sharing and further automation in the future done in the digital realm, this increases the stakes of potential security breaches for government and can have a flow on impact on not sharing data due to the silo mentality. Although the automation of identification procedures through voice biometric technology by the Digital Transformation Office in the future could help improve convenience and lead to time savings for both government and citizens, it faces significant risk of exploitation through advances in audio technology which can easily analyse the vocal content of speech (e.g. recording someone talking at a café) and be modified through voice masking programs by imposters looking to extract sensitive information and details. Therefore governments need to be especially attentive on having the most up to date voice modification detection software or additional security checks (such as a combination between voice recognition and security questions) to ensure that valuable personal information remains safe.

Recommendations:

Because of high information sensitivities in government, a sober and transparent assessment of privacy and security and a risk management approach that accounts for the vulnerabilities will be required.

Government agencies can improve the efficiency of security processes by providing a unique token identifier per individual for government services. They can also look at ways of using voice recognition security, which has been considered by the Australian Taxation Office and content centric networking which emphasises a security model that secures individual pieces of content rather than an entire connection, providing flexibility by providing names rather than IP addresses.

To utilise the benefits of open data and interoperability in government this may require collective action between agencies such as initiatives from the Digital Transformation Office. To improve the level of information security between government agencies, an external body such as the Crossroads Bank of Social Security (CBSS), which was established to manage secure information sharing across 2,000 social security authorities in Belgium, could be considered as an approach to improve service delivery and eliminate duplicated forms.

Transitioning government staff to new roles

The staff time savings from digitising government customer transactions are substantial but with any change there are people who will be affected differently. The government needs to consider through appropriate strategies to ensure that these employees smoothly transition to new roles.

This may involve training costs for external consultants to use new digital systems as well as a time cost attached to employees to learn new skills or a redundancy cost.

Recommendations:

Because digital education and awareness is an important issue, employees with strong customer service backgrounds can transition to digital customer service representatives at services centres such as the Department of Human Services and Service NSW to encourage digital take-up as well as reduce the digital divide gap. For individuals in roles that are more difficult to transfer it may involve a redundancy cost for government as well as adequate safety nets such as job search assistance or education allowance in areas of skill shortage in Australia for example surveying, midwifery, accounting and trades according to the Department of Employment's Skill Shortage List (2014). These estimated costs are considered in section 5.1.2.

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11. A third party cookie is a small script placed on the hard drive of your computer by the website server to recognise your specific browser and computer combination for convenience when you return to the site.

Methodology

Cost-benefit analysis is effective in calculating net economic benefits. By calculating year by year economic impacts, net present value (NPV) will represent the overall net economic benefit of digitising government customer transactions. This accounts for other aspects such as variability in costs and benefits over time (e.g through implementation, productivity delays or responses) as well inflation and project risks.

With B_t and C_t representing the associated benefits and costs in each year, and r being the discount rate, the NPV can be calculated as follows:

$$NPV\,(t,\,N) = \sum_{t}^{N} \frac{B_t - C_t}{(1+r)^t}$$

with t =0 to N (N being the project life span)

We use a discount rate of 7% in line with the NSW Treasury's guidelines for economic appraisal. For our productivity and efficiency benefit calculations we assume that the benefits of digital transformation will be unlocked gradually over time with a fixed cost structure over a period of ten years. This means that only a fraction of the full potential benefit (10%) will be recognised during time period one. This benefits structure is based on the acknowledgement that digital transformation is a challenging and long-term process, where the benefits of expenditure into digital development may not be immediately realised. After period 10 we estimate the benefits and operating costs on a perpetual basis, representing the economic benefits unlocked to governments and citizens from investing in substantive initial capital costs.

In regards to using a static forecast for total government transactions, although the total number of transactions may change over time due to changing needs, population growth and improvements in interoperability, our economic calculation is based on the productivity and efficiency benefit savings from reducing volumes in *traditional* channels.

Appendix A
Cost calculations

Annual cost of postage for government

Based on current annual Commonwealth Government postal volumes of 250 million we calculated a $253 million government postal cost in 2015, expected to decrease to $183 million by 2019.

Annual cost of labour resourcing on traditional service delivery activities

ANZSCO code	ANZSCO group name	Public sector employment	Estimated FTE*	Average annual wages*	Annual wage costs ($millions)
1492	Call and contact centre information managers	2,715	0.801	$66,040	143.5
5321	Keyboard operators	8,229	0.807	$50,232	333.6
5411	Call and contact centre information workers	4,514	0.801	$52,000	187.9
5412	Enquiry clerks	15,774	0.834	$49,920	656.7
5613	Filing and registry clerks	3,821	0.818	$49,400	154.3
5614	Mail sorters	705	0.834	$52,000	30.6
5616	Switchboard operators	800	0.765	$41,652	25.5
5995	Inspectors and regulatory officers	13,580**	0.943	$65,000	832.4

* Obtained from joboutlook.gov.au, ANZSCO data is sourced from the Australian Bureau of Statistics

** This was based on a proportionate estimate based on the customs and immigration officers, social security assessors and taxation inspectors at the six digit level working in government.

Based on forecast estimations of traditional channel reliance, we anticipate that labour resourcing needs for these government roles will be halved over the next decade. The direct impact on individual ANZSCO job groups may vary however depending on circumstances.

Allocation of government ICT expenditure

The Department of Finance reports on the allocation of ICT spending on across different services. The percentage allocations remain generally constant over time. To ensure that the digital transformation process is as effective as possible, future reviews may be needed.

We added 42% to investment costs to account for additional operational costs such as ICT management, mainframe, midrange, storage, WAN, gateway and LAN that are expected from digital transformation. Although aspects such as digital standards and cloud computing may involve significantly lower operational costs than traditional methods, we use the same proportional allocation of various expenses based on the annual Commonwealth ICT budget in order to calculate a conservative net economic benefits figure.

Table A.1: Allocation of annual government ICT expenditure (%)

Service Tower	2008-09	2009-10	2010-11	2011-12	2012-13
ICT Management	10%	10%	12%	10%	13%
Applications	35%	36%	33%	39%	38%
Mainframe	7%	6%	7%	6%	5%
Midrange	8%	7%	8%	7%	8%
Storage	3%	3%	3%	4%	3%
WAN	9%	10%	10%	11%	6%
Gateway	1%	2%	1%	1%	2%
LAN and RAS	2%	2%	2%	2%	7%
End user infrastructure	14%	12%	11%	9%	11%
Voice services	7%	8%	8%	7%	7%
Helpdesk	3%	3%	3%	2%	11%
Facilities	1%	1%	3%	2%	3%

Table A.2: Allocation of annual NSW government ICT expenditure (%)

Service Tower	2008-09	2009-10	2010-11	2011-12
Internal personnel	23.3%	25.2%	26.3%	25.8%
Software	16.6%	18.1%	17.7%	18.4%
Outsourced (external)	15.9%	14.6%	16.1%	14.3%
Hardware	16.7%	15.7%	13.8%	14.0%
Carriage	12.6%	11.8%	12.7%	12.5%
External personnel	11.0%	10.2%	10.6%	11.0%
Other	4.0%	4.3%	2.8%	4.0%

Cost of leisure time

First, we obtain average Australian weekly earnings, minus taxes and expenses divided by the hours required to earn this amount. This was then adjusted by a factor of 0.45 based on estimations of leisure time from Lehr (2004).

Transaction cost by channel

In order to derive our transaction cost based by channel (face-to-face, postal, telephone and online) for government customer transaction services we averaged the estimated channel cost from three international sources, which include the UK Digital Efficiency Report (2012); Society of Information Technology Management (2013) and the Norwegian e-Government Program (2012). The cost figures were then adjusted to Australian dollar terms using yearly average exchange rates. Australian government sources verified that these channel cost estimates were similar to Australian experiences.

Table A.3: Transaction cost per channel based on source (adjusted to $AUD)

Source	Face-to-face	Phone	Postal	Digital
UK Digital Efficiency Report	21.25	7.94	12.79	0.43
SOCITM	16.65	5.47		0.29
Norwegian e-Government	12.80	6.40		0.48

Public sector employment by department

Table A.4: Public sector employment, 2013-14

Department	Total employment	% of federal employment
Department of Human Services	30,707	12.5%
Australian Taxation Office	22,022	8.9%
Department of Immigration and Citizenship	9,080	3.7%
Total Commonwealth Government	246,400	

Sources: Australian Bureau of Statistics: Employment and Earnings, Public Sector, 2013-14 (catalogue: 6248) and Department of Foreign Affairs and Trade

Appendix B
ANZSCO Job Duties

Keyboard operators
- Receiving, sorting, opening, classifying, photocopying and filing information
- Entering text and data via keyboards for further processing
- Retrieving and updating data in storage and keeping records
- Preparing reports, letters and similar matter
- Transcribing information and proofreading and correcting copy.

Call and contact centre information workers and managers
- Developing and reviewing policies, programs and procedures concerning customer relations and goods and services provided
- Ensuring operational efficiency within a call centre
- Providing direction and feedback to team members and assisting with recruitment
- Managing, motivating and developing staff providing customer services
- Planning and implementing after-sales services to follow up customer satisfaction, ensure performance of
- Goods purchased, and modify and improve services provided
- Liaising with other organisational units, service agents and customers to identify and respond to customer expectations.

Inspectors and regulatory officers*
- Searching aircraft, vehicles, premises and people, and checking documents and goods to detect illegal activities such as undocumented cargo, prohibited goods and illegal aliens
- Examining and assessing visas and residency applications
- *Testing applicants' ability to operate a motor vehicle, assessing applicants' suitability to hold learner's permits and probationary licences, and issuing learner's permits and probationary licences*
- *Identifying pest and weed problems and determining treatments and management*
- Assessing claims for government benefits
- Carrying out random checks of taxation documents to detect non-compliance with taxation legislation
- *Conducting visual checks of the mechanical, structural, electrical, pneumatic and hydraulic systems of railway wagons, carriages and locomotives for condition and correct classification*
- *Ensuring that train, tram and bus services are provided according to schedule, monitoring the cleanliness, Presentation and condition of vehicles, and recommending improvements and changes to services*
- *Receiving and assessing applications for licences to use water, investigating the ability of water resources to meet new requirements, and conducting site inspections.*

*Job roles that were not included in our quantification of efficiency benefits are in italics.

Mail sorters
- Explore lost item mail or package claims and attempt to track items
- Manually sort mail and prepare instructions for distributing mail
- Obtain incoming mail by unloading mail bags and collecting postal service boxes
- Process express and priority mail services and determine underpaid mail and bulk mail blocks
- Process mail, handling incorrectly addressed mail, forwarding changes of address, undelivered or redirected items
- Use letter indexing, preparation lines, bar coding, sorting and other mail processing equipment to organise large quantities of mail
- Verify registered packages and special articles.

Enquiry clerks
- Answer phones
- Handle complaints and offer ways to rectify the problem
- Issue informational data to those who need it
- Keep records regarding questions and problems
- Refer questions they cannot answer to others with more expertise
- Respond to questions about services and products available
- Use computer, intercoms and other office equipment.

Switchboard operators
- Answer incoming calls in a professional manner, and direct the call
- Arrange conference calls upon request
- Check operating system to ensure its working accurately
- Operate communication systems to receive, transfer or allow for outgoing of calls
- Page individuals to inform them of phone calls
- Record messages in a concise manner, along with the date and time
- Route emergency calls when needed.

Filing and registry clerks
- Classify and label documents and file accordingly
- Ensure up-to-date databases and systems
- Fill record requests for customers by retrieving files from databases, systems, and archives
- Maintain accurate records of document orders and movements
- Remove or archive repeated documents or irrelevant/out-dated information
- Respond to customer queries in person, by email, by post, or by phone.

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