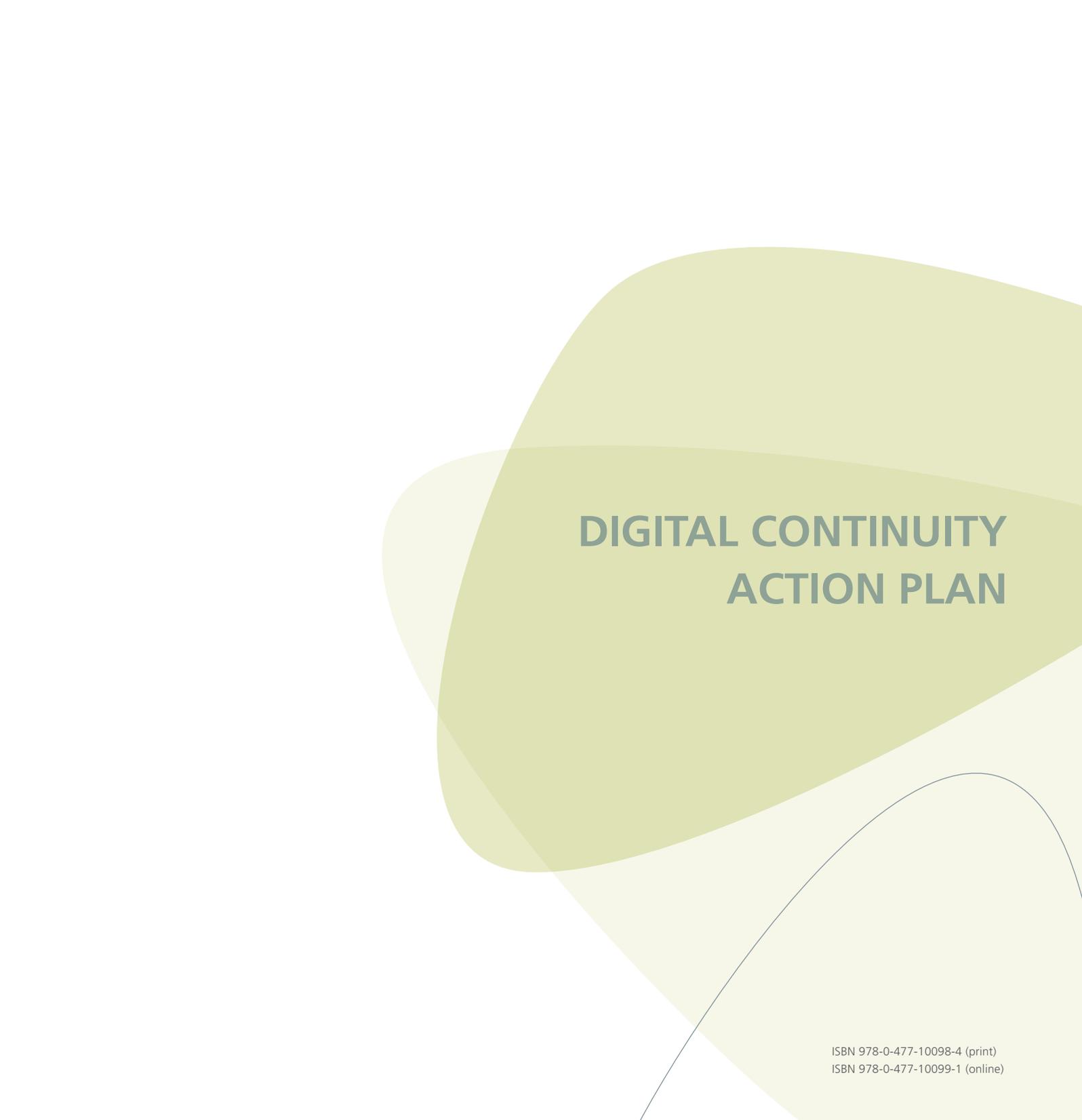


DIGITAL CONTINUITY
ACTION PLAN

Managing
Information for
Public Sector
Efficiency



access act action address agencies
archives available business
community continuity created data
development document
ensure environment existing future government
http identify include
information infrastructure
initiatives international issues library long-term
management national needed plan practice
preservation provide public
records required research resources retrieved
sector services standards strategies
New Zealand
systems



DIGITAL CONTINUITY ACTION PLAN

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01

MINISTER'S FOREWORD

The volume of digital information being created is increasing exponentially across the globe. In 2008, digital content exceeded storage capacity for the first time – and by 2011 its volume will be 10 times the size it was in 2006.

Not all digital information created and transmitted is stored, but by 2011, almost half of all the information created will not have a permanent home. This information overload could not have been foreseen even a few years ago. We need to delete the digital trash to ensure we have access to the information we need.

Only by taking a proactive approach, can we be confident that we identify crucial business information. We must ensure that the information we need today is not lost or buried in the digital landfill. Digital continuity is not just about preservation, it is about ensuring that information is identified, accessible and usable for as long as it is needed.

Technology, no matter how simple or complex, is always changing and we are always searching for better, more efficient ways of working.

From the first primitive accounting machines to the highly complex data processing programmes of today, digital information has become more and more a part of our everyday lives.

In the 21st century, most information is created digitally and the continuity of digital information has become a major concern worldwide for all sectors of society and for all organisations, whether they are public or private. As yesterday's information management technologies are replaced by today's, the danger of losing our digital investment becomes increasingly high. Clearly this is a risk we must address with urgency and on a collective front.

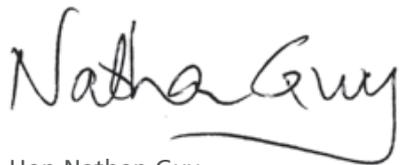
Managing information, and managing it well, is essential to the effective delivery of public sector services to New Zealanders.

To maintain our transparency and accountability in the public sector, it is vital that the information important to New Zealanders is managed and kept safe for use for as long as it is needed.

The Digital Continuity Action Plan provides an all-of-government approach to developing the practices to sustain the public sector's digital environment and to protect our valuable knowledge stores.

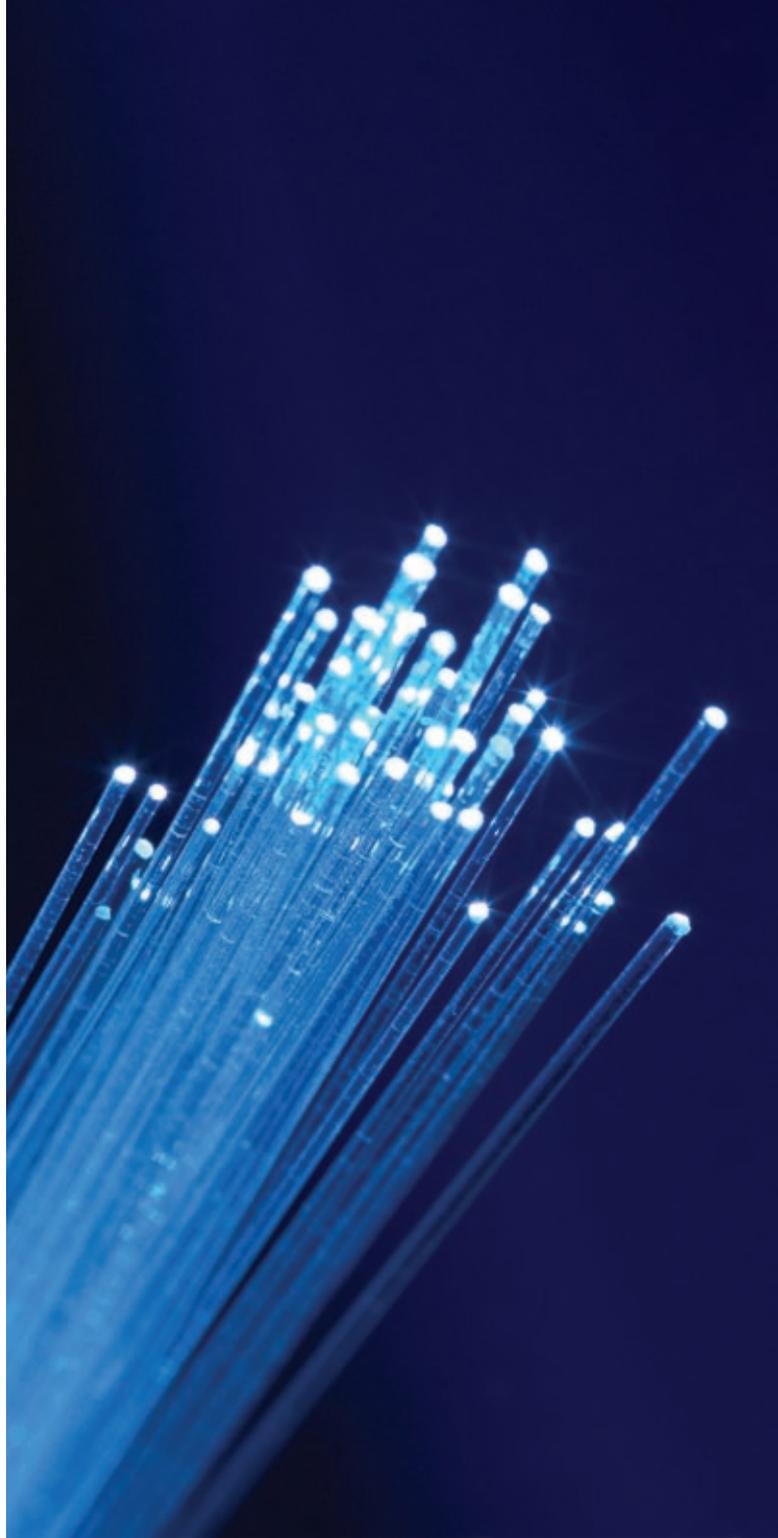
This action plan has a set of achievable goals, and more importantly, practical actions. It is clearly focused to help New Zealand's public sector get a strong and continuing return on the investment government is making in the creation and use of digital information.

We live in a digital age. We must think digitally and manage digitally. The Digital Continuity Action Plan will ensure that the digital information we need is there when we need it.



Hon Nathan Guy
Minister Responsible for Archives New Zealand

Photo: ©Stockphoto.com/Brian Stanback



02

EXECUTIVE SUMMARY

New Zealand is creating digital information at a rate never seen before. Its quantity and diversity is growing exponentially however this growth is often unmanaged, potentially leading to a digital landfill where information is lost or retrieval is severely hampered.

Public sector digital information is no different and these drivers mean that it must be managed in such a way that it is accessible, useable and reusable for both today's and tomorrow's New Zealanders. At the same time, there must be awareness of the need to protect certain types of information (for example, personal data) from unauthorised access and use.

The shift to the creation of information in digital formats and ICT-based business processes enables new approaches in the way business is carried out and in the way people interact with each other, the public sector and with the commercial marketplace.

But, it has also created a challenge to those tasked with managing and sustaining the resulting information. Public sector digital information must be proactively managed and cared for, both for delivering quality public services and for legislative and regulatory accountability. The passing of the Public Records Act in 2005 with requirements to create and maintain

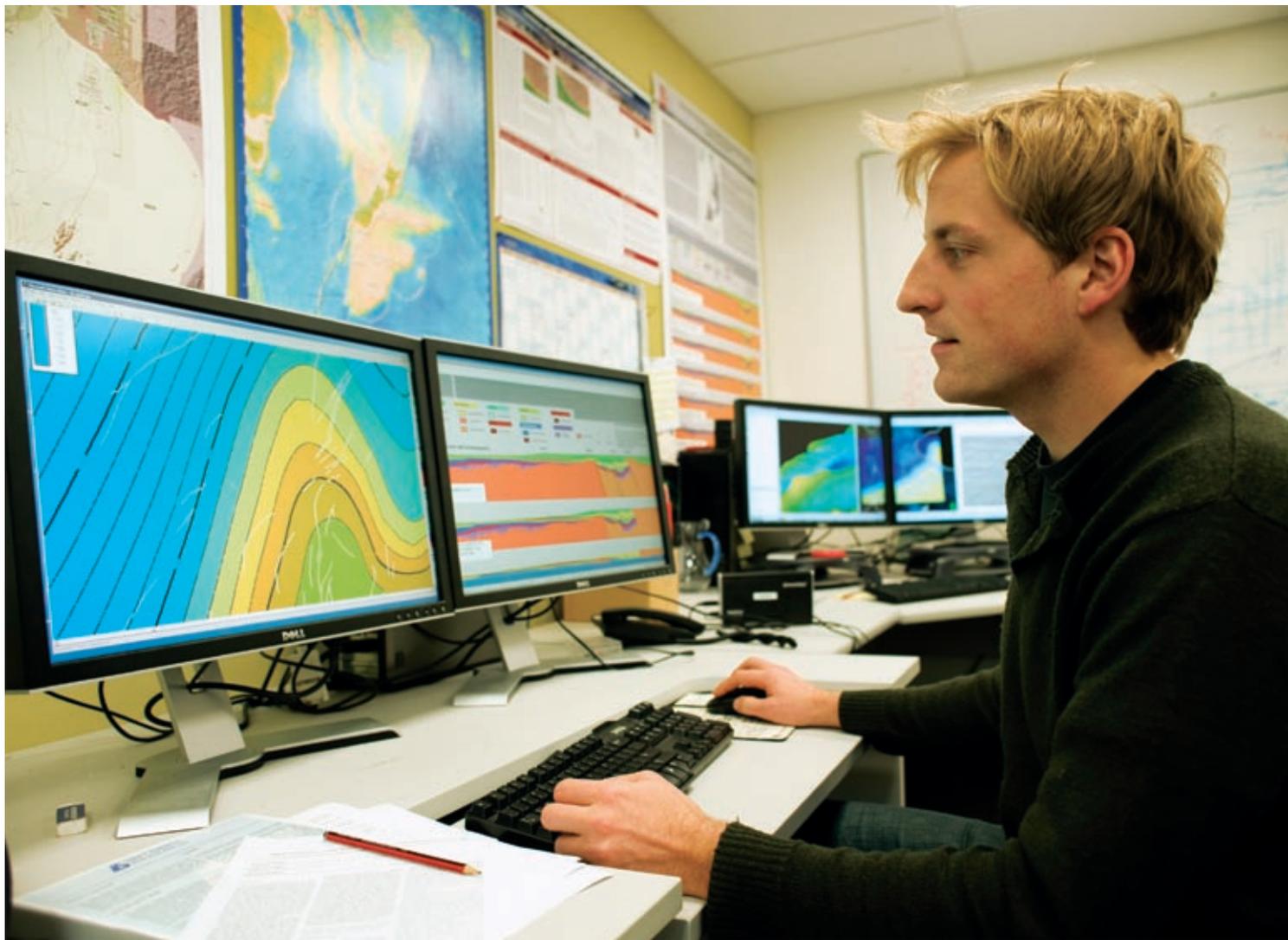
full and accurate records when it is normal and prudent business practice to do so has brought these issues to the forefront.

This Digital Continuity Action Plan applies to public sector digital information, that is, digital information created and managed by public sector agencies including government departments, crown research institutes, crown entities, state enterprises, district health boards, state and integrated schools, tertiary institutions and local government. A staged and differentiated approach is envisaged, with government departments the first to implement the action plan. Public sector digital information covers a wide range of data, such as budgetary and benefits information, evidence on court cases, research data, sensitive personal case files and foreign policy decisions. Also it is often stored or transmitted via a range of ephemeral conduits and environments such as websites, wikis, SMS text messages, email, CDs, DVDs and USB drives.

Did you know?

In 1975, NASA sent two Viking space probes to Mars. The data generated by these unrepeatable missions – produced at a total mission cost of approximately \$1 billion – was recorded onto magnetic tape. Two decades later, the tapes were cracking and brittle, despite climate-controlled storage, and the formats were unreadable. To access the data, NASA had to track down old print outs and retype everything. NASA has subsequently become one of the world's biggest supporters of digital continuity.¹

Photo taken by Bruce Foster at GNS Science in Lower Hutt.



¹ Digital Preservation Coalition (2006).

The objective of the action plan is to ensure that public sector digital information is trusted and accessible when it is needed now and in the future.

THE KEY MESSAGES ARE:

There when you need it

Public sector digital information will be maintained so that it can be accessed when it is needed. Some information is required only for a few months or years. A small proportion needs to be preserved for many decades, or indefinitely, for future use.

Authentic and reliable

Public sector digital information is tamper-proof and free of technological digital rights restrictions. It can be trusted to be authentic and reliable.

Trusted access

New Zealanders can be confident that they will be able to find, retrieve and use all public sector digital information that can be made publicly available, and that their sensitive information will be protected from unauthorised access.

Do nothing, lose everything

If no action is taken, public sector digital information will be lost. The public sector must take a proactive approach to maintain its digital information for the future.

GOALS	ACTIONS
<p>Understanding: Those responsible for public sector digital continuity communicate effectively with each other and have a common understanding of the problem space.</p>	<ul style="list-style-type: none"> · Raise awareness of public sector digital continuity issues at a strategic level · Form a community of practice which crosses professional, occupational and international boundaries · Harmonise existing legislative definitions and compile a glossary
<p>Well-managed from day one: All public sector digital information is well-managed from the point of creation onwards.</p>	<ul style="list-style-type: none"> · Develop a comprehensive framework of standards and guidance · Monitoring and audits · Support appropriate business information systems design and procurement
<p>Infrastructure: Robust cross-agency infrastructure exists to support the interoperability of systems and efficient digital continuity.</p>	<ul style="list-style-type: none"> · Implementation of the National Digital Heritage Archive · Leverage the public sector's investment in existing digital continuity initiatives <p>POTENTIAL FUTURE INITIATIVES</p> <ul style="list-style-type: none"> · Ensure New Zealand public sector has comprehensive digital archiving capability · Investigate cross-agency infrastructure for storage and retrieval of digital information
<p>High-value information kept: High-value information is identified, so that business critical information is not concealed in the digital landfill.</p>	<ul style="list-style-type: none"> · Analyse the functions of public sector agencies to identify high-value digital information that will need to be kept long term · Target at-risk areas of digital public sector information
<p>Trusted access: The public sector and citizens are able to access digital information now and in the future, and information is protected from unauthorised access and use.</p>	<ul style="list-style-type: none"> · Government information and data reuse · Ensure that access restrictions can be applied and maintained to certain types or categories of information · Understand implications for Māori and ensure these perspectives are taken into account
<p>Establish good governance: Information management across the public sector is characterised by good governance, leadership and accountability.</p>	<ul style="list-style-type: none"> · Identify lead and specialist agencies and articulate responsibilities · Investigate the need for, and role of, a governance body

INTRODUCTION

The continuity of digital information has become a major concern worldwide. It impacts on all sectors of society and all organisations public and private.

3.1 Origins of the Digital Continuity Action Plan

A key outcome for the New Zealand public sector is that information important to New Zealand is well-managed and kept safe, for use by present and future generations and is available for ongoing service delivery and reuse as a core publicly funded asset. Archives New Zealand has led the development of a Digital Continuity Action Plan to ensure that public sector digital information is appropriately maintained and is accessible for as long as it is needed. While Archives New Zealand is mandated to lead this work, it must be recognised that achieving digital continuity across the public sector will require the expertise of a range of agencies and will be undertaken within the wider international context.

3.2 Process of development

Development of this document has been multi-lateral, involving external agencies by means of a strategic advisory group, as well as discussion with individual stakeholders. A comprehensive consultative process has also been undertaken which reached a wide audience and facilitated active, engaged consultation and considered feedback.

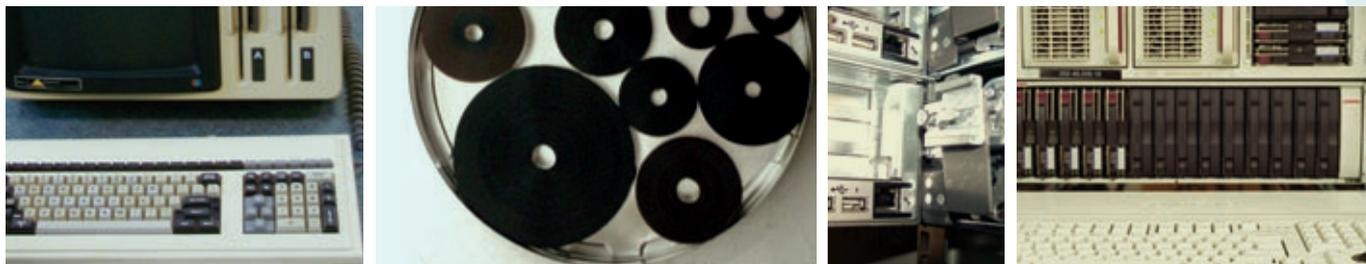
The Digital Continuity Action Plan will continue to be a living document and will be updated on a regular basis to reflect the progress that has been made, goals achieved and advances in research and development. The action plan will also be continuously assessed against the monitoring and review mechanisms that will be established as part of the project's governance framework. The lead driver for redeveloping the action areas will be the results of ongoing evaluation of its effectiveness.

3.3 Acknowledgements

The input from members of Archives New Zealand's Digital Continuity Strategic Advisory Group in the development of the Digital Continuity Action Plan is gratefully acknowledged.

3.4 Structure of this document

The document is divided into three parts. The first part provides an overview of the current background and information environment. Fundamental concepts addressed are digital continuity, the purpose of the action plan, the expected outcomes and its rationale. This section sets out the background and scope of the Digital Continuity Action Plan.



The second part sets out the action plan's high level goals for public sector digital continuity, and articulates the specific actions identified in the six goals at a tactical level.

Thirdly, the New Zealand context is described, including existing digital information initiatives. A brief overview of key overseas initiatives is also provided.

3.5 Key terms

Digital continuity – the ability to ensure digital information is accessible and usable by those that need it for as long as it is needed. Digital continuity conveys notions of persistence, continuation of resources, efficiency and stability. It can be seen as mitigating against the loss of, or destruction of, digital assets; or the unauthorised consumption of restricted information. Digital continuity focuses on the long-term management and exploitation of digital assets.

Digital preservation – the long-term, error free storage of digital information, for the entire time span the information is

required for, through the impacts of changing technologies, including support for new media and data formats. The stored digital information must be able to be decoded and rendered into usable representations, making it available for readable access. Digital preservation focuses on the long-term storage of digital assets.

Public sector digital information – this term includes digital information in all formats and of all types created, used or received by public sector agencies in the course of business (see section 4.3).

Did you know?

Sixty-seven percent of New Zealand public sector agencies hold some information that they can no longer access.

Technological obsolescence puts public sector digital information at risk.

04

BACKGROUND AND SCOPE

Digital continuity is the ability to ensure digital information is accessible, usable and reusable by those who need it for as long as it is needed.

4.1 Digital continuity – what is it?

Continuity conveys notions of persistence, continuation of resources, efficiency and stability. It can be seen as mitigating against: the loss of a valued artefact; the destruction of digital assets; or the unauthorised consumption of restricted information.

For digital information to be accessible over time there are certain requirements:

- public sector digital information is created with long-term management issues in mind
- there is motivation to provide enduring access to public sector digital information
- agencies have access to suitable technological infrastructures for managing public sector digital information
- there are adequate financial, technical and human resources available
- these resources are sustainable and viable over time.

Digital continuity is the union of technical action, planned infrastructure, social drivers and economic sustainability.

These four cornerstones must be in place to ensure the continuity of digital objects. Actions to manage and maintain information created on paper and in other traditional formats have always had to deal with these considerations:

- technology in some form has always been required to make sure information survives
- planned and suitable infrastructure has always been needed to be able to successfully store materials
- the public increasingly expects quality service delivery and protection of their personal information
- the skills and talent of staff to manage public sector digital information have always been in demand, and all long-term enterprises need ongoing sustainable resourcing.

4.2 Why do we need an action plan?

Information and communication technologies (ICT), particularly the use of networked technologies and digitally transmittable information, are enabling continually evolving advances in the way the public sector delivers services and interacts with citizens. Digital information supports public

Did you know?

Failure to implement digital continuity strategies will result in irretrievable loss of information.

An estimated 10 percent of the Canadian Government's digital information is already no longer readable.²

A recent study by the National Science Foundation in the US found that the average cost of recreating just 20 MB of data was \$64,000.³



sector transactions, policy development, monitoring and accountability, as well as research, justice, education, health, economic development and social benefits for New Zealanders. To continue to deliver these benefits over time, it is necessary for digital information to continue to be available and reliable. Digital continuity is a prerequisite for undertaking effective business in the 21st century.

The shift to digital creation of information and ICT-based business processes, while enabling innovation in the way business is carried out and the interaction between people, has created challenges to those tasked with managing and sustaining the resulting information. It is recognised at the highest level that digital information cannot be cared for in the same way as that created or maintained on paper and other analogue formats. It requires sustained resources and positive, frequent actions and planned intervention to ensure any degree of integrity and accessibility.

Archives New Zealand's 2008 recordkeeping survey found that 67 percent of public sector agencies hold some information that they can no longer access, including information on

obsolete storage media, without controlling indexes, saved or archived without appropriate metadata or on unreadable software or hardware.⁴ Furthermore, it is a concern that only 41 percent had implemented, or plan to implement, a strategy to ensure accessibility of records that are currently inaccessible. This is a challenge that will continue to grow with only 49 percent of public sector agencies having procedures in place for creating and maintaining electronic documents and only 39 percent having procedures in place for managing emails. A report commissioned by Archives New Zealand and the National Library of New Zealand on the public sector's readiness for digital preservation⁵ noted a lack of policies for the preservation of digital materials and that senior management were largely unaware of the issues and their responsibilities.

2 <http://www.nationalarchives.gov.uk/electronicrecords/digitalcontinuity/default.htm>

3 <http://www.nationalarchives.gov.uk/electronicrecords/digitalcontinuity/default.htm>

4 Archives New Zealand, Recordkeeping Survey Results 2008.

This figure includes formats that are inaccessible due to damage, which may include some non-digital record formats.

5 Dorner, et al., 2006.

Did you know?

Public sector digital information has a commercial as well as evidential and cultural value. Revenues to the United Kingdom Government from the sale and licensing of public sector information are currently around £340 million per year.⁶ The United Kingdom Ordnance Survey estimates that public sector information underpins £100 billion per year of economic activity and the total market for public sector information stands at £590 million per year. Yet, direct revenues from United Kingdom public sector information are considered to be only a fraction of the wider value that this information creates.

The Digital Continuity Action Plan articulates the key high level public sector digital continuity issues, and details tactical approaches for dealing with them, in order to enable effective digital public sector service delivery over time.

4.3 Scope and coverage

The scope of this action plan is the continuity of public sector digital information. This term includes digital information in all formats and of all types created, used or received by a public sector agency in the course of its business. Although the individual agencies that the action plan applies to are defined in Figure 1, the principles and approaches will also be useful for the private sector especially where public-private approaches to achieving these actions are initiated.

4.3.1 Which public sector agencies are covered?

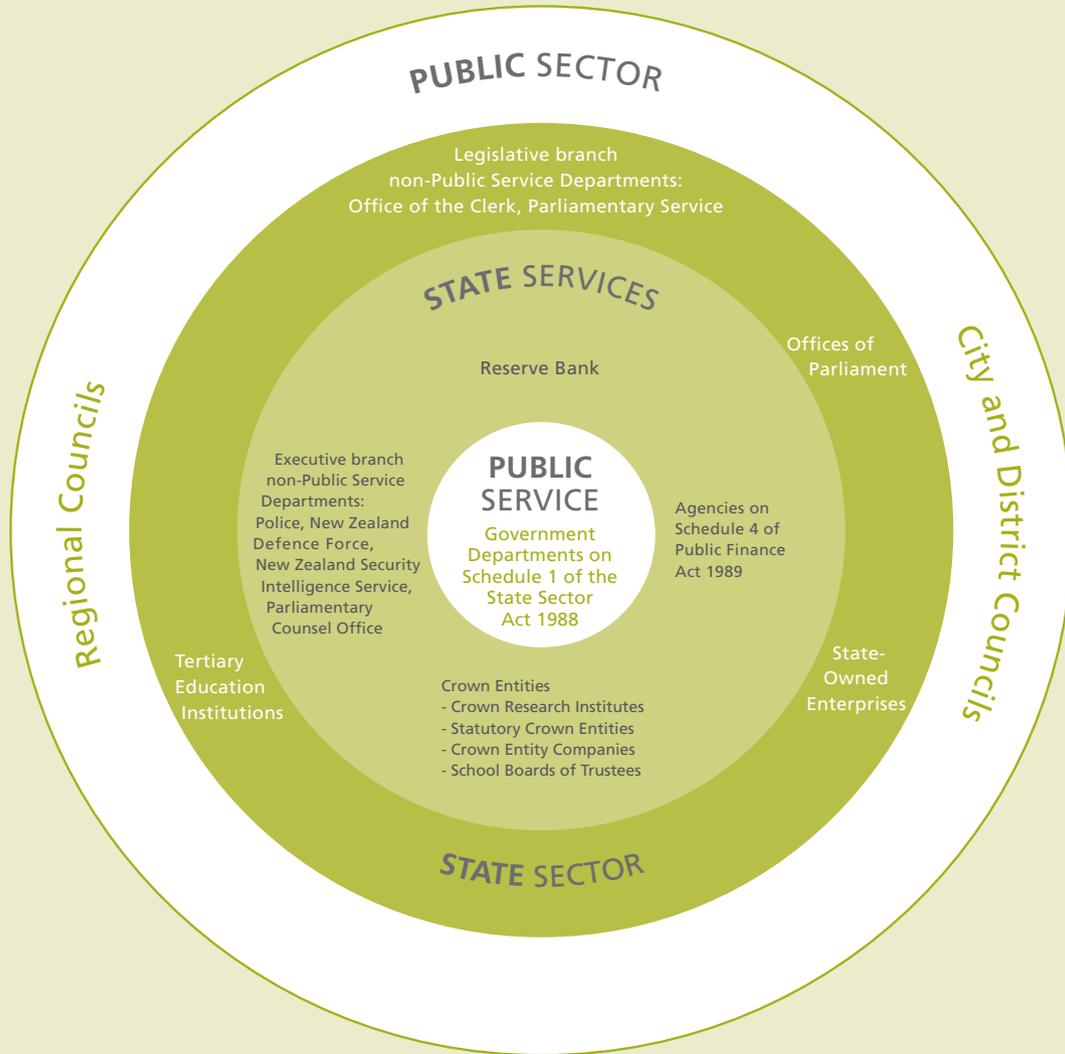
A staged approach is envisaged, with central government departments the first to implement this action plan. Furthermore a differentiated approach is likely; not all public sector agencies will be affected by each of the actions.

The action plan covers the entire public sector; a full list of the agencies covered by this definition can be accessed at the State Services Commission's website at:

<http://www.ssc.govt.nz/display/document.asp?DocID=6811>

⁶ The Power of Information: An independent review by Ed Mayo and Tom Steinberg, http://www.cabinetoffice.gov.uk/~media/assets/www.cabinetoffice.gov.uk/strategy/power_information%20pdf.ashx

Figure 1. Public sector agencies.



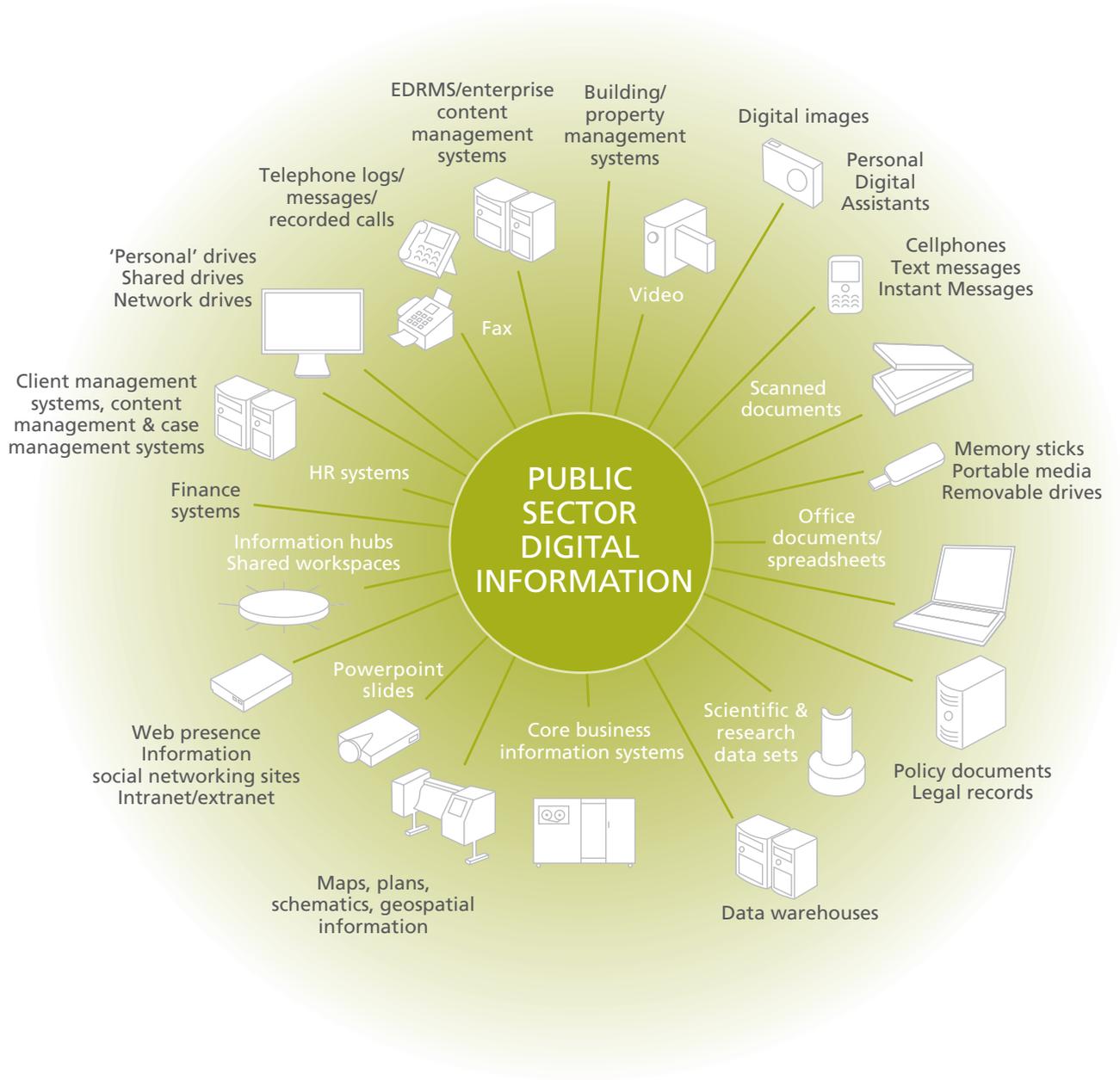
Did you know?

Digital continuity is of concern worldwide. UNESCO's Charter on the preservation of the digital heritage emphasises the critical role of digital preservation for global culture⁷. The wording of the UNESCO charter, therefore, resonates for New Zealand on two levels; firstly, as a country committed to recognising a bicultural past, present and future; and secondly as a small country, geographically remote from major population centres.

It is important to set out the scope of the activities that this action plan will cover. It is concerned with the continuity of public sector digital information and not primarily focussed on the decision-making processes of how, or why, the information was created originally or the rationale for the retention of the information.

THE SCOPE OF THE ACTION PLAN INCLUDES:	THE SCOPE OF THE ACTION PLAN DOES NOT INCLUDE:
Continuity of public sector digital information	Continuity of other digital information
Continuity of both publicly available and confidential information, including personal, 'commercial in confidence' and security classified information	Decisions on defining which information is confidential, personal 'commercial in confidence' or security classified
Ensuring public sector information remains accessible when needed	Promotion of public access to public sector digital information
Decisions on which public sector digital information assets to sustain over time	Decisions on which public sector information to capture in digital form
Guidance on how to capture public sector digital information (eg, formats and standards) in order to enable continuity	Guidance on which public sector digital information to capture
All digital versions of the same information held by the public sector	Non-digital and non-public sector versions of the same information
Continuity for however long the public sector digital information is required – including preservation in perpetuity	Long-term continuity of non-digital public sector information
Continuity of public sector digital information that has been digitised from other sources	Decisions on when to carry out digitisation processes on non-digital public sector information

Figure 2. Common public sector digital information types and platforms.⁸



⁸ This diagram is not exhaustive and is for illustrative purposes only.

Did you know?

The United Kingdom's National Archive estimates that it holds enough information to fill about 580,000 encyclopaedias in formats that are no longer widely available.⁹

4.3.2 What public sector digital information is covered?

Public sector digital information comes in many forms and is created, stored, transmitted and held in a variety of file formats, platforms, programmes, applications and hardware environments. The diversity of information types and platforms means that there is unlikely to be a single system solution to digital continuity.

The aim of implementing digital continuity actions is to maintain information according to its utility, business/legislative value (or reuse value) regardless of its carrier, format or where it is stored or managed. Therefore, the action plan is not limited to any specific information types and seeks to address all public sector information that is deemed to be of value.

4.4 What are the issues?

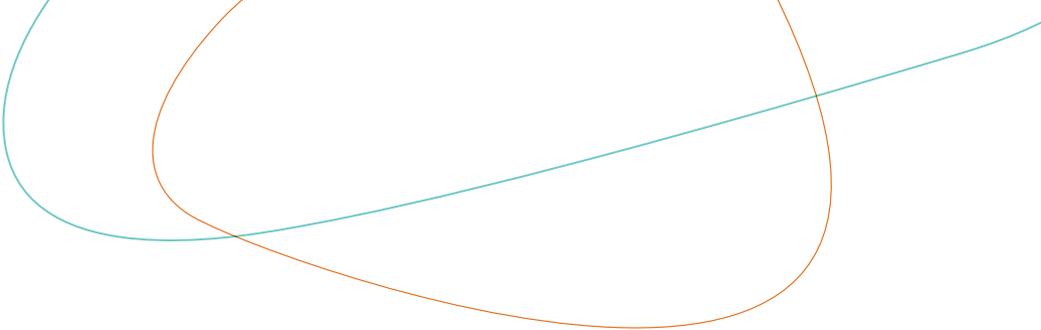
The fundamental issues are:

- public sector digital information is created in a large number of different software programmes (or versions of the same programme). These software platforms change regularly,

often excluding the accessibility of information created on older versions and demanding migrations to new versions

- storage solutions for information also change and deteriorate (often in a surprisingly short time)
- the way that information is created changes from person to person and agency to agency. This leads to problems in information retrieval, sharing, management, reuse and understanding both internally and externally
- information deemed to be of long-term value will pass through a large number of technology environments, challenging its authenticity and accessibility
- increasing application of technological digital rights management (DRM) presents risks (as well as potential benefits) to public sector digital information
- increased ability to access information means that there is a high risk of information that needs to be protected due to its sensitivity becoming globally available. This includes information relating to Māori, personal information, 'commercial in confidence' and security classified information.

⁹ <http://news.bbc.co.uk/2/hi/technology/7886754.stm>



The challenges of digital continuity are so evident that it is unsurprising that many sectors and communities have begun to respond with strategies and initiatives. The creation of large amounts of public sector digital information in myriad formats poses management, access and continuity challenges for all agencies. Across the public sector, the following are required:

- common statement on digital continuity issues
- common approach to address these issues
- clear articulation of roles and responsibilities of different participants
- current, consistent, comprehensive and transparent evaluation of which public sector digital information is to be maintained.

This action plan aims to address these needs.

4.5 What will be the outcomes of the action plan?

The action plan will enable the efficient and effective management of public sector digital information. It will help to minimise barriers to cross-agency information sharing, collaborative working and duplication of effort in long-

term public sector digital information management. Effective information management is a key prerequisite of efficient and well informed decision making and better service delivery. It enables agencies to add value to their existing investment by working smarter.

4.5.1 Economic benefits

Digital continuity and preservation are new areas where there are not yet proven, commercially available solutions. A robust cross-agency infrastructure for digital continuity should result in significant economic savings, as it will remove the need for each public sector agency to develop its own solution independently. This is likely to generate cost efficiencies across the public sector and reduce duplication of expenditure. Investment in this area should generate further economic benefits through the development of intellectual capital. Public sector innovation in this area can be expected to have spin-offs for the New Zealand commercial sector, for example, the cost efficient development of digital archive management tools and systems. Greater accessibility will enable greater use which

will in turn increase the value of that information – paying for the creation of information once, then benefiting from its informational content many times over.

4.5.2 Protecting the rights of New Zealanders

The ongoing existence of public sector information is essential to support New Zealanders in obtaining their rights and entitlements. Public sector digital information documents people's rights to property, to passports, to benefits, to compensation and to justice. Public sector digital information resources are often the data bank from which New Zealanders draw opportunities for local history, genealogical and whakapapa research. Trusted public sector information can provide a critical resource for reconciliation of past wrongs in order to build together towards the future.

4.5.3 Reusing New Zealand's information assets

Over time, the careful safekeeping of public sector information has generated an invaluable store of New Zealand's historical data and information. These assets are now created in digital forms. Continuity of public sector

digital information into the future is vital to ensure that New Zealand's stories are recorded, researched, questioned and ultimately strengthened. Digital information can also be used and repurposed by the creative sector to showcase New Zealand and its interactions and relationships with other nations. The broader commercial sector also has a keen interest in repurposing New Zealand's knowledge bank not just for tourism, but for new online business initiatives with the internet genealogy industry alone estimated at US\$200 million annually.¹⁰

An exponential rise in the access and use of archives as a social and commercial resource can be expected when they are available digitally and online. During 2006/07, there were over 55,000 physical archives issued in Archives New Zealand's four reading rooms by over 16,000 visitors. Given the reported experiences of online usage of Australia's and the United Kingdom's National Archives, a tenfold increase can be expected in New Zealand when our informational assets are digitally accessible to the general populace and the market.

¹⁰ <http://genealogy.about.com/library/weekly/aa011502a.htm>



Photo: AAQT6539 A90393 Social Security Department, Courtesy of Archives New Zealand.

4.5.4 Smarter use of resources

The consolidation of information technology infrastructure envisaged in this action plan is an initiative that will contribute to public sector efficiencies in terms of equipment and human resources. For users of public sector information, the consequences of remote and digital access will be reduced travel for research and reduced wastage of time in information retrieval. Making our public sector informational assets accessible, usable and reusable digitally will not only reduce the need for travel to access these resources, but also make the information retrievable to all of New Zealand. Smarter, faster, repurposing of the public sector's informational capital will add value to previous public expenditure.

4.6 What are the risks of not having an action plan?

Digital continuity is challenging and globally significant resources are being devoted to finding appropriate solutions. The complexity of this area is such that it is unlikely, if not impossible, that a cost-effective way forward could be navigated by agencies or individuals operating independently. In addition, failure of measures is not a situation that can be remedied; failure will result in irretrievable loss of information.

Consequently a whole-of-public sector approach is essential to provide a well-reasoned and rigorous framework for action.

As it stands, without a Digital Continuity Action Plan:

- disparate solutions will be created to address continuity challenges, leading to inefficiencies and financial wastage through duplication of effort
- investments will be made in the wrong areas, missing the key points to be addressed
- evaluation of which public sector information should be kept or destroyed will be ad hoc and inconsistent, opening the public sector up to risk and unnecessary expenditure recreating lost data
- the issue will not be addressed at all by agencies, leading to public sector digital amnesia and the inability to conduct business
- not all stakeholder groups that utilise public sector information may be considered and served.

05

OBJECTIVE

The overarching aim of this initiative is to provide the framework for an environment where individual agencies do not have to supply the technological and human resources and expertise necessary for the implementation of actions and methodologies that support digital continuity and preservation on an uncoordinated, individual basis.

Customer service in terms of citizens' access to information will be sustainable, coordinated and financially prudent. The ultimate aim can be succinctly stated as follows:

Public sector digital Information is trusted and accessible when it is needed, now and in the future.

The key messages are:

There when you need it

Public sector digital information will be maintained so that it can be accessed when it is needed.

Some information is required only for a few months or years. A small proportion needs to be preserved in perpetuity for future use.

Authentic and reliable

Public sector digital information is tamper-proof and free of technological digital rights restrictions. It can be trusted to be authentic and reliable.

Trusted access

New Zealanders can be confident that they will be able to find, retrieve and use all public sector digital information that can be made publicly available, and that their sensitive information will be protected from unauthorised access.

Do nothing, lose everything

If no action is taken, public sector digital information will be lost. A proactive approach to maintain information for the future is necessary to prevent loss of irreplaceable information assets.

In the current context, raising awareness of the problem space, coherence in public sector digital information management, and standardised public sector data services would have a substantial positive impact on setting foundations for sustainable digital continuity.



06

GOALS AND **ACTIONS**

The high level goals, actions and potential future initiatives are summarised below, and discussed in the following text.

The actions listed below are either:

'Existing' – these projects are underway, or have been initiated

'Planned' – these projects have not been started, they are planned to start using allocated resources but could be increased in scope with additional funding

'Potential future initiative' – these projects are not yet at the business / work planning stage and would require additional funding to be actioned.

GOALS	ACTIONS
<p>Understanding: Those responsible for public sector digital continuity communicate effectively with each other and have a common understanding of the problem space.</p>	<ul style="list-style-type: none"> · Raise awareness of public sector digital continuity issues at a strategic level · Form a community of practice which crosses professional, occupational and international boundaries · Harmonise existing legislative definitions and compile a glossary
<p>Well-managed from day one: All public sector digital information is well-managed from the point of creation onwards.</p>	<ul style="list-style-type: none"> · Develop a comprehensive framework of standards and guidance · Monitoring and audits · Support appropriate business information systems design and procurement
<p>Infrastructure: Robust cross-agency infrastructure exists to support the interoperability of systems and efficient digital continuity.</p>	<ul style="list-style-type: none"> · Implementation of the National Digital Heritage Archive · Leverage the public sector's investment in existing digital continuity initiatives <p>POTENTIAL FUTURE INITIATIVES</p> <ul style="list-style-type: none"> · Ensure New Zealand public sector has comprehensive digital archiving capability · Investigate cross-agency infrastructure for storage and retrieval of digital information
<p>High-value information kept: High-value information is identified, so that business critical information is not concealed in the digital landfill.</p>	<ul style="list-style-type: none"> · Analyse the functions of public sector agencies to identify high-value digital information that will need to be kept long term · Target at-risk areas of digital public sector information
<p>Trusted access: The public sector and citizens are able to access digital information now and in the future, and information is protected from unauthorised access and use.</p>	<ul style="list-style-type: none"> · Government information and data reuse · Ensure that access restrictions can be applied and maintained to certain types or categories of information · Understand implications for Māori and ensure these perspectives are taken into account
<p>Establish good governance: Information management across the public sector is characterised by good governance, leadership and accountability.</p>	<ul style="list-style-type: none"> · Identify lead and specialist agencies and articulate responsibilities · Investigate the need for, and role of, a governance body

6.1 Understanding

The focus of this goal is that those responsible for digital continuity in the public sector communicate effectively with each other and have a common understanding of the problem space. Discussion of digital continuity issues is hampered by the use of inconsistent language and terminology. Digital 'stuff' is variously referred to in different contexts as records, information, documents, content, data, assets, etc. At the same time, an effective collective response to digital continuity needs to draw on expertise and experience from all sectors and disciplines. Similarly it is important not to lose, through unnecessary jargon and complexity, the connection between digital continuity and the policy and business outcomes that it supports.

The problem is compounded by the fact that roles and responsibilities in the traditional information management domains are becoming blurred (see also 6.6. Establish good governance, below). With misunderstandings occurring within and between professional groups, the communication of clear and unambiguous messages to external audiences is even more unlikely. Although various interest groups exist both locally and internationally a more formal, collaborative workspace for the exchange of experience, ideas and best practice across sectors is lacking. Current practice does not, therefore, create an environment that is particularly conducive to sustained research and innovation in digital continuity.

▼ Action	Lead	Timing	Status
<p>6.1.1 RAISE AWARENESS OF DIGITAL CONTINUITY ISSUES AT A STRATEGIC LEVEL</p> <p>A comprehensive communication plan will be developed, taking into account existing channels and special interest groups such as the Australasian Digital Recordkeeping Initiative (ADRI), National Digital Forum (NDF) and Government Information Systems Managers Forum (GOVIS), etc. Archives New Zealand is undertaking preparatory work and providing guidance in this area.</p>	Archives New Zealand	2009/10 Then ongoing	Planned

Did you know?

The average life of a piece of digital information is just 5-7 years.¹¹ Given the speed with which technological capabilities are developing, digital preservation is essential to avoid the consequences of technological obsolescence and subsequent reliance solely on human memory. Furthermore, this constant evolution of technology means that the strategies, techniques and tools used for preservation also have to continue to evolve in tandem. The ability to access information in the future depends on this happening.

▼ Action	Lead	Timing	Status
<p>6.1.2 FORM A COMMUNITY OF PRACTICE WHICH CROSSES PROFESSIONAL, OCCUPATIONAL AND INTERNATIONAL BOUNDARIES</p> <p>Including and encouraging representation from all occupations contributing to digital continuity is essential to encompass all sectors working in this area. This includes both public sector agencies and their commercial and research partners. Successful formation of this community of practice will foster research and innovation. Monitoring and incorporating relevant acumen and expertise from the international community will feed into and inform the New Zealand context. Existing communities of practice can be leveraged.</p>	Archives New Zealand	2009/10 to 2010/11 Then ongoing	Planned
<p>6.1.3 HARMONISE EXISTING LEGISLATIVE DEFINITIONS AND COMPILE A GLOSSARY</p> <p>Digital information is addressed by a variety of legislative instruments both explicitly and by inference. There is a need to first identify all pertinent definitions, and second ensure that there is consistency. This harmonisation activity will also highlight areas of overlap, contradiction and/or gaps. An authoritative and up-to-date glossary of specialist terms can then be compiled as an essential tool to underpin all future collaborative work.</p>	Archives New Zealand	2009/10	Planned

¹¹ The National Archives, United Kingdom, 2007.

6.2 Well-managed from day one

The focus of this goal and associated actions is to ensure that all public sector digital information is well-managed from the point of its creation onwards for business purposes and efficient service delivery, regardless of whether it is considered to have archival value. Digital continuity starts with system design and information capture. However, in practice, active consideration of issues frequently begins only when factors such as storage capacity limitations or technological change require action. This is undesirable, as previous decisions can be significant in terms of the cost or feasibility of preservation options at this point. There are a number of information initiatives, strategies and standards underway that address aspects of the digital continuity problem, but no comprehensive plan to ensure that the information environment within the public sector is conducive to continuity.

The provision of a comprehensive standards and guidance framework will assist in ensuring that awareness of digital continuity occurs at appropriate points. However, this will still leave the burden of responsibility for digital continuity with the creating agency. The complexity of digital continuity is such that it is unlikely, if not impossible, that agencies operating independently with uncoordinated expenditure will be a cost-effective way of addressing the problems of long-term storage of digital information.

The following actions are proposed to address these issues, and to achieve the goal of well-managed digital information from day one:

▼ Action	Lead	Timing	Status
<p>6.2.1 DEVELOP A COMPREHENSIVE FRAMEWORK OF STANDARDS AND GUIDANCE</p> <p>This framework will include all relevant New Zealand standards and guidance, regardless of issuing institution, to encompass the creation and maintenance of all types of public sector digital information. Issues to be considered here are what gaps exist, whether standards should be mandatory (and if so, which ones) and to what level of specificity (eg, prescribing a limited number of file formats for given document types).</p>	Archives New Zealand	2009/10 to 2011/12 Then ongoing	Planned

Did you know?

Research undertaken by the British Library estimates that the delay caused by accessing and preserving old digital files costs European businesses about £2.7 billion a year.¹²

▼ Action	Lead	Timing	Status
<p>6.2.2 MONITORING AND AUDITS</p> <p>A monitoring system to check on compliance with standards will be developed. The scope of this monitoring system will encompass measuring the success of the Digital Continuity Action Plan. The system will be run in conjunction with the independent audits of agencies' recordkeeping practices required under the Public Records Act 2005 commencing in 2010. Both of these tools will assist in ensuring best practice in managing new and current public sector digital information.</p>	Archives New Zealand	2010/11 Then ongoing	Planned
<p>6.2.3 SUPPORT APPROPRIATE BUSINESS INFORMATION SYSTEMS¹³ DESIGN AND PROCUREMENT</p> <p>For digital continuity to be successfully implemented across the public sector appropriate information management functionality will have to be integrated into business information systems. For this, leadership and guidance are required. Support mechanisms, standards and advice are needed to ensure quality spend, when designing, selecting, implementing and decommissioning business information systems for these specific areas of functionality, particularly electronic document and records management systems (EDRMS). Engagement with vendors and the wider private sector will be crucial in achieving these aims and understanding the existing public sector digital information environment.</p>	Archives New Zealand (with support from Government Technology Services)	2009/10 to 2011/12	Planned

¹² <http://news.bbc.co.uk/2/hi/technology/7886754.stm>

¹³ Business information systems are any automated systems that create or manage digital data about business activities, and / or are used to undertake public sector business and service delivery. This includes both transaction-based business applications (for example, e-commerce systems, data warehouses, transactional databases), and business support systems such as finance systems, human resources systems, electronic document and records management systems (EDRMS) or enterprise content management systems.

6.3 Public sector infrastructure

The focus of this goal and associated actions is the planning and provision of a robust infrastructure to enable interoperability between systems and value for money digital continuity and preservation implementations. Individual initiatives do not necessarily relate effectively or establish a platform for interoperable public sector efficiencies. Inconsistent practices can hinder federated search and other cross-platform information discovery and retrieval aims. Similarly, efficient transmission from current information systems to long-term repository environments is much more difficult and costly when originating systems vary widely and unique tools need to be crafted on an ongoing ad hoc basis.

It is essential that systems and technologies used by agencies are compatible, and there is standardisation across the public sector to enable efficiencies in information use and reuse. This consideration not only supports digital continuity but provides a rationale for the deployment of technology to add value. Lack of system compatibility and interoperability will act as a future roadblock to seamless cross-agency service delivery, agile decision making and efficiencies of expenditure in technological and human resources.

The following actions are proposed to address these issues, and to achieve the goal of public sector interoperability and cost-effectiveness:

▼ Action	Lead	Timing	Status
<p>6.3.1 IMPLEMENTATION OF THE NATIONAL DIGITAL HERITAGE ARCHIVE</p> <p>The National Digital Heritage Archive (NDHA) has been developed by The National Library as a digital preservation solution that ensures the ongoing collection, preservation and accessibility of New Zealand's published digital cultural heritage. The NDHA is a system of software applications that support a digital storehouse for the websites, sound and vision files, digital images and other born-digital and digitised items that make up New Zealand's growing digital heritage collections.</p>	National Library of New Zealand	2006/7 to 2011/12	Existing
<p>6.3.2 LEVERAGE THE PUBLIC SECTOR'S EXISTING INVESTMENT IN DIGITAL CONTINUITY INITIATIVES</p> <p>Digital New Zealand, the Statistics New Zealand Data Archive, Kiwi Research Information Service (KRIS) and other institutional repositories and initiatives are of key importance to the consideration of digital continuity in New Zealand. They represent key capability resources and provide potential for the development of cross-agency infrastructure.</p>	Statistics New Zealand, others as required	2009/10 to 2011/12	Existing

▼ Action	Lead	Timing	Status
<p>6.3.3 ENSURE NEW ZEALAND PUBLIC SECTOR HAS COMPREHENSIVE DIGITAL ARCHIVING CAPABILITY</p> <p>The coordination of technology configuration, leveraging existing staff expertise and the development of a coherent custodial model, will be necessary for this outcome to be achieved. Undertaking this approach will facilitate the most cost-effective approach to long-term management of digital archival information.</p> <p>This action involves the coordination of secure and trusted digital repositories for the preservation of significant public sector digital archives for future generations.</p> <p>An online interface to digital and digitised archives will enable far greater access to public sector digital information by New Zealanders than could be envisaged in the analogue environment, regardless of their location in the world.</p>	Archives New Zealand	2–5 years	Potential future initiative
<p>6.3.4 INVESTIGATE CROSS-AGENCY INFRASTRUCTURE FOR STORAGE AND RETRIEVAL OF DIGITAL INFORMATION</p> <p>This action takes a whole-of-public sector approach to the storage of digital information. It would include information required only for the short-term, as well as that kept for the future. This collaborative approach would make the best possible use of the limited capability to deal with medium and long-term digital preservation, and therefore significantly reduce the burden on individual agencies to resource this work.</p> <p>The model of service provision could be either centralised or decentralised, and could involve partnerships with the commercial sector. This may include such options as collaborative approaches to information management and archival storage services, and could be funded through sector-wide initiatives or in partnership with commercial providers.</p> <p>The collaborative approach would substantially reduce the risk of public sector digital information becoming inaccessible.</p>	Archives New Zealand, with Government Technology Services	1–2 years	Potential future initiative

6.4 High-value information kept

Not all public sector information needs to be kept for the long term. The focus of this goal is the considered identification of the 'right' public sector digital information, which has long-term business value at a whole of public sector level. This provides a basis for determining how long, or if, different information sets need to be kept and what subset of public sector digital information is significant enough to be preserved for the long-term. Quality information access, focussing on the high value information, supports timely retrieval of business information. Disposal of 'chaff' helps to identify the business critical content. Only by taking a proactive, whole-of-public sector approach, can we be confident that all high-value public sector digital information is identified. We must ensure that the information we need today is not lost or buried in the digital landfill. Digital continuity is not just about preservation, it is ensuring that information is identified, accessible and usable for as long as it is needed.

Engagement with digital continuity is uneven across the public sector. Existing initiatives cover a few specific areas of public sector information; however they do not represent a deliberately chosen set of priorities for a broad cross-sector digital continuity framework.

The following actions are proposed to address these issues, and to achieve the goal of capturing and preserving high-value public sector information:

▼ Action	Lead	Timing	Status
<p>6.4.1 ANALYSE THE FUNCTIONS OF PUBLIC SECTOR AGENCIES TO IDENTIFY HIGH-VALUE DIGITAL INFORMATION THAT WILL NEED TO BE KEPT LONG-TERM</p> <p>This will include an investigation of the functions and activities of the public sector to determine the information which is of the most value and enable removal of redundant information. Prioritisation can then take place to identify and target the agencies that can be identified to have the highest value information and / or with limited capability and resources to manage them appropriately.</p>	Archives New Zealand	2010/11	Planned
<p>6.4.2 TARGET AT-RISK AREAS OF PUBLIC SECTOR INFORMATION</p> <p>This will include the consideration of data formats, platforms and storage media. This analysis will provide the basis for a staged approach to whole of public sector digital continuity, and enable the targeting of scarce resources and expertise.</p>	Archives New Zealand	2009/10	Planned

6.5 Trusted access

The Digital Continuity Action Plan is crucial to the ongoing aim of creating a digital New Zealand public sector. It underpins the creation of information, continued access to information and ensures that it can be understood for use and reuse by New Zealanders into the future. There is however a tension between freedom of information and privacy requirements for personal information; complexity is further increased by the need to be aware of and sensitive to cultural considerations and to protect New Zealand's security and commercial activity. The intent of this goal is that people are able to access digital information now and/or in the future, taking into account legislative and cultural requirements to protect information from unauthorised access.

The following actions are proposed to address these trust and security issues:

▼ Action	Lead	Timing	Status
6.5.1 GOVERNMENT INFORMATION AND DATA REUSE This action will help create the conditions that encourage reuse of government non-personal information and data for the benefit of the New Zealand economy and New Zealanders. The deliverables will include a Copyright and Information Licensing Toolkit and guidance for semantic publishing of unstructured data.	State Services Commission	2008/09-2009/10	Existing
6.5.2 ENSURE THAT ACCESS RESTRICTIONS CAN BE APPLIED AND MAINTAINED TO CERTAIN TYPES OR CATEGORIES OF INFORMATION This will involve the identification of types or categories of public sector digital information that may need to be protected for varying periods of time. This will feed into the future development of trusted digital repositories to provide flexible yet secure access requirements.	Archives New Zealand with State Services Commission and Office of the Privacy Commissioner	2011/12	Planned
6.5.3 UNDERSTAND IMPLICATIONS FOR MĀORI AND ENSURE THESE PERSPECTIVES ARE TAKEN INTO ACCOUNT. Approach to be determined through continuing consultation with Māori representative groups and stakeholders.	To be determined	2010/11	Planned

6.6 Establish good governance

The focus of this goal and associated actions is to ensure that digital continuity across the public sector is characterised by good governance, leadership and accountability. Allocation of roles and responsibilities across agencies is currently unclear, although specialist sectors such as geospatial information, or official statistics, are characterised by explicit and clear governance models.

The following actions are proposed to address these issues, and to achieve the goal of a good governance layer for digital continuity:

▼ Action	Lead	Timing	Status
<p>6.6.1 IDENTIFY LEAD AND SPECIALIST AGENCIES AND ARTICULATE RESPONSIBILITIES</p> <p>The role of lead agencies will be to harmonise existing mandates and to ensure that negotiated and unambiguous responsibilities are assigned for specific data types and sectors. Furthermore, designated leadership will help ensure that other all-of-public sector initiatives work collaboratively.</p>	Archives New Zealand with State Services Commission	2009/10	Planned
<p>6.6.2 GOVERNANCE BODY</p> <p>The issues to be explored will include consideration of the appropriateness of a governance body, its responsibilities and whether there is a suitable model in place for such a body.</p>	Archives New Zealand	2009/10	Existing

Did you know?

In the right conditions, paper or parchment can survive almost by accident and with appropriate remedial treatment restoration is possible. The Treaty of Waitangi provides a good example of this at least initial 'accidental survival'. In 1841, the Treaty documents were stored in a safe, transferred to Wellington in 1865, and hardly seen again until 1908. Initial preservation attempts were made at that time to counteract the damage made by water, time and rodents, but it was not until 1966 that further conservation actions were undertaken¹⁴. This benign neglect would have disastrous consequences for any document created in today's digital age: the chances of being able to access, read and be assured of the authenticity and origins of a document created on a computer in 1997 and stored digitally are just about zero if no active management strategies have been implemented.

¹⁴ New Zealand History Online



07

THE CURRENT ENVIRONMENT

This action plan does not reinvent the wheel; wherever possible the action plan leverages existing research and development and integrates with existing initiatives.

Listed below are major initiatives identified as sharing the goals and objectives of the action plan. There are also a number of pieces of legislation that require public sector digital information to be well-managed and maintained over time, alignment with these requirements is necessary for the ongoing success of the action plan.

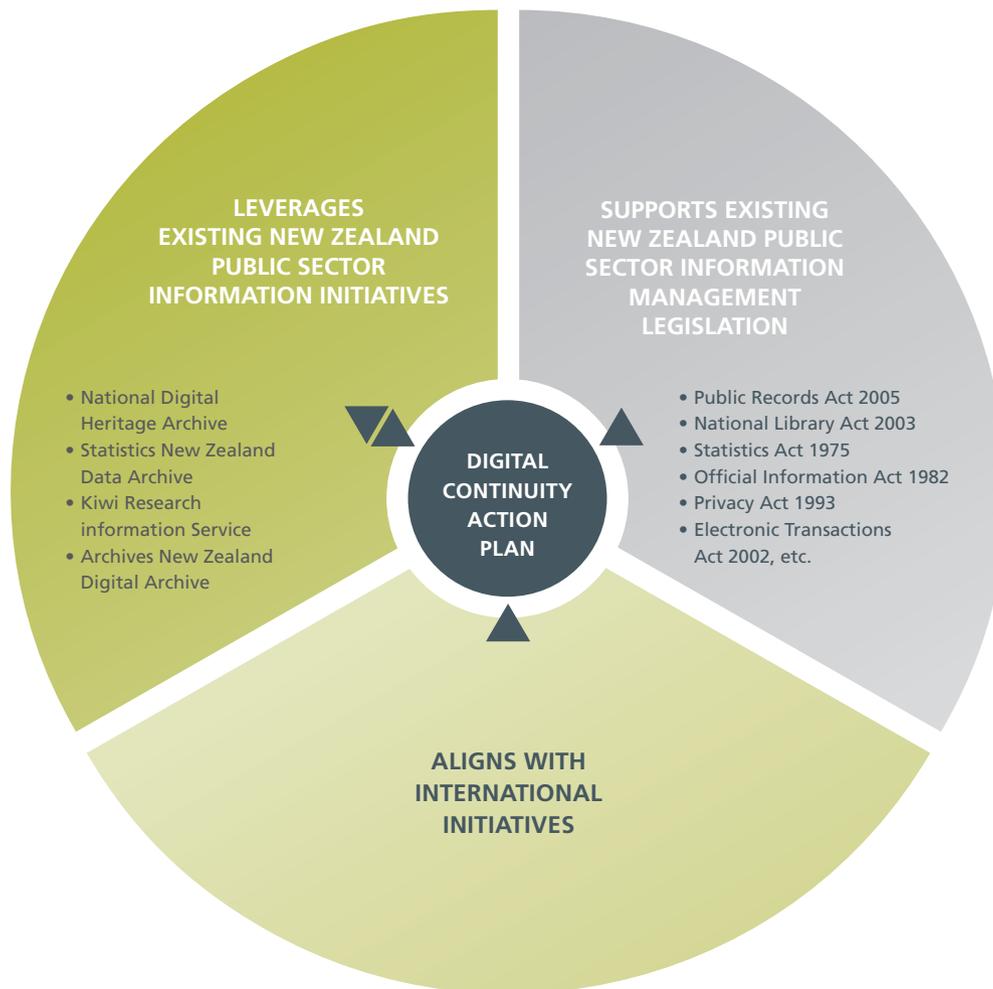
7.1 Legislative environment

A key component in the current legislative environment is the Public Records Act 2005. A fundamental purpose of the Act is to provide a framework for the maintenance of public records – information relating to the conduct of public sector business. The Act mandates Archives New Zealand to take a leadership role in this area, and provides a number of specific powers, such as the authority to issue standards, to control disposal, and to maintain public sector digital records that are 25 years old, or older, in perpetuity. To support this role Archives New Zealand is required to provide a central archive for public sector digital information. These provisions are important tools in support of the Act's objective to ensure a well-managed public record, and recognise the need for coordination. The Act also requires all public sector agencies to create and maintain records of their business. The effective implementation of the Digital Continuity Action Plan will enable this obligation to be met.

There are a number of relevant pieces of legislation which address public sector digital information, including the provisions of the National Library Act 2003 for public, electronic and internet documents, and the framework for official statistics set out in the Statistics Act 1975. The boundaries between applications of different laws that require retention of information are not always clear, especially in the digital environment. The Electronic Transactions Act 2002 sets out the requirements for trusted digital communication, digital signatures and which types of information are legally acceptable in digital form. Attention will also need to be paid to statutes which mandate access to public sector digital information, such as the Official Information Act 1982, Local Government Official Information and Meetings Act 1987 and statutes which protect personal public sector digital information, principally the Privacy Act 1993. This work advances the Policy Framework for Government-Held Information¹⁵, approved by Cabinet in 1997, which brought together the key purposes of the Official Information Act 1982 and Privacy Act 1993. Achieving the appropriate balance between access and protection of digital information will only be realised if digital continuity issues are addressed.

¹⁵ State Services Commission (1997).

Figure 3. The Digital Continuity Action Plan is part of a broader public sector information framework.





7.2 New Zealand public sector digital information initiatives

There are a number of existing New Zealand initiatives which are already shaping and framing New Zealand's public sector digital information environment. This Digital Continuity Action Plan is inter-related to these other initiatives, either explicitly or implicitly. The challenges of managing digital information, progress towards interoperability and related national approaches have prompted the development of a number of initiatives at a national level, all designed to effectively manage particular aspects of the public sector digital information environment. The resulting environment therefore can usefully be considered as complex, organic and differentiated, rather than as a homogenous system.

7.2.1 E-government in New Zealand

E-government is a way for governments to use the internet and web technologies to provide people with more convenient access to government information and services, to improve the quality of the services and to provide greater opportunities to participate in our democratic institutions and processes. The State Services Commission has been providing a leadership role for the implementation of e-government in New Zealand since 2000. E-government presents New Zealand with exciting opportunities to move forward

into the 21st century with higher quality, cost-effective, government information and services and a better relationship between New Zealanders and their government.

The current *E-government Strategy*, released in 2006, sets out an action plan for agencies to work together to use technology to change the way government works. Key public sector information initiatives include opening up non-personal digital information and data for the benefit of the New Zealand economy and New Zealanders and ensuring that personal data that is used across government is authoritative and well-managed.

7.2.2 Open Government Information and Data Reuse project

The Internet is often the first place New Zealanders search to find information¹⁶. They expect Government's non-personal information to be available across online and other channels and to be released as soon as possible. Government has an opportunity to open up its authoritative non-personal data for use in new ways. This will enable people, businesses and civil society to reuse it to create new products and services for the benefit of the New Zealand economy and citizens.

¹⁶ The internet in New Zealand 2007 final report:
http://www.aut.ac.nz/resources/researchresearch_institutesccr/wipnz_2007_final_report.pdf

Did you know?

In New Zealand, requests for information under the Official Information Act have increasingly specifically targeted emails. Fulfilling these requests has been fraught with difficulty due to inappropriate management and storage of emails.¹⁷

The Public Records Act 2005 requires public offices to maintain records in an accessible form. The Public Records Act will be supported by independent audits starting in 2010.

The State Services Commission is leading a project to help create the conditions that stimulate reuse of this non-personal government information and data for economic and social gain. The commission is working with suppliers and users of this data to consider impediments such as copyright and licensing, pricing and funding and to develop all-of-government guidance and tools to support open government information and reuse.

7.2.3 National Digital Heritage Archive and Digital New Zealand

The National Library of New Zealand is mandated to collect digital entities by legislation (National Library of New Zealand Act 2003). The National Digital Heritage Archive programme (NDHA) will be the National Library's repository for digital heritage assets such as websites, images and digitised copies of print documents and audio-visual recordings. The goal of the NDHA is to preserve these items in their original form and to ensure that they are accessible in the future.

Digital New Zealand is a national collaborative initiative launched in November 2008 and led by the National Library of New Zealand. Digital New Zealand aims to make New Zealand content easier to find, share and use by developing, testing

and implementing tools and technologies for both providers and users of digital content. These include smart search and discovery tools, access to metadata from a range of New Zealand sources, and guidance on creating and sharing digital content throughout its lifecycle. The content includes material from government departments, publicly funded agencies, the private sector, and community groups.

7.2.4 Statistical Data Archive

A review of New Zealand's official statistics system accepted by Cabinet in 2004 identified the need to develop a model to manage statistical data as an 'enduring national resource'. This resulted in the development of a protocol to preserve important official statistics produced across government¹⁸ and the establishment of a data archive at Statistics New Zealand. The purpose of this archive is to provide a single reference point for detailed data from a portfolio of key statistics for government, universities and other researchers. The key statistics are referred to as Tier 1 statistics, and are those that are considered to provide performance measures of New Zealand over time. Other government agencies that produce official statistics may deposit data in the Statistics New Zealand data archive.

¹⁷ Berger, 2006.

¹⁸ 'Protocol 6: Management, documentation and preservation of statistical records', <http://www.statisphere.govt.nz/NR/rdonlyres/3DC56DD3-5AA2-478F-A191-457CBFD13A54/0/PrinciplesandProtocols.pdf>

The responsibilities of the statistical archive include providing the following, related to Tier 1 statistics:

- a metadata archive for surveys, administrative data and integrated datasets
- a unit record data archive, including historical data, and
- the infrastructure to promote data access and facilitate research.

The need for a robust preservation strategy in this domain is emphasised by the choice of wording used to name the management model. An “enduring national resource” clearly signals not only the national importance of this information, but also the need for it to persist and be accessible over time.

7.2.5 Research Information

New Zealand’s research community, including tertiary education providers (universities and polytechnics), Crown Research Institutes, government agencies and individual researchers, has recognised the need for digital storage of research outputs¹⁹. Research outputs are defined in the most general sense, including the whole spectrum from research data to published outputs. The New Zealand Research Agenda signals that online access to publicly-funded research outputs will be developed in partnership with funding and investment agencies and made available to the New Zealand public²⁰. As well as improving access by the public, digital preservation of research outputs allows them to be more efficiently shared and reused by a range of researchers to extract more information and get better value from the initial collection of data.

The Tertiary Education Commission has funded the development of several institutional repositories in the tertiary sector, and a single discovery infrastructure is provided by the National Library’s Kiwi Research Information Service (KRIS)²¹. The Ministry of Research, Science and Technology (MoRST) has recently announced funding for the development of digital repositories for Crown Research Institutes so they can participate in KRIS.

7.2.6 Archives New Zealand

Archives New Zealand has a key role in the digital continuity sphere; in leading thinking about digital continuity and preservation of public sector information. Archives New Zealand is also developing systems and processes for digital continuity and transitioning management of public sector digital archives to Archives New Zealand under the Public Records Act 2005. Archives New Zealand undertakes a programme of activities to support public sector agencies in their responsibilities, and to support good practice, through publishing advice, guidance and standards as part of the *Continuum*²² suite of publications, providing training, forums and expertise to clients, and through providing a platform for communities of practice.

In 2006, the Digital Sustainability Programme was instituted to specifically address the digital continuity issues that have been increasingly visible across the public sector. A digital archive is currently being developed as a repository for storing and managing both born digital and digitised records. It allows Archives New Zealand to transfer some types of digital

¹⁹ National Library of New Zealand (2005).

²⁰ Ministry of Research, Science and Technology, 2008.

²¹ Cullen and Chawner (2008)

²² <http://continuum.archives.govt.nz/recordkeeping-publications.html>

records, and provides a test environment to learn about the kinds of techniques and processes that will be required in a permanent digital archive system. Archives New Zealand is also the custodian of the Trusted Computing/Digital Rights Management Standards and Guidelines (TC/DRM).

7.3 International Information Strategies and Initiatives

There are an extensive number of digital continuity and preservation programmes, projects and initiatives being undertaken globally. Digital continuity is not a nation or sector specific problem and many governments, private sector businesses and organisations are producing strategies, tools, services and frameworks to address this increasingly problematic area. It is not proposed to develop an action plan for New Zealand in isolation and the international scene will continue to be monitored for opportunities to incorporate and leverage existing resources into the New Zealand public sector. There is such a plethora of existing initiatives that it is not possible to reproduce even a small fraction here. Instead a few representative examples have been outlined. As yet, there is no existing project internationally that is directly comparable to New Zealand's Digital Continuity Action Plan, however there are projects internationally which can inform our processes.

7.3.1 The National Archives' Digital Continuity Project and National Digital Archive of Datasets

The National Archives of the United Kingdom's (TNA) digital continuity project²³ is an investigation of the feasibility of developing a shared service to ensure the long-term survival of digital information needed for ongoing government

business. It is funded by central government departments to conduct a full assessment of public sector digital information needs and to provide solutions to address public sector digital obsolescence.

The TNA also administers the National Digital Archive of Datasets which is one of the very few digital archives that not only preserve but also provide online access to digital records. It conserves and provides access to many computer datasets from central government departments and agencies, which have been selected for preservation by TNA dating back to 1963.

7.3.2 Digital Preservation Europe, CASPAR and PLANETS projects

The European Union joint funded Information Societies Technologies group runs a number of research and development activities to strengthen Europe's scientific and technology base and ensure its global leadership in ICT. Digital Preservation Europe (DPE) addresses the need to improve coordination, cooperation and consistency in European activities to secure effective preservation of digital materials.²⁴

The Preservation and Long-term Access through Networked Services (PLANETS) project provides a framework to enable commercial product and service providers to compete in a new market place for differentiated preservation services and tools.²⁵ CASPAR (Cultural, Artistic and Scientific knowledge for Preservation, Access and Retrieval) is an integrated project to provide tools to enable long-term access to and preservation of cultural and scientific resources.²⁶

²³ UK National Archive's Digital Continuity Project

²⁴ <http://www.digitalpreservationeurope.eu/>

²⁵ <http://www.planets-project.eu/>

²⁶ www.casparpreserves.eu/

7.3.3 National Digital Information Infrastructure and Preservation Program

The United States' National Digital Information Infrastructure and Preservation Program²⁷ is a national strategic programme being led by the Library of Congress to preserve digital content. In December 2000, Congress passed special legislation (Public Law 106-554) in recognition of the importance of preserving digital content for future generations, appropriating \$100 million to the Library of Congress to lead this effort.

7.3.4 InterPARES project

The International Research on Permanent Authentic Records in Electronic Systems (InterPARES) Project²⁸ is based at the School of Library, Archival and Information Studies at the University of British Columbia, in Canada. It is a project to develop the knowledge essential to the long-term preservation of authentic records created and/or maintained in digital form. It provides the basis for standards, policies, strategies and plans of action capable of ensuring the longevity of such material and the ability of its users to trust its authenticity.

7.3.5 The Internet Archive

The Internet Archive²⁹ is building and maintaining a free, openly accessible and permanent online archive of the entire surface Web, providing “snapshots of the World Wide Web” (archived copies of pages, taken at various points in time), software, movies, books, and audio recordings accessed through the *Wayback Machine* online tool. The Internet

Archive does not restrict itself to any one jurisdiction, subject or technology platform.

7.3.6 National Archives and Records Administration's Electronic Records Archive

The Electronic Records Archive (ERA)³⁰ is the United States National Archives and Records Administration's (NARA) strategic initiative to preserve and provide long-term access to digital records. It provides a means for NARA to take in, preserve, and provide continued access to digital information created by the United States Federal Government, and to transition government-wide management of the lifecycle of all records as a shared service. The ERA reached Initial Operating Capability in 2008 after commencing the research stage in 1998; the ultimate project goal is to make it easier for United States government agencies and NARA to conduct business and to pool critical information quickly to make important decisions.

7.3.7 National Archives of Australia XENA project

The National Archives of Australia (NAA) designed the XML Electronic Normalising of Archives – XENA³¹ product as a tool that allows agencies, and individuals to place their digital documents and digital records in open, documented, and accessible formats where important business information can be accessed from a diverse range of applications on a wide range of computing platforms. It is a digital preservation software application which allows the NAA to convert public sector digital information from their original format into

²⁷ <http://www.digitalpreservation.gov/>

²⁸ www.interpares.org/

²⁹ www.archive.org/

³⁰ www.archives.gov/era/

³¹ www.naa.gov.au/records-management/secure-and-store/e-preservation/at-NAA/software.aspx

selected open, fully-documented formats used for archival preservation for long-term digital continuity of public sector digital information.

7.3.8 Australasian Digital Recordkeeping Initiative

The Australasian Digital Recordkeeping Initiative (ADRI)³² is an undertaking of all of the government archives and records institutions in Australia and New Zealand. The primary objective of ADRI is to pool resources and expertise to find better ways to ensure that public sector digital records are preserved and made accessible for the future. This trans-national community of practice collaborates on the development of a common set of strategies, standards and tools for managing public sector digital information. This collaborative approach ensures the best possible strategic use of limited collective resources and maximises the wider awareness and impact of the agreed approach to addressing the challenge of digital recordkeeping and digital continuity.

7.4 International Standards

There are many international standards that have already been developed that can inform and guide public sector digital continuity practice in New Zealand. Being able to communicate and conduct business effectively across international boundaries requires us to think globally when undertaking business digitally and build systems and practices fit for the future. Standards are crucial in informing efficient interoperable technology service delivery across the public sector, that allow individual agencies to make their own decisions and develop their own technology solutions; while providing a mechanism to embed interoperable principles and functionality. Some established examples of internationally adopted standards include:

Consultative Committee for Space Data Systems – Reference Model for an Open Archival Information System (OAIS). CCSDS 650.0-B-1, Blue Book, January 2002. The OAIS Model has been formally recognised as an international standard: ISO 14721:2003.

European Union – European Commission. 2008. MoReq2 Specification: Model Requirements for the Management of Electronic Records – Update and Extension, 2008.

Dublin Core – Dublin Core Metadata Element Set, Version 1.1: Reference Description, Dublin Core Metadata Initiative, 2007. Dublin Core has been formally recognised as an international standard: ISO 15836:1009.

International Council on Archives / ADRI – Principles and Functional Requirements for Records in Electronic Office Environments.

International Organisation on Standardisation (ISO)
ISO 15489-1: 2001 Information and documentation
— Records management — Part 1: General; and

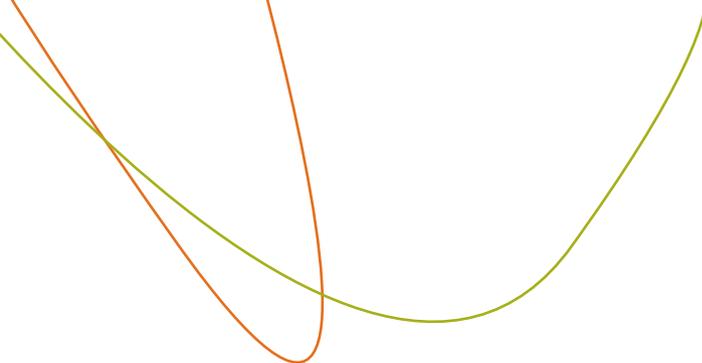
ISO/TR 15489-2: 2001 Information and documentation
— Records management — Part 2: Guidelines.

The National Archives UK – PRONOM: The Technical Registry, National Archives (UK), 2006.

Online Computer Library Center (OCLC) – Trustworthy Repositories Audit and Certification: Criteria and Checklist Online Computer Library Center (OCLC) and Center for Research Libraries (CRL) February 2007.

PREMIS (PREservation Metadata: Implementation Strategies) Working Group – PREMIS Data Dictionary, Version 2.0: Preservation Metadata Implementation Strategies (PREMIS) Working Group, 2008.

³² <http://www.adri.gov.au/>



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Did you know?

Britain's Domesday Book has existed for over 900 years. But the modern day digital version created in 1986 almost failed to survive until the new millennium. It took an international research team three years to develop strategies to rescue the resource.³³

³³ Mellor, P. (2003).

Photo: AAQT6539 A90394 Social Security Department,
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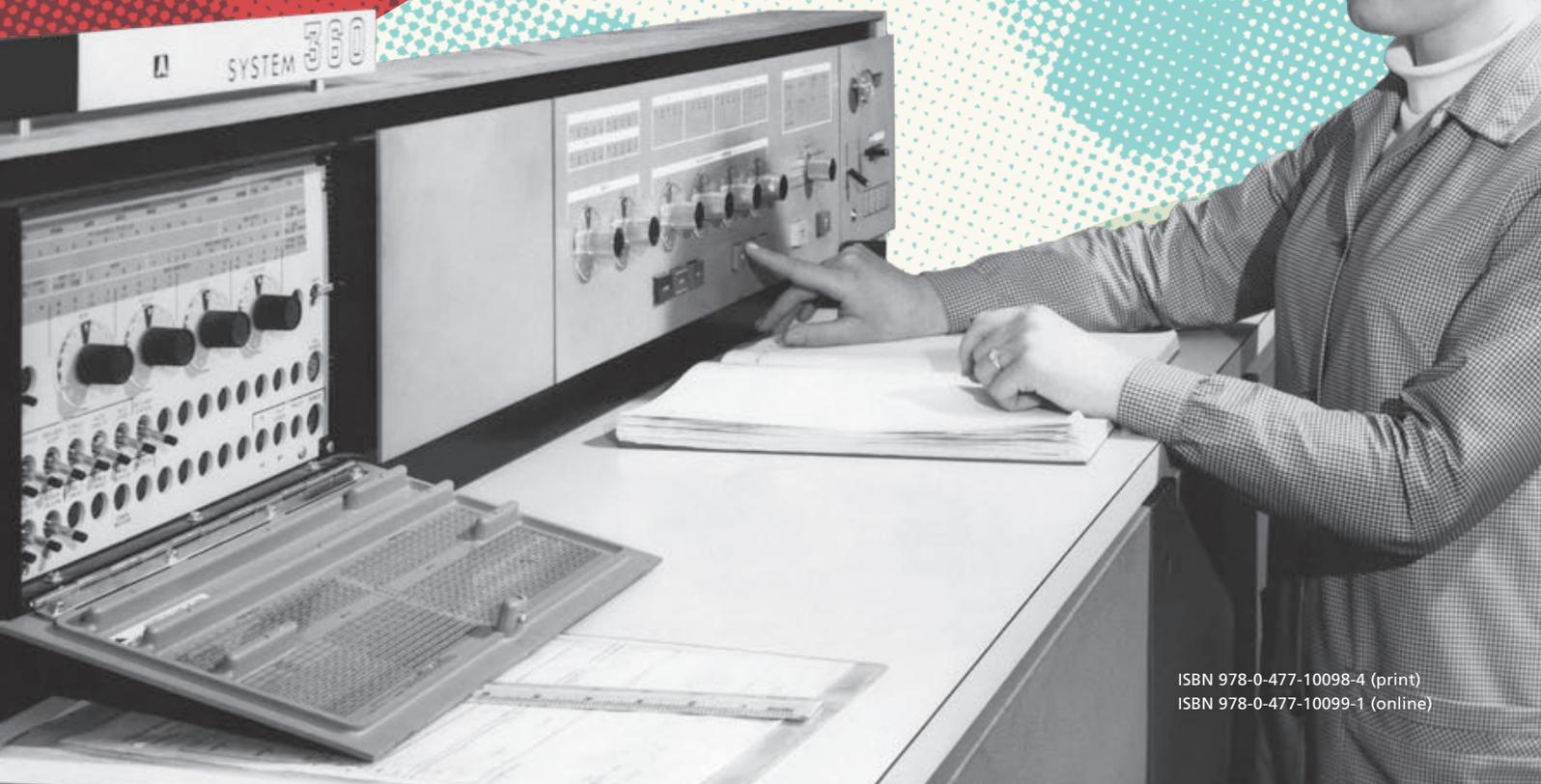
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