Digital Preservation Strategy
1. INTRODUCTION

1.1. Purpose

1.1.1. This document forms the strategy of the Public Record Office of NI (PRONI) for the long term preservation of its digital archives.

1.1.2. Under the terms of the Public Records Act (NI) 1923, PRONI has a statutory duty to preserve both the physical and the digital material it holds.

1.1.3. PRONI is dedicated to managing the long term preservation of, and access to, the electronically created (‘born digital’) and digitised historical resources (‘digital surrogates’) in its care.

1.1.4. PRONI will continue to be committed to preserving records in non-digital formats, as described in the ‘Preservation of Records – Preservation Policy’ document.

1.2. Context

1.2.1. The amount of ‘born digital’ information has increased dramatically over the last ten years. With the continued dominance of the desktop PC, at home and in the workplace, huge increases in processor power and continuous developments in storage capacity and media, the amount of information created in an electronic environment will continue to rise exponentially.

1.2.2. The majority of the archival collections held by PRONI have so far been received in traditional formats, such as paper or parchment, however, due to the recent prevalence of digital information, in the near future it is expected that more material will be received in electronic formats.

1.2.3. Many organisations, both public and private, now use and maintain Electronic Document and Records Management Systems (EDRMS), or other computerised record keeping systems for the storage and lifecycle management of their digital records. The reform project known as RecordsNI, saw one such system, HP TRIM, rolled out across the Northern Ireland Civil Service in 2006/2007.
1.2.4. The Public Records Act (NI) 1923 established PRONI as the repository for selected records of the NI public sector; records created in the UK but relating solely to NI (transferred with the agreement of The National Archives, London); and privately-owned records relating to NI.

1.2.5. The Act [s.1 (3)] defines ‘records’ as ‘...rolls, records, writs, books, proceedings, decrees, bills, warrants, accounts, maps, papers and documents’. The intention of the legislation was clearly to cover all media and, accordingly, it is considered applicable across all storage media, past, present and future. The definition encompasses digital records such as those originating from an Electronic Document and Record Management System, shared drives, databases, websites and other systems containing records.

2. Aims

2.1. PRONI will maintain a Digital Preservation system, comprising a Preparation System, Digital Repository and Access System, in order to accession, store and provide access to selected digital records reflecting key activities, events and trends relating to the history of NI and its people.

2.2. PRONI will ensure that the records held within its Digital Repository will remain authentic, i.e. maintain characteristics of reliability, integrity and usability, and remain accessible in the future.

2.3. Where possible and subject to constraints of feasibility, cost, Intellectual Property Rights (IPR), and the protection of sensitive information, PRONI will provide public access to preserved content. Detailed strategies relating to access and reuse will be prepared and made available separately.

2.4. PRONI will support digital records’ creators by providing advice and guidance pertaining to best practice in managing their digital assets for the long term.

3. Constraints

3.1 The sheer quantity of, and variety of ways to create, electronic information presents a technical challenge to PRONI when planning for the preservation of electronic records.
3.2 On some occasions, PRONI may be unable to preserve records offered. This may be due to the complexity or scale of the records offered or in other cases, especially when dealing with bespoke line of business applications, where a technical solution to preservation may not exist.

3.3 PRONI may also, in some cases, face difficulty in preserving and maintaining the original file format in which the electronic records have been presented. The range of available file formats is huge and, while PRONI has identified a list of formats that it can accommodate, it may be the case that some of the others offered cannot be preserved.

3.5 Whatever the case, PRONI will make a decision on the preservation of electronic information based on a consideration of the difficulties and costs involved in preserving, maintaining and providing access to the records.

4. Standards

4.1. PRONI follows current best practice as recognised nationally and internationally. In doing so, the Digital Preservation work will take into account the following standards:

- BS 4783 Storage, transportation and maintenance of media for use in data processing and information storage
- BS 7083:1996 Guide to the accommodation and operating environment for information technology (IT) equipment
- BS ISO/IEC 27001: 2005 Information technology - Security techniques - Information security management systems - Requirements
- BS ISO/IEC 27002: 2005 Information technology - Security techniques - Information security management systems - Code of Practice
- BS 6266:2002 Code of practice for fire protection for electronic data process installations
- ISO 14721:2003 Space data and information transfer systems - Open archival information systems - Reference model
- BS ISO 15489-1:2001 Information and documentation - records management
• BS 10008:2008 Evidential weight and legal admissibility of electronic information.

4.2. Standards in Digital Preservation are still evolving and PRONI will monitor their development, and implement those which are appropriate.

5. **Staffing**

5.1. PRONI will ensure that its digital preservation activities are adequately resourced by members of staff with appropriate skills.

5.2. PRONI may use a combination of in-house staff, contractors, and consultancy to achieve its objectives.

5.3. PRONI will provide training opportunities to ensure that relevant members of staff develop, maintain and enhance their digital preservation expertise.

6. **Content coverage**

6.1. The selection of digital records for preservation in the PRONI Digital Repository will be directed by PRONI’s Acquisition Strategy.

6.2. This Digital Preservation Strategy applies to both ‘born digital’ material (i.e. created electronically), and to ‘digital surrogates’ (i.e. created in non-digital form but subsequently converted to digital form).

7. **Roles and responsibilities**

7.1. **The role and responsibilities of PRONI**

7.1.1. To provide advice and guidance to those public servants and professionals who deal with the records management function in their respective organisations.

7.1.2. To advise potential private depositors on the suitability of their records for transfer to PRONI.

7.1.3. To quality assure record retention and disposal schedules prepared by all public sector organisations to ensure that records of historical significance are transferred to PRONI when no longer required and that all other records are retained for the appropriate period.
(according to business need or legislative requirement), prior to their managed destruction.

7.1.4. To provide submission guidance documentation to Departments, other public sector organisations and private depositors of electronic records, detailing the process for transferring electronic records to the digital preservation system. The documentation will stipulate which transfer media and file formats will be accepted, and the minimum descriptive and technical metadata which must accompany the records during transfer.

7.1.5. For technical reasons it is desirable for digital records to be transferred to PRONI substantially in advance of the 20 year statutory default under the Public Records Act (NI) 1923. Transfer agreements governing the timing of transfer in a way suited to digital records will be developed between PRONI and each depositor.

7.2. The role and responsibilities of Government Departments and other public sector organisations

7.2.1. Government Departments and other public sector organisations are responsible for managing their electronic records via the RecordsNI EDRMS and/or other business-specific information systems. It is particularly important that these systems are well managed and that policies are in place which govern the capture and maintenance of records created.

7.2.2. Government Departments and other public sector organisations are responsible for:

- creating records which are consistent, reliable, accurate and complete
- naming records appropriately and filing records in the correct area of the organisation’s records storage system
- requisite metadata, e.g. accompanying access decisions.

7.2.3. The Information Manager, in conjunction with staff from the relevant business areas within the Government Department or other public sector organisation, is responsible for identifying the
appropriate retention periods and disposal actions for the records created within the organisation.

7.2.4. The Information Manager is responsible for ensuring that disposal and retention schedules are implemented and monitored within the Government Department or other public sector organisation, and that records which have been identified in the schedules as suitable for preservation within the PRONI Digital Repository are transferred to PRONI according to agreed processes.

7.2.5. The Information Manager within the Government Department or other public sector organisation will ensure that the records are submitted in a suitable condition for acceptance by PRONI and comply with all requested format and metadata requirements and that all required records management actions have been completed, e.g. declassification of material before transfer.

7.2.6. Each Government Department or other public sector organisation has a duty to care for its records prior to their transfer to PRONI.

7.3. The role and responsibilities of private depositors

7.3.1. Depositors and potential depositors of digital records should contact PRONI at their earliest convenience to discuss transfer requirements.

7.3.2. Where the format can be facilitated by PRONI, the depositor should ensure that the records are submitted in a suitable condition for acceptance by PRONI and that all requested format and metadata requirements are adhered to.

8. Strategy Overview

8.1. Overview of preservation strategy

8.1.1. The preservation of digital records is very different from the preservation of physical records. With digital records, the informational content of the record and its technical format can be treated as two separate preservation considerations. Long-term access to a particular technical format cannot be guaranteed due to dependence on specific technologies which may become obsolete over time. PRONI’s strategy on preserving digital records is therefore
based on preserving access to the informational content and its associated evidential value.

8.1.2. PRONI’s preservation strategy encompasses two levels of preservation: passive preservation, which provides for the secure storage and integrity of each record manifestation, and active preservation, which may require the migration of records to new technical manifestations over time. Where it is possible and cost effective to do so, PRONI will maintain the original manifestation of the record and optionally all subsequently generated manifestations.

8.2. **Strategy statements**

8.2.1. PRONI will provide for the preservation of both content information objects and their associated metadata, the maintenance of a persistent bond between the two, and the creation of new metadata to document the preservation processes undertaken.

8.2.2. PRONI will seek to generate and process metadata automatically. Wherever possible, PRONI will source record metadata from the creation environment to ensure its authenticity. This may be supplemented by metadata which is automatically extracted from the objects themselves. Manual metadata creation will normally be feasible only at a very high-level of description.

8.2.3. PRONI may use the services of external contractors or partners to provide preservation and access services for some or all of its digital collections. Decisions about this will be based on the requirements of the collections, and PRONI’s existing or planned capabilities with regard to the required services.

9. **Implementing the strategy (operational details)**

9.1. **Procedures for preservation**

9.1.1. PRONI’s digital preservation methodology will focus on migration.

9.1.2. Migration of digital records may be required to improve the usability of the record or in response to technological changes which threaten
its continued accessibility through obsolescence. This is likely to be an ongoing periodic requirement throughout the lifecycle of digital records and will always be undertaken in a controlled manner as a result of detailed preservation planning and testing. The potential risk of information loss will be mitigated through testing of migration pathways and validation of migrated records. Migration must also be fully documented in the form of a detailed migration history as part of the metadata associated with the record.

9.1.3. PRONI may implement different preservation strategies (e.g. emulation) in the future, for different types of digital resource. Strategies will be selected according to the requirements of particular resources, evolving international best practice, and an assessment of the resources required to execute the strategy.

9.2. **Security, authenticity and integrity**

9.2.1. PRONI will ensure that the physical infrastructure required to store and manage its digital archives is protected from accidental or deliberate damage. The IT systems must also be protected from intrusions and malicious damage, either by external attackers and other unauthorised users, or by malicious code or other forms of software attack. Countermeasures may include the use of access controls, firewalls, and anti-virus software.

9.2.2. Digital preservation requirements will be incorporated into PRONI’s Emergency Planning for Archives process, to ensure the continued availability or restoration of archived resources in the event of an incident or disaster. The relevant plans will be periodically tested through various types of disaster recovery exercise led by PRONI’s Preservation and Collections Management Branch.

9.2.3. PRONI will ensure that records will be accessed according to their access status. Appropriate systems for authenticating and authorising user and system access will be implemented.

9.2.4. PRONI will continually check the integrity of the digital material preserved within its Digital Repository, and will implement procedures to rectify any integrity errors detected, through recovery from an alternative copy.

10. **Sustainability plans**
10.1. The infrastructure required for the digital preservation system must itself be sustainable for as long as the digital resources it manages. PRONI will ensure that the architectural design for that infrastructure supports its long-term sustainability.

10.2. PRONI will maintain professional relationships with the wider digital preservation community in Ireland, the UK and internationally. Where appropriate it may actively participate in wider initiatives, through partnerships and collaboration with appropriate organisations.

11. Communication, monitoring and review of the strategy

11.1. The Digital Preservation Strategy will be published on the PRONI website.

11.2. The strategy will be reviewed immediately following the implementation of the PRONI Digital Repository and thereafter the period between strategy reviews will not exceed three years.
REFERENCES AND RELATED DOCUMENTATION

This strategy has been developed in conjunction with existing legislation and policies – those which apply to PRONI and also to the entire Northern Ireland Civil Service and the wider public sector. They include:

1. PRONI Acquisition Strategy
2. PRONI Preservation Policy
3. Northern Ireland Civil Service Information Management Strategy
4. Northern Ireland Civil Service IT Security Policy
5. The records management policies and strategies of the Northern Ireland Government Departments and other public sector organisations
7. The National Archives Preservation Policy (2009)
8. ‘Developing a Digital Preservation Policy’ guidance, TNA (2011)
GLOSSARY

**Born-digital record**: a record that has been created electronically, as opposed to having been digitised from a physical record.

**Copy or surrogate**: a duplicate of an original document in whole or in part to preserve it and provide access to it.

**Digital preservation**: a set of processes to ensure that digital documents and records remain accessible over the long term.

**Digital Surrogate**: a digital copy of a physical record, created for preservation and/or access purposes.

**Electronic Document and Records Management System (EDRMS)**: a type of content management system which combines the technologies of document management and records management systems as an integrated system.

**Electronic record**: a record produced, housed or transmitted by electronic means rather than physical means and satisfies the definition of a record.

**Emulation**: replicating the functionality of an obsolete system. Examples include emulating an Atari 2600 on a Windows system or emulating WordPerfect 1.0 on a Macintosh.

**Manifestation**: an instance of an electronic record which requires a specific technological environment for access. New manifestations may be created through the process of migration.

**Metadata**: a set of data which conveys information about other data. For example, the information in the catalogue can be considered to be metadata. Metadata is used for records management, retrieval and use.

**Migration**: the transferring of data to newer system environments (Garrett et al., 1996). This may include conversion of resources from one file format to another (e.g., conversion of Microsoft Word to PDF), from one operating system to another (e.g., Windows to Linux) or from one programming language to another (e.g., C to Java) so the resource remains fully accessible and functional.

**Original record**: the accessioned record, which can be in a physical or electronic format, from which a copy or surrogate can be made.
**Physical record**: a record that exists in its original physical format.

**Preservation**: a set of activities that aims to prolong the life of a record and relevant metadata, or enhance its value, or improve access to it. This includes actions taken to influence records creators prior to selection and acquisition.

**Records**: defined in the 1923 Public Records Act as including not only written records, but records conveying information by any means whatsoever. The information conveyed in records is created, received and maintained as documentation in pursuance of legal obligations or in the transaction of business.

**Transformation**: any form of active preservation of electronic records which results in a change to the means by which the information content is represented as a bitstream. Format migration is the most common type of transformation.