# Welsh Vital Digital Information Project

# Research Report – Discovery Phase


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## Final version 1 March 2021

| Version | Description |
|---|---|
| 3.2.2021 | First draft. Sections 1-6 provided to client/steering group. |
| 19.2.2021 | Second draft. Main changes include:<br><br>- Section 4.1.2 – paragraph added to provide more context to Figures 6 and 7.<br>- Section 4.1.3 – second sentence replaced.<br>- Section 5.1.6 added.<br>- Section 7 added.<br>- Appendix 6 – information for Conwy replaced. |
| 1.3.2021 | Final report. Minor changes to recommendations. Executive summary included. |

# Executive summary

This discovery phase research investigated how to maintain long term access to data held on Council line of business systems in Wales. These systems can have a relatively short operational life span, but often the data they hold are required to be kept for longer. This report summarises the findings of the discovery phase research and makes recommendations for ways forward based on these findings.

### (i) Background (report sections 1-2)

Funded by the Welsh Government's Local Government Digital Transformation Fund the research was commissioned by a partnership of 6 archive services representing 15 principal Councils. Archives consultancy Kevinjbolton Ltd undertook the research for the discovery phase, reporting to a Project Steering Group managed by the Glamorgan Archivist/Cardiff City Council. The consultancy team included Kevin Bolton, Sarah Wickham and Jan Whalen.

The discovery phase aimed to:

- Understand the barriers or issues, strategic, organisational and technological, involved with providing long term access to Council records.
- Develop a proposed solution to the problem, and help to develop the next phase of any work required to move this process on.
- Understand the barriers and opportunities to the archive services in undertaking digital preservation in general.

Following agile principles, the **research methodology** (section 2) included desktop review of documentation and best practice, analysis of Council systems and retention requirements, interviews with stakeholders and workshops.

### (ii) Findings (report sections 3-6)

The **context** of "digital transformation" within Councils and the Welsh Government was examined (section 3.1 - 3.2), with the key findings that the idea of "digital transformation" is now commonly used as a shorthand phrase to refer to digital tools, technologies and approaches to support the fundamental re-design of local services so that they deliver better outcomes, in a more targeted and timely fashion, at less cost. At national level there is a vision that digital will contribute to national strategies and the objectives of the Well-being of Future Generations (Wales) Act 2015.

The broader context to the management of records and archives within Councils carried out by archive services and information/records management services was also examined (section 3.3 - 3.5). Within some Council functions, legislation requires records to be kept in particular forms or for specific minimum durations. Some Councils have a separate records/information management function, in others it is combined with the archive service or another function such as IT. All Councils have an archive service (some joint with other Councils) which collect, preserve, and make accessible archives relating to their local area, including the archives of Councils. Increasingly these archives are in digital form requiring special digital preservation activities to preserve and ensure continued long-term access to digital data. The representative body of organisations involved with archives in Wales is ARCW, which since 2009 has been collaborating on digital preservation. This work has included developing a digital preservation system, hosted by the National Library of Wales, which manages digital content from deposit (by partner archive services) through to preservation and access.

The **current situation** for the retention of records in line of business systems was examined (section 4). The research found that even with the limited information available, the numbers of systems and data retention requirements mean that different Council functions have differing levels of complexity for data continuity.

The digital preservation activities currently undertaken by the participating archive services were benchmarked against the NDSA Levels of Digital Preservation matrix. Most archive services are struggling to meet even the lowest levels of NDSA in some areas. In addition, the ARCW digital preservation system was also benchmarked; this system was shown to meet the highest levels of NDSA in most areas.

Thematic analysis of the stakeholder interviews was undertaken to identify barriers and opportunities for Councils and archive services when preserving and providing long term access to digital information, particularly in line of business systems (section 4.1.3).

A series of case studies relating to the preservation of digital information from line of business systems and collaboration in digital preservation offer **learning opportunities** for Wales (section 5). These include activities such as advocacy and training, specific collaborations, practical solutions and technical approaches.

The results of the various strands of the research informed the creation of a **SWOT analysis** (section 6) for preserving and providing long-term access to Council digital information, particularly in line of business systems. The SWOT is reproduced on pp.5-6 below.

| | Helpful to the objective: how to maintain long-term access to records held on Council line of business systems in Wales | Harmful to the objective: how to maintain long-term access to records held on Council line of business systems in Wales |
|---|---|---|
| **Internal origin: ARCW / Archive Services (organisational attributes)** | **Strengths**<br>• There is established collaboration through ARCW on Digital Preservation, including resources, training, and the ARCW system.<br>• Some archive services have started to develop and implement simple digital preservation workflows and processes inhouse.<br>• Some archive services are integrated with records/information management.<br>• Some information and records management services are integrated with Council ICT functions and have access to their existing knowledge and expertise.<br>• Some archive services have strong links with Council service departments.<br>• This project has developed services' understanding of the wider digital preservation sector and work elsewhere. | **Weaknesses**<br>• There are gaps between archive service collecting policies and how these are implemented for Council records. Retention schedules and Information Asset Registers are not generally used for this.<br>• Recordkeeping requirements including official marking, data protection issues and retention are not always understood by archive services.<br>• Some archive services are disconnected from Council information/records management services. Some archive services are also viewed as disconnected from the Councils' day-to-day work delivering vital services to residents.<br>• Archive services lack resources and staff capacity.<br>• Archive services are collecting a small amount of born-digital records and are not actively collecting digital. Most services felt they cannot be more proactive in this area until they have a 'proper' digital preservation system.<br>• Aspects of the ARCW system are not clearly defined and are poorly understood (e.g. governance, costs, security levels, types of records covered). It covers limited digital formats. |

| | Helpful to the objective: how to maintain long-term access to records held on Council line of business systems in Wales | Harmful to the objective: how to maintain long-term access to records held on Council line of business systems in Wales |
|---|---|---|
| **External origin: Wider Councils / ARCW system / Welsh Govt (environ. attributes)** | **Opportunities**<br>• Established expertise, knowledge and use in ICT of standard ETL (Export Transform and Lift) processes and open data formats.<br>• Councils increasingly see information and data as an asset worthy of effective management. Some Councils have a more mature and pro-active approach. Some have integrated information management/governance, and ICT functions.<br>• Outcomes for residents are underpinned by effective recordkeeping, including digital preservation. This can be advocated to key stakeholders (e.g. elected members, senior management, other Council departments).<br>• The digital transformation agenda includes changes to infrastructure, managing out legacy systems, and embedding remote working. These changes depend on effective information management and recordkeeping.<br>• There are strong precedents for collaboration within Wales, including communities of learning, joint procurement and shared systems. It is a key agenda for the Welsh Government.<br>• Expertise in the long-term retention of Council information may help archive services to build a case for digital preservation.<br>• The 'minimal repository' approach to digital preservation could be developed further within archive services using existing tools and resources.<br>• The ARCW system could move from the research & development phase into production. | **Threats**<br>• There is a lack of awareness of recordkeeping requirements in Councils and how they apply to their line of business systems. Responsibilities of information asset owners are not always well understood, identified or supported.<br>• The implementation of retention requirements for digital records is much more difficult than for paper: identifying triggers and calculating dates.<br>• The intangible nature and scale of digital records make it hard for information asset owners to conceptualise.<br>• Councils are using a wide range of business systems. Information about these is sometimes inconsistent and incomplete.<br>• There are perceptions in Councils that archives and records management are to do with paper and not digital. Digital is viewed as an ICT issue involving technology and systems.<br>• Councils lack resources and staff capacity. Budgets are likely to be more pressured in the future. |

### (iii) Going forward (report section 7)

Four key themes were identified by the Steering Group in a workshop focussing on the SWOT:

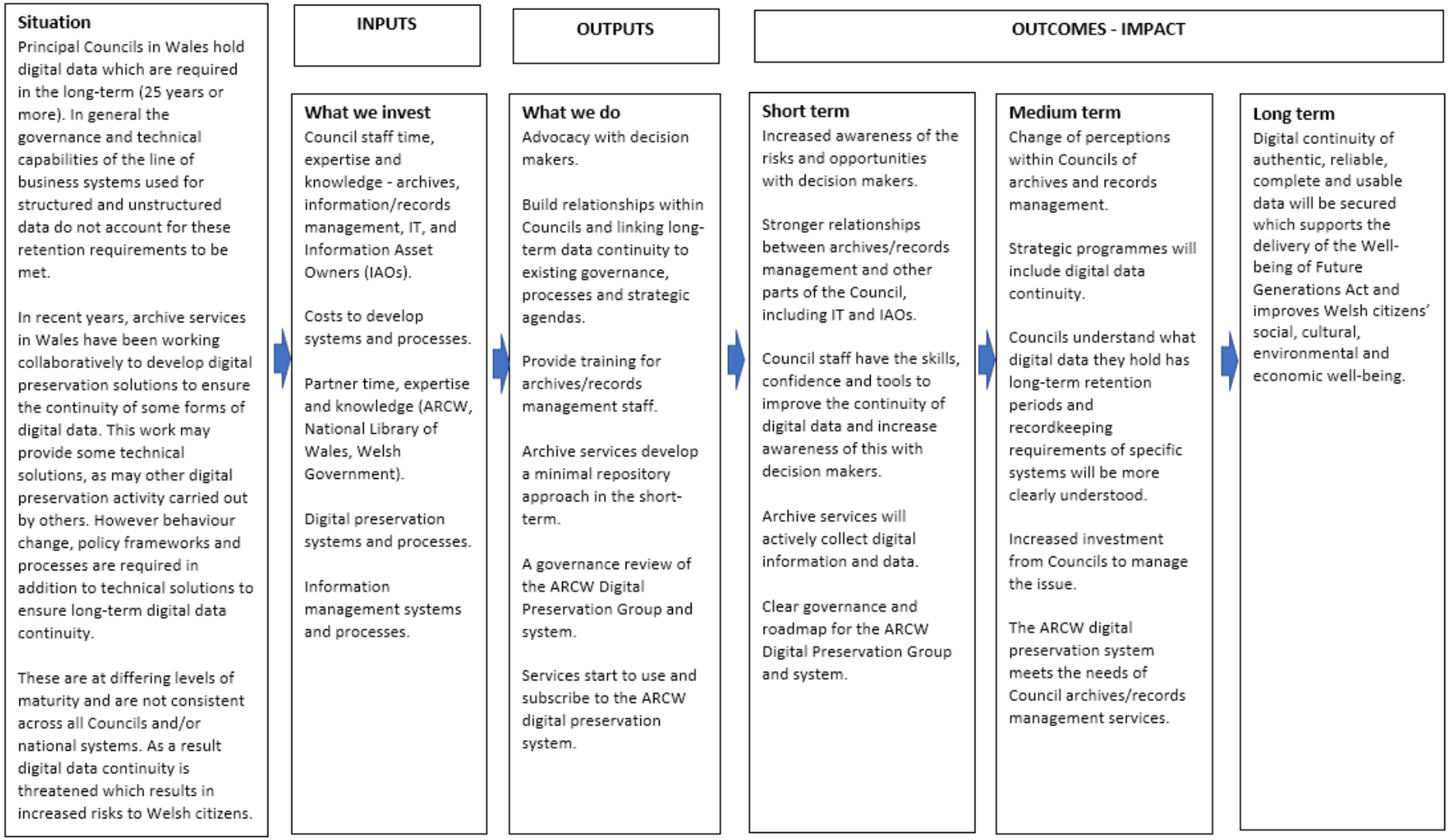
1. Undertaking advocacy with decision-makers.
2. Building relationships within Councils.
3. Developing practical digital preservation work within archive services.
4. Strengthening the ARCW Digital Preservation Group and system.

A logic model was developed (section 7.2) to relate these themes and their outcomes; this is reproduced on p.8 below.

Drawing on the high-level themes, a series of detailed recommendations for the project steering group, ARCW, individual services and Information Asset Owners were made (section 7.3).

**High priority recommendations for the short term** were identified as follows:

- Project steering group/ARCW develop initial advocacy resources, including key messages and stakeholder mapping (recommendation 1.1).
- Project steering group/ARCW develop an advocacy plan to deliver and measure this work over time both within Councils and for national programmes (recommendation 1.2).
- ARCW Digital Preservation Group deliver practical hands-on training on using open-source/free software for integrity checking and DROID to archives staff (recommendation 3.2).
- ARCW Digital Preservation Group and individual services use The National Archives' 'Digital preservation workflows' to develop their own workflows for a 'minimal repository' (recommendation 3.3).
- ARCW Digital Preservation Group look out for forthcoming resources from the DPC EDRMS taskforce expected later in 2021 (recommendation 3.7).
- ARCW review the governance of the ARCW Digital Preservation Group, including the creation of a Project Board and terms of reference (recommendation 4.1).
- ARCW and the National Library of Wales create governance arrangements for the ARCW digital preservation system, including service level/partner agreements and a roadmap (recommendation 4.2).
- ARCW and the National Library of Wales bring 'current records' into scope for the ARCW digital preservation system, and any future developments or roadmap reflect this (recommendation 4.4).


Situation
Principal Councils in Wales hold digital data which are required in the long-term (25 years or more). In general the governance and technical capabilities of the line of business systems used for structured and unstructured data do not account for these retention requirements to be met.
In recent years, archive services in Wales have been working collaboratively to develop digital preservation solutions to ensure the continuity of some forms of digital data. This work may provide some technical solutions, as may other digital preservation activity carried out by others. However behaviour change, policy frameworks and processes are required in addition to technical solutions to ensure long-term digital data continuity.
These are at differing levels of maturity and are not consistent across all Councils and/or national systems. As a result digital data continuity is threatened which results in increased risks to Welsh citizens.
INPUTS
OUTPUTS
OUTCOMES - IMPACT
What we invest
Council staff time, expertise and knowledge - archives, information/records management, IT, and Information Asset Owners (IAOs).
Costs to develop systems and processes.
Partner time, expertise and knowledge (ARCW, National Library of Wales, Welsh Government).
Digital preservation systems and processes.
Information management systems and processes.
What we do
Advocacy with decision makers.
Build relationships within Councils and linking long-term data continuity to existing governance, processes and strategic agendas.
Provide training for archives/records management staff.
Archive services develop a minimal repository approach in the short-term.
A governance review of the ARCW Digital Preservation Group and system.
Services start to use and subscribe to the ARCW digital preservation system.
Short term
Increased awareness of the risks and opportunities with decision makers.
Stronger relationships between archives/records management and other parts of the Council, including IT and IAOs.
Council staff have the skills, confidence and tools to improve the continuity of digital data and increase awareness of this with decision makers.
Archive services will actively collect digital information and data.
Clear governance and roadmap for the ARCW Digital Preservation Group and system.
Medium term
Change of perceptions within Councils of archives and records management.
Strategic programmes will include digital data continuity.
Councils understand what digital data they hold has long-term retention periods and recordkeeping requirements of specific systems will be more clearly understood.
Increased investment from Councils to manage the issue.
The ARCW digital preservation system meets the needs of Council archives/records management services.
Long term
Digital continuity of authentic, reliable, complete and usable data will be secured which supports the delivery of the Well-being of Future Generations Act and improves Welsh citizens' social, cultural, environmental and economic well-being.

# Contents

# 1. Introduction

This discovery phase project investigated how to maintain long term access to records held on Council line of business systems in Wales. A line of business system is software/application that supports the running of the Council. These systems can have a relatively short operational life span, but the records they hold are required to be kept for longer. For example, adoption records must be retained for 100 years under the Adoption Agencies Regulations 1983, Regulation 14 (Statutory Instrument 1983, No 1964).

A partnership of Council archive services from across Wales received funding from the Welsh Government's Local Government Digital Transformation Fund to:

- Understand the barriers or issues, strategic, organisational and technological, involved with providing long term access to Council records.
- Develop a proposed solution to the problem, and help to develop the next phase of any work required to move this process on.

Although this project's original focus was long-term access to records held on Council line of business systems, it has also focused on understanding the barriers and opportunities for the archive services undertaking digital preservation in general.

The project was a partnership between Cardiff Council (lead partner, represented by Glamorgan Archives and including the Councils of Bridgend, Caerphilly, Merthyr Tydfil, Rhondda Cynon Taf and Vale of Glamorgan), Conwy County Borough Council, Ceredigion County Council, Denbighshire and Flintshire County Councils (through North East Wales Archive Service), the Councils of Blaenau Gwent, Torfaen, Newport, Monmouthshire and Caerphilly (through Gwent Archives), and Gwynedd Council.

Following a procurement process Kevinjbolton Ltd, an archives consultancy, were appointed to undertake the research. The consultancy team included Kevin Bolton, Sarah Wickham and Jan Whalen.

# 2. Methodology

This section outlines the project management and the research methodology used in this project.

## 2.1 Project management

The project was managed by Laura Cotton, Glamorgan Archivist, through Cardiff Council, using Agile project management principles. A Project Steering Group was also formed, and membership can be found in Appendix D. Agile is a project management approach that is collaborative and iterative and incorporates responsiveness to change and (in a software development context) continuous testing (UK Government, 2016). In this discovery phase project, the following core Agile principles and values influenced the approach taken:

- Making progress through individuals and interactions.
- Focusing on fitness for purpose.
- Reflecting on the effectiveness of the team - both clients and consultants - and adjusting behaviour accordingly.
- Emphasising user needs.
- Continually planning.

## 2.2 Research methodology

### 2.2.1 Desktop research

We reviewed background documentation to understand the context to digital preservation, records management and line of business systems in the Councils/archive services. This included:

- Archive services: collection/access policies, digital preservation documentation; digital asset registers, policies; Archive Service Accreditation applications; and accession returns.
- Councils: objectives/priorities, records/information management policies, retention schedules, audits/lists of systems and information asset registers.
- Archives and Records Council Wales (ARCW) Digital Preservation Working Group: policy, strategy, workflow documentation, reports and minutes.

We also researched:

- Capturing information for long-term preservation from Council/public sector line of business systems and databases in the United Kingdom and internationally.
- Collaborative approaches and best practice undertaken by Council archive services to digital preservation in the United Kingdom and Ireland.

### 2.2.2 Understanding line of business systems and retention requirements

We were provided with lists of “principal” or “corporate” line of business systems by 4/15 partner Councils. These lists were combined to identify any common systems. The chief function(s) fulfilled by the system were coded using the Local Government Functional Classification Scheme version 2 to ensure consistency (Information and Records Management Society, 2019). Individual systems were further researched where the information provided could not be used to identify the function(s).

We were provided with retention schedules for five partner Councils. The schedules were manipulated into a common format for analysis to cover all Council functions. Each records retention period listed in the schedules was coded to its Council function using the Local Government Functional Classification Scheme to ensure consistency (Information and Records Management Society, 2019). The individual variability of retention triggers and retention periods (short term/medium term/long term/indefinite) were also coded. A detailed methodology for this analysis can be found in Appendix A.

### 2.2.3 Stakeholder engagement

We carried out semi-structured interviews with staff from the archive services, the partner Councils, and the National Library of Wales. We also spoke informally to some staff from the Welsh Government and a couple of suppliers of line of business systems. A list of people interviewed can be found in Appendix C.

The interview guides we used can be found in Appendix D. Although we followed these guides, we also followed topical trajectories in the conversation that strayed from the guide when we felt this was appropriate. Notes for each interview were also created.

Following the interviews with the archive services, we benchmarked each service against the NDSA Levels of Digital Preservation matrix (Kussman et al., 2019).

### 2.2.4 Analysis of interview data

We used NVivo software and a thematic analysis method to collect, organise and analyse the qualitative data (the interview notes). This involved:

- Familiarisation: the notes were read through and initial labels identified.
- Initial thematic framework: the initial labels were sorted hierarchically into themes and sub-themes.
- Indexing: the initial thematic framework was inputted into NVivo, and sections of text from the notes were indexed.
- Creating a final thematic framework: following the initial indexing, the thematic framework was revised, and definitions for each theme/sub-theme were created. The interview notes were indexed again, using the final thematic framework.
- Interpretation: during this stage, an attempt was made to go beyond the descriptive themes and understand what is happening. This informed the creation of Section 4.3 of this report. The final thematic coding framework can be found in Appendix F.

### 2.2.5 Developing opportunities

We created a SWOT analysis that summarised the results of the different strands of the research. We arranged the following workshops/meetings with the Project Steering Group to feedback on the research:

- Early findings from the analysis of retention periods and line of business systems (December 2020).
- Learning from others in terms of digital preservation collaboration and line of business/database archiving (January 2021).
- Findings from the stakeholder engagement: barriers, opportunities and next steps (10 February 2021).

Following the workshops, we created this research report.

### 2.2.6 Stakeholder commitment

We arranged a final meeting with the Steering Group to present this report and present the recommendations/next steps. Following the workshops, we updated this report to reflect any feedback or discussion. We also arranged a workshop on advocacy and communicating with decision-makers (3 March 2021).

## 2.3 Limitations of methodology

This section summarises some of the key limitations of the methodology.

### 2.3.1 Analysis of line of business systems and retention periods

Only four of the 15 Councils provided selected information regarding line of business systems, and five provided some form of retention schedule (see Appendix B). Some retention schedules were of uncertain status and may not have been fully up to date with legislative requirements. Therefore, it is possible the analysis is not fully representative of the partner Councils or Wales.

In addition, the information supplied was not comprehensive or consistently structured to enable easy comparison. A high level of manual intervention and coding was required to compare the business systems and retention schedules. Therefore, there is potential for error or inconsistency.

### 2.3.2 Interviews

The stakeholder interviews were based on the availability of Council staff. Archive services are well represented. However, it would have been useful to undertake more interviews with information asset owners in Council departments/services.

The interviews with records/managers and ICT staff were comprehensive with the Councils in North Wales and Ceredigion. However, coverage for South Wales was poor – we only spoke to staff in Cardiff and Caerphilly. Therefore we should be cautious when generalising certain findings to all the partner Councils or Wales.

# 3. The context

This section outlines the context of the project regarding Councils, the Welsh Government, recordkeeping/archive services and the Archives and Records Council Wales (ARCW).

## 3.1 Principal Councils

### 3.1.1 Background

Wales' 22 unitary 'principal Councils' deliver a wide range of services. A typical list of Council services includes (Local government bodies in Wales, 2020):

- Planning and building control.
- Education.
- Trading standards.
- Alcohol, entertainment and gambling licensing.
- Health and safety.
- Libraries, leisure and tourism.
- Environmental health, refuse and recycling.
- Transport and highways.
- Housing.
- Social services.

A review of the objectives and aims of the 15 Councils who were part of this project revealed that, although there are local differences, the following are some of their key priorities:

- Education: improving educational attainment, developing people's skills, and ensuring everyone has the best possible start in life.
- Well-being: helping people enjoy healthier and better-quality lives.
- Independence: helping people to become more self-reliant and independent.
- Safety: ensuring the most vulnerable residents are safeguarded, and people feel safe.
- Economy: enabling employment, supporting businesses and local economic growth.
- Environment: developing environmental sustainability.
- Resources: delivering value for money and smarter use of resources.

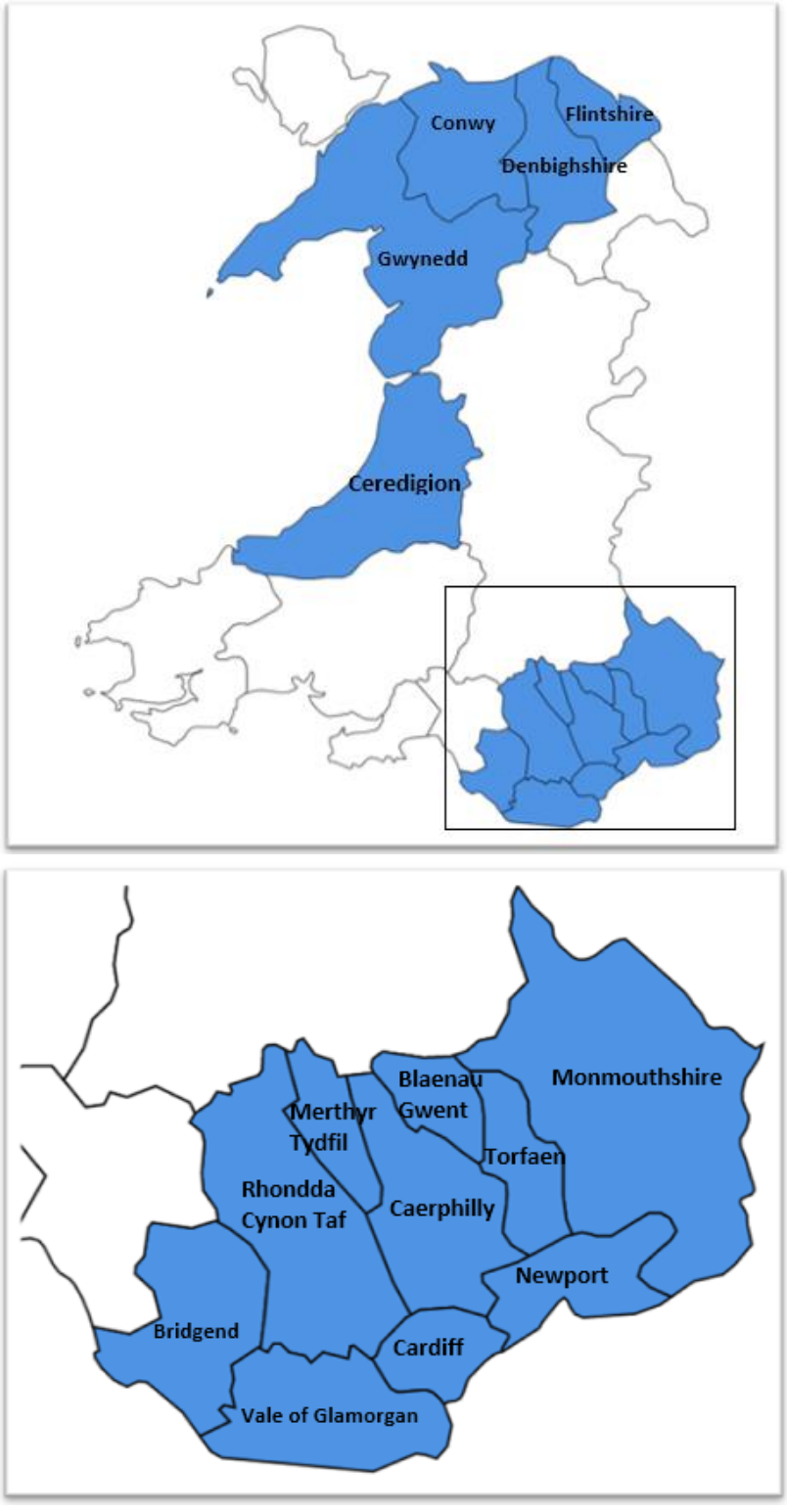



*Figure 1 - Map showing the 15 Councils who were part of this project*

### 3.1.2 Digital agenda

Councils have used digital technology and tools since the 1970s in their day-to-day operations (Local Government Association, 2014). There has been a consistent focus on digital accomplishing efficiency savings and better outcomes for service users. “Digital transformation” is now commonly used as a shorthand phrase to refer to digital tools, technologies and approaches to support the fundamental re-design of local services so that they deliver better outcomes, in a more targeted and timely fashion, at less cost.

The complex interactions and inter-dependencies of “digital” is pictorially represented in Figure 2 below, showing repositories of data and documents (or information/content and records) at the heart of the delivery of services.

Within Welsh Councils, the digital transformation agenda is at different levels of maturity (Socitm Advisory Ltd, 2017). In some authorities, it is led from within the ICT function; in others, it is a function shared with other authorities. The agenda can be considered through 6 dimensions:

- Transactions: the extent to which citizens can request services from the Council website.
- Leadership: how digital is “embedded as a golden thread within corporate/strategic plans through to digital strategies, and measurable improvements are demonstrated”.
- Smart with data: defined by Socitm as “Collecting the right data in an accessible way and making informed decisions with it. Making open data available to citizens and businesses to consume.”
- Citizen-oriented design: business processes and online services re-designed to “put the citizen at the heart of digital design” including using citizen data to drive service design.
- Inclusion: ensuring citizens and businesses can access digital.
- Staff: defined as providing “digital mobile devices and flexible ways of working to staff to maximise efficiency. Implementation of automated digital back-office process and workflow.”

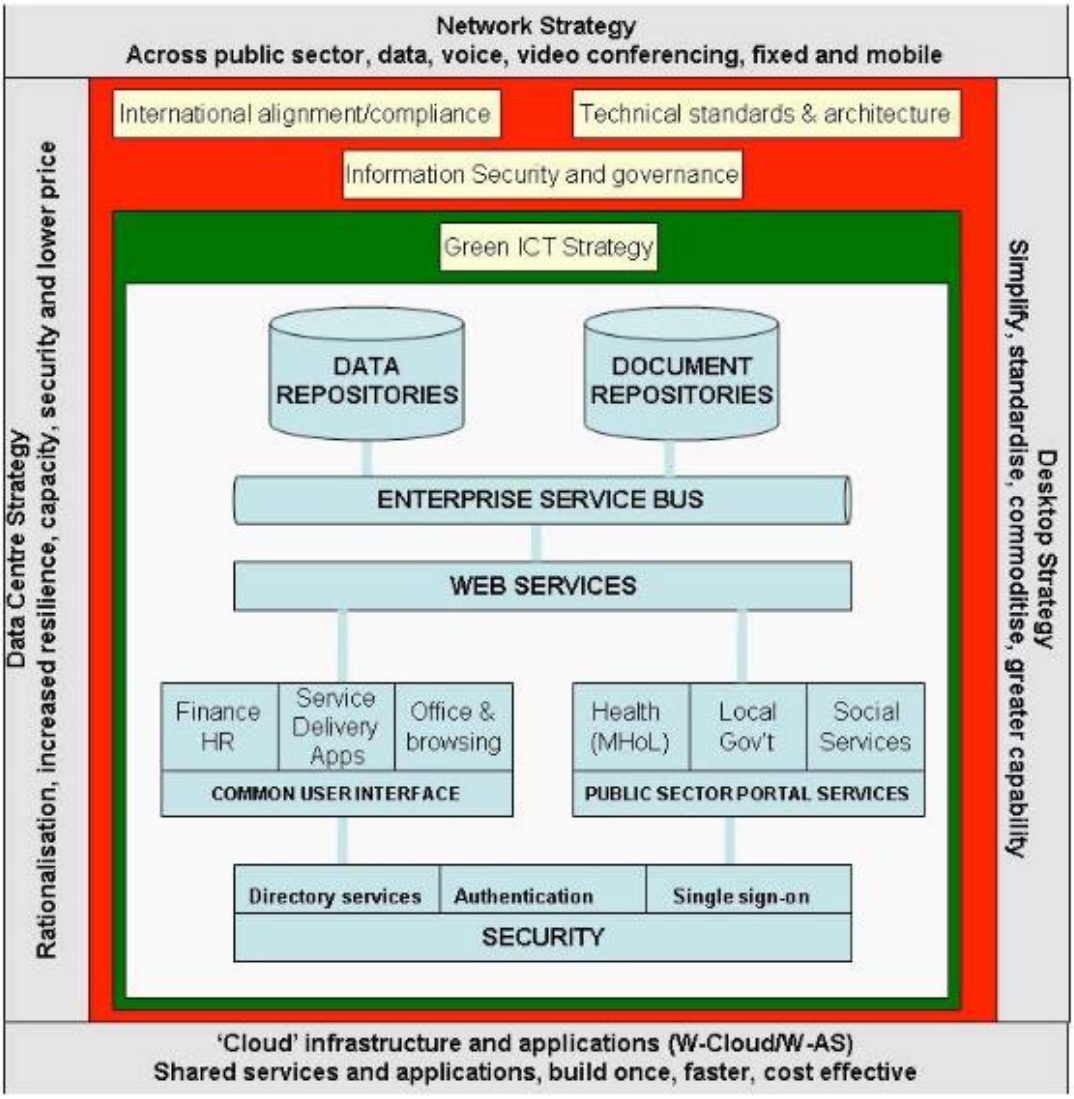



*Figure 2 - ICT Strategy for the Public Sector in Wales - A pictorial view of the strategy and supporting architecture (Welsh Government, 2011)*

## 3.2 The Welsh Government's priorities

### 3.2.1 Well-being of Future Generations Act

"Prosperity for All" is the Welsh Government's national strategy covering 2017-2021 which addresses the objectives of the Well-being of Future Generations (Wales) Act 2015. At the beginning of 2020, the Government highlighted its three cross-cutting themes of "more prosperous", "equal" and "greener" and its eight priority areas of:

- Early years
- Social care
- Housing
- Employability and skills
- Better mental health
- Decarbonisation
- Poverty
- Biodiversity

The Well-being of Future Generations Act requires public bodies in Wales "to think about the long-term impact of their decisions, to work better with people, communities and one other, and to prevent persistent problems such as poverty, health inequalities and climate change" (Future Generations Commissioner for Wales, n.d.). Areas of particular focus currently include Health and Wellness, Adverse Childhood Experiences, land use, planning and placemaking (Future Generations Commissioner, 2020).

The Act has seven Well-being Goals and five Ways of Working needed for public bodies to achieve the Well-being Goals.

The Ways of Working:

- Long-term
- Integration
- Involvement
- Collaboration
- Prevention

The Well-being Goals:

- A prosperous Wales
- A resilient Wales
- A more equal Wales
- A healthier Wales
- A Wales of cohesive communities
- A Wales of vibrant culture and thriving Welsh language
- A globally responsible Wales

### 3.2.2 Digital Wales

The Welsh Government is currently consulting on a new digital strategy to fulfil the vision that "Digital in Wales will improve quality of life, sustainability and economic growth, creating user-centred public services supported by effective leadership, data and a culture of innovation and collaboration". Digital infrastructure, including data and information, is seen to underpin overarching societal goals of the Digital Wales agenda. The consultation version (December 2020) of the Digital Strategy through which this vision will be delivered includes "data and collaboration" as one of its six key missions.

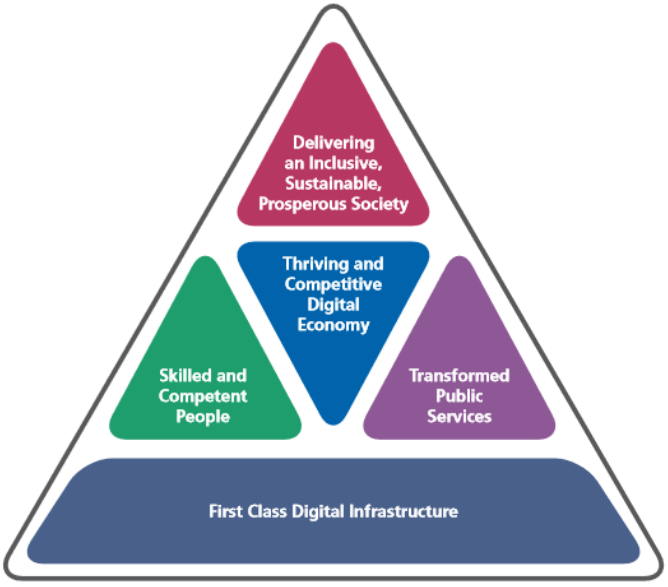



*Figure 3 - The "Digital Wales" agenda (Welsh Government, 2010)*

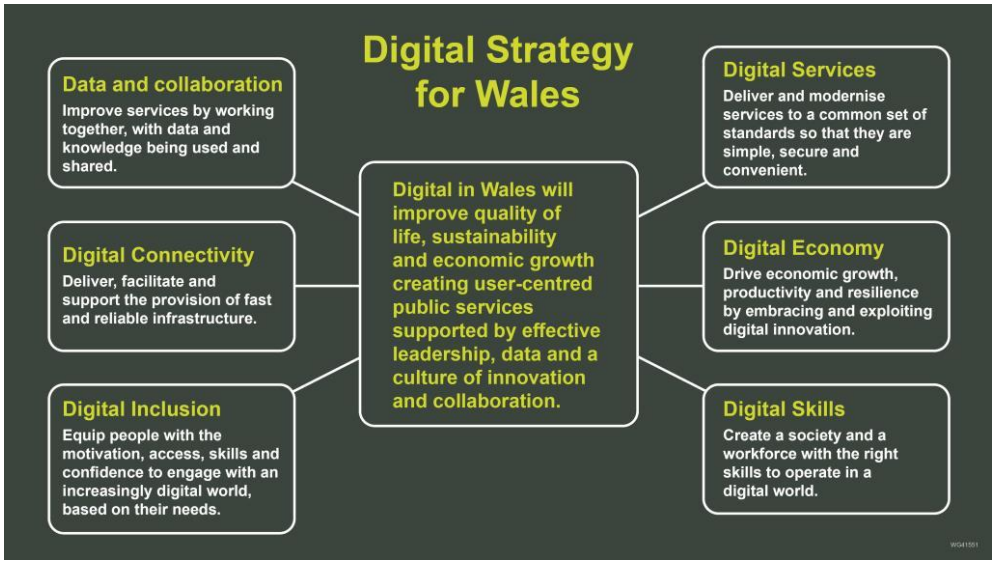



*Figure 4 - Summary of the draft Digital Strategy for Wales 2021 (Welsh Government, 2020)*

## 3.3 Recordkeeping and archives in Councils

### 3.3.1 Information and records

Councils depend on their information and records to fulfil their statutory and discretionary functions – to deliver services, fulfil legal and regulatory compliance and other required responsibilities, and meet their operational and evidential needs. Records and information support Councils in:

- Formulating strategy and policy.
- Making decisions and demonstrating transparency.
- Business intelligence and process improvement.
- Demonstrating corporate social responsibility (e.g. sustainability).
- Protecting the interests of the Council as a corporate body, including reputational protection and demonstrating compliance.
- Protecting the rights of individuals, whether customers or service users, employees or service providers.
- Delivering efficient and agile services in accountable, consistent and equitable ways.
- Making good use of precedents and organisational experience.
- Managing risks and business continuity.
- Collaborating, data sharing and partnership working.
- Efficient, agile and flexible working.

Effective governance and management ensure that information is trustworthy and accessible both as evidence of business activity and as business assets. International standards describe the principles for effective management of information/records:

- Creating, capturing and managing records are integral parts of conducting business, in any context.
- Decisions regarding the creation, capture and management of records are based on the analysis and risk assessment of business activities, in their business, legal, regulatory and societal contexts.
- Any record (regardless of form or structure) which has the characteristics of authenticity, reliability, integrity and useability is authoritative evidence of business.
- Records consist of content and metadata, describes the context, content and structure of the records, as well as their management through time.
- Systems for managing records may be digital, analogue or hybrid.

### 3.3.2 Archives

The International Council of Archives defines 'archives' as the documentary by-product of human activity retained for their long-term value. They are contemporary records created by individuals and organisations as they go about their business and therefore provide a direct window on past events. Archives have several characteristics (International Council on Archives, 2016):

- They are only retained if they are considered to be of long-term historical value. This can be difficult to assess but what it means is that archive collections do not and cannot hold every document ever created.
- Documents do not have to be 'old' to be an archive, just no longer required for the use for which they were created.
- They come in a wide range of analogue and digital media – not just paper documents. Archives can encompass written documents, digital information, photographs, film, and sound recordings.

However, the records continuum model of recordkeeping practice believes that all recordkeeping stages are interrelated and effective management of records requires cooperation between the records manager and archivist (Atherton, 1985).

### 3.3.3 Legislation

The Local Government (Wales) Act 1994 (s.60) required all the new principal Councils in Wales to make and maintain "a scheme setting out their arrangements for the proper care, preservation and management of their records." 'Documents' includes "records, of whatever form and in whatever medium, which convey or are capable of conveying information". 'Records' means "any documents which (a) belong to the council or of which they have custody; and (b) have been retained for reference and research purposes or because of their likely historical interest."

Within some Council functions, legislation requires particular records to be kept; some records must be in a particular form. Legislation may also specify the duration or minimum retention period for which records must be kept. For example:

- The Local Government (Access to Information) Act 1985 requires minutes and documents (other than exempt information) to be publicly available for at least six years after the meeting.
- The Openness of Local Government Regulations 2014 require written records to be kept of licence and contract awards that materially affect the Council's financial position.

- Minimum retention periods for certain financial records are imposed by the VAT Act 1994, and the Taxes Management Act 1970.
- Auditors have a right to access every document relating to the Council that appears necessary for the auditor to carry out their functions under the Audit Commission Act 1998.
- The Freedom of Information Act 2000 makes it a criminal offence to destroy information to prevent disclosure.
- The Data Protection Act 2018 and GDPR requires clear and justified purposes for holding information about individuals as information must not be held for longer than needed.

International standards and best practice recommend analysing business functions and activities to classify all information across a business and to schedule how long information should be retained. This is a resource-intensive process, and generic classification schemes and retention schedules are available for Councils which deliver common functions. All the partner Councils in this project used a generic form of retention schedule.

Regardless of how a retention schedule is created, it is the implementation of that schedule that is most important. In general terms, a simple schedule that is well implemented is to be preferred to a complicated schedule that is poorly implemented.

### 3.3.4 Council archive and records management services

There are 12 Council archive services in Wales. They collect, preserve, and make accessible archives relating to their local area, including the archives of Councils, businesses, places of worship, hospitals, courts, communities, people, and societies. Some archive services are 'joint services' and funded by more than one Council. Table 1 summarises the six services for this project. A couple also have responsibility for records management for their Council. For other Councils, records/information management will sit elsewhere in the Councils structure.

Council archives are a key priority for services, and traditionally they will collect (in paper format) collections such as minutes, correspondence, policies/publications, planning & building control applications/plans, cemetery registers, and adoption records (note – this list is not exhaustive).

Five out of six of the services in this project hold Archive Service Accreditation. This is the UK management standard for archive services supported by a partnership of

organisations including the Welsh Government (Culture and Sport Division). It provides a Standard and supporting documentation that archive services can freely use to identify their strengths and weaknesses and develop and improve over time. The "percentage of museums and archives holding archival/heritage collections meeting UK accreditation standards" is one of the national indicators for the Well-being of Future Generations (Wales) Act 2015.

*Table 1 – Archive services who were partners in this project*

| Archive service | Council | Records/information management? |
|---|---|---|
| Ceredigion Archives | Ceredigion | Yes – also responsible for records management in the Council. |
| Conwy Archive Service | Conwy | Yes – also responsible for records management in the Council. |
| Glamorgan Archives<br>Joint service – reports to the Glamorgan Archives Joint Committee. | Bridgend<br>Cardiff<br>Caerphilly*<br>Merthyr Tydfil<br>Rhondda Cynon Taf<br>Vale of Glamorgan | No – sits elsewhere in each Council. |
| Gwent Archives<br>Joint service – reports to a Joint Committee. | Blaenau Gwent<br>Caerphilly*<br>Monmouthshire<br>Newport<br>Torfaen | No – sits elsewhere in each Council. |
| Gwynedd Archives | Gwynedd | No – sits elsewhere in the Council. |
| North East Wales Archives | Denbighshire<br>Flintshire | No – sits elsewhere in each Council. Although the Information Manager for Denbighshire is also head of North East Wales Archives. |

*Caerphilly is split between Gwent Archives and Glamorgan Archives.

## 3.4 Digital preservation

**“Digital information lasts forever – or five years, whichever comes first” (Rothenberg, 1998).**

Increasingly archive services are creating and collecting digital collections. This includes digitised content of their physical collections and born-digital collections, which have been created and managed electronically**.** In addition, Councils hold digital information or data that needs to be retained in the long-term.

Digital Preservation looks specifically at the activities necessary to preserve and ensure continued long-term access to digital information or data. The five functional areas that are at the heart of digital preservation systems include:

- **Storage and geographic location.** Digital storage technologies present several risks to the long-term preservation of digital information or data. These risks can be reduced by using a digital storage strategy that involves one or more storage systems and at least two copies of the data.
- **File fixity and data integrity.** Fixity measures such as checksums can record and regularly monitor the integrity of each copy of the digital data. This helps detect corruption or loss.
- **Information security.** Digital material can easily be changed or deleted accidentally due to human error. Systems need to protect digital information or data from unauthorised change.
- **Metadata.** Contextual information is required to understand the digital information or data and for it to be useful.
- **Content.** File formats, software and systems used can become obsolete over time. Strategies such as migration can help mitigate these risks.

Passive preservation is not an option. Unlike paper, digital data which is not selected for active preservation treatment at an early stage in its existence will very likely be lost or unusable in a few years. A proactive approach to digital data continuity is required to ensure preservation over time.

## 3.5 The Archives and Records Council Wales (ARCW)

ARCW was established in 1995 as a representative body for institutions and organisations all over Wales involved with caring for archives. It is unincorporated. The aims of ARCW are:

- To influence policy on archives in Wales.
- To bring to the attention of the public, government or relevant institutions or organisations, matters of current concern in the field of archives in Wales.
- To provide a focus for collaborative projects in the field of archives in Wales.
- To bring together institutions and organisations involved with the administration of archives in Wales and to provide a forum for the regular exchange of views between them.

ARCW also manages various grant schemes to support member services' work to preserve and provide access to archival resources.

Since 2009, the ARCW Digital Preservation Working Group has been working to address the requirements for preserving and managing digital records across Wales. The objective is to support digital preservation collaboratively whilst taking account of individual organisational needs. To date, work has included:

- Creating a Digital Preservation Policy for Wales.
- Creating a Digital Preservation Strategy template for archive services to adapt and adopt.
- Funding (supported by the Welsh Government) for digital preservation training for archives staff.
- Co-ordinating a trial of Preservica, a digital preservation system, by archive services.
- Survey of Councils on their security requirements.
- Developing a digital preservation system, hosted by the National Library Wales, which manages digital content from deposit (by partner archive services) through to preservation and access.

# 4. The current situation

This section describes the results of our analysis of the retention of records in line of business systems; our benchmarking of archive services and the ARCW digital preservation system against the NDSA Levels of Digital Preservation matrix; and the barriers/opportunities identified through the stakeholder interviews.

## 4.1 Retention of records in line of business systems

### 4.1.1 Line of business systems

We were provided with lists of "principal" or "corporate" line of business systems by four Councils. These lists were combined to identify common systems[1] (~15) and systems unique to one Council (~615). Capita (14 systems) and Civica (9) were the most frequently used suppliers. A large proportion of systems were developed in-house (~90). The systems were coded to Local Government Functions as described in Section 2.2.2. Many of the generic systems which underpin the work of the whole Council such as video-conferencing, email, document storage and management were coded to the Information and Communications Technology function. The results are shown in Figure 5.

It was not possible to analyse each individual system as to whether it readily permitted retention triggers and periods to be applied to data, and/or actions to dispose of data to be taken at the conclusion of a retention period. Anecdotal evidence suggests that such functionality is generally lacking other than in Electronic Document and Records Management Systems (EDRMS), of which four were identified among the 631. Disposal of data may be undertaken on an ad hoc basis during system obsolescence, migration or upgrade. This may or may not be in accordance with recommended retention periods in the relevant Council's schedule.

### 4.1.2 Retention schedules

Information about the desired retention periods across all Council functions was compiled from five retention schedules supplied by the partners and supplemented by a further best practice example, as described in Section 2.2.2. A logarithmic scale has been used to present the results to avoid skewing the chart towards three functions with large values. The results are shown in Figures 6 and 7.

[1] Note that the "common" systems are not shared but are local instances of the same system.

Information about the desired retention periods across all Council functions was compiled from five retention schedules supplied by the partners and supplemented by a further best practice example, as described in Section 2.2.2. The results are shown by function in Figures 6 and 7 broken down into Indefinite (permanent), Long-term (25-100 years), Medium-term (10-25 years) and Short-term (up to 10 years) periods. A logarithmic scale has been used in Figure 6 to present the results to avoid skewing the chart towards three functions with large values.

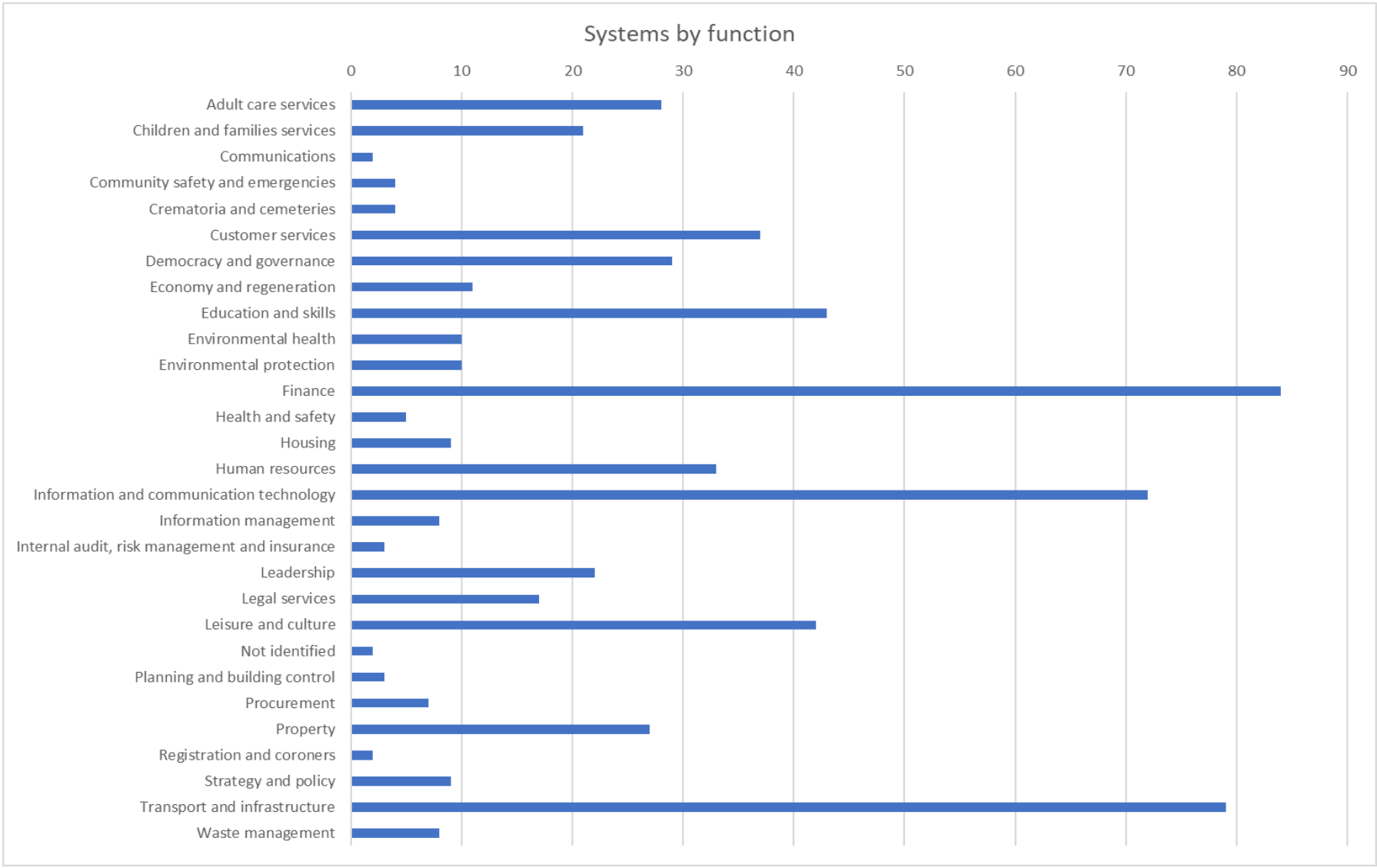



*Figure 5 - Analysis of line of business systems by Council function*

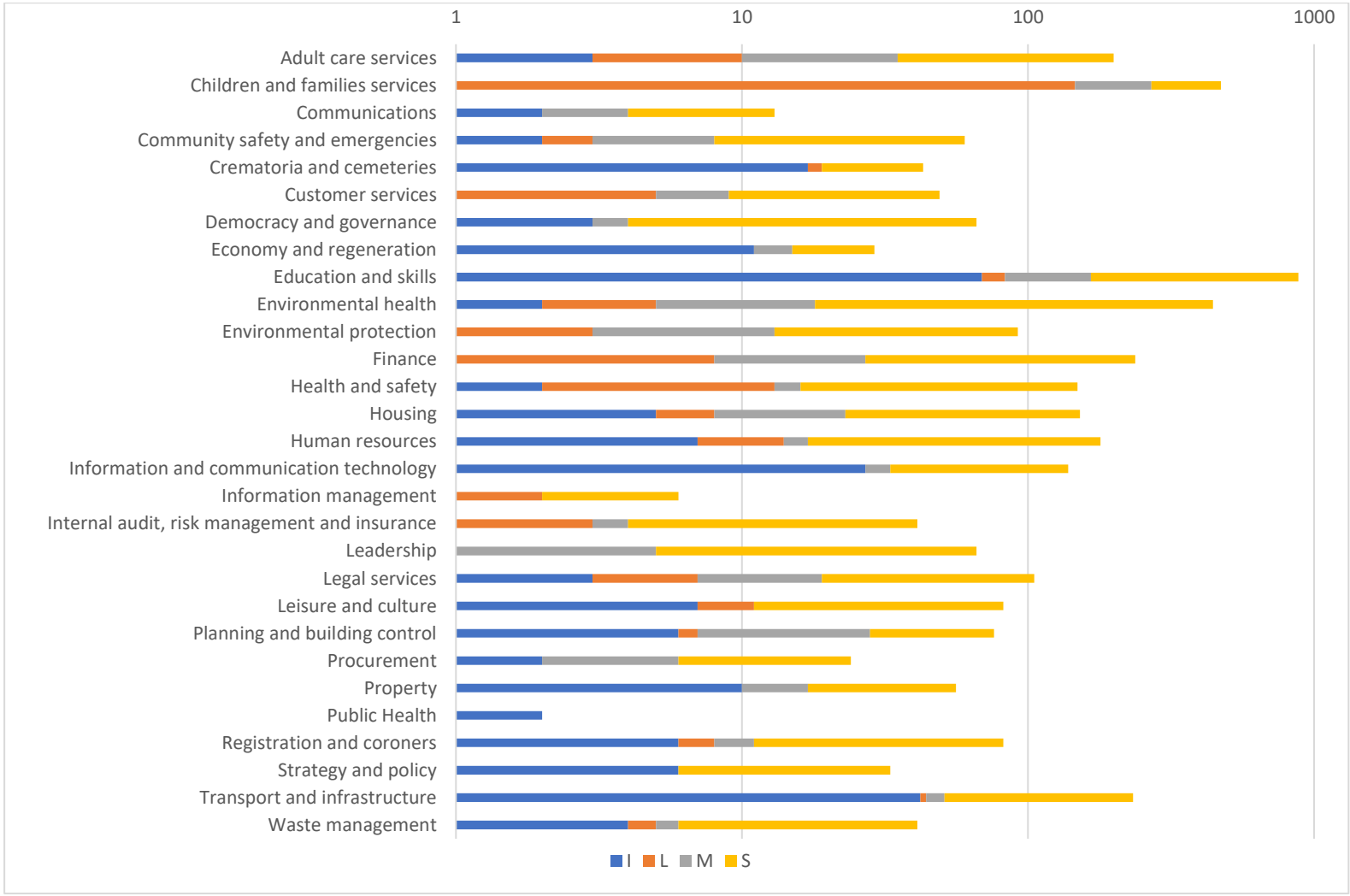



*Figure 6 – Indefinite, Long-term, Medium-term and Short-term retention periods by function (logarithmic scale)*

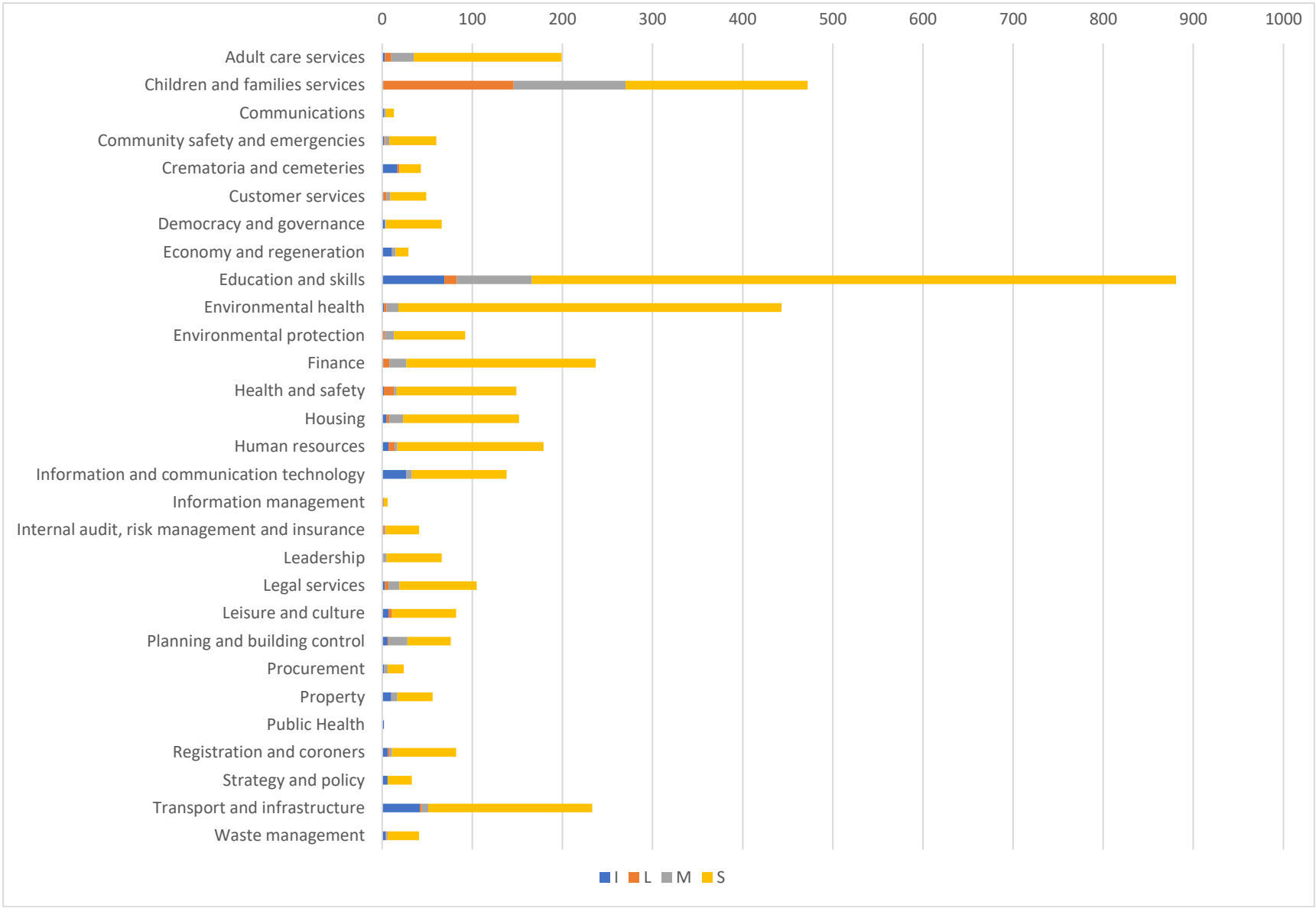



*Figure 7 – Indefinite, Long-term, Medium-term and Short-term retention periods by function (non-logarithmic scale)*

### 4.1.3 How complex might digital preservation be within Council functions?

Combining the analysis of the line of business systems and the retention requirements by function indicates the likely digital preservation requirements for the function. The greater the number of long-term (25+ years) retention periods which need to be applied to an increasing number of systems, the greater the digital preservation requirements for the function.

A rough way to compare the complexity of digital preservation requirements for Council functions is simply to multiply the number of line of business systems by the number of retention periods. The results of doing this for medium and long-term retention can be found in Table 2. Results broken down by long-term (i.e. those greater than 25 years) and by medium-term (i.e. those between 10 and 25 years) retention periods can be found in Appendix H.

This analysis suggests that on numbers of systems and retention requirements alone, the functions could be grouped on a spectrum of complexity of digital preservation. This is shown in Table 2 and represented visually in Figure 8.

*Table 2 Complexity of digital preservation requirements by function*

| Function | Score for long-term retention | Score for medium-term retention | Total score | Priority banding |
|---|---|---|---|---|
| Education and skills | 3569 | 3569 | 7138 | 1 |
| Children and families services | 3066 | 2604 | 5670 | 1 |
| Transport and infrastructure | 3476 | 553 | 4029 | 1 |
| Information and communication technology | 1944 | 432 | 2376 | 2 |
| Finance | 672 | 1596 | 2268 | 2 |
| Adult care services | 280 | 700 | 980 | 3 |
| Human resources | 462 | 99 | 561 | 3 |
| Leisure and culture | 462 | 0 | 462 | 4 |
| Property | 270 | 189 | 459 | 4 |
| Customer services | 185 | 144 | 329 | 4 |
| Legal services | 119 | 204 | 323 | 4 |
| Housing | 72 | 135 | 207 | 5 |
| Environmental health | 50 | 130 | 180 | 5 |
| Economy and regeneration | 121 | 44 | 165 | 5 |
| Environmental protection | 30 | 100 | 130 | 5 |
| Democracy and governance | 87 | 29 | 116 | 5 |
| Leadership | 22 | 88 | 110 | 5 |
| Planning and building control | 21 | 63 | 84 | 6 |
| Health and safety | 65 | 15 | 80 | 6 |
| Crematoria and cemeteries | 76 | 0 | 76 | 6 |
| Strategy and policy | 54 | 0 | 54 | 6 |
| Waste management | 40 | 8 | 48 | 6 |
| Procurement | 14 | 28 | 42 | 6 |
| Registration and coroners | 24 | 9 | 33 | 7 |
| Community safety and emergencies | 12 | 20 | 32 | 7 |
| Information management | 16 | 0 | 16 | 7 |
| Internal audit, risk management and insurance | 9 | 3 | 12 | 7 |
| Communications | 4 | 4 | 8 | 7 |
| Public health | 2 | 0 | 2 | 7 |


*Figure 8 - Visualisation of comparative complexity of digital preservation by function*

## 4.2 Digital preservation

### 4.2.1 Council archive services

As part of this project, the digital preservation policies and procedures of the six archive services were benchmarked against the NDSA Levels of Digital Preservation matrix (Kussmann et al., 2019). This is a resource for practitioners when developing their digital preservation systems. Table 3 provides a summary of the overall picture. Individual results for each service can be found in Appendix G.

### 4.2.2 ARCW Digital Preservation Service

The need for a digital preservation service was identified in the ARCW Digital Preservation Business Case (2010). It warned that vast quantities of digital information of enormous cultural, economic and political significance would be irretrievably lost if steps were not taken to ensure long-term access to it. It concluded that a collaborative solution would be the most feasible solution as the cost of setting up and maintaining individual services/systems might be difficult to justify to parent organisations.

Following consultation through the ARCW Digital Preservation Board and stakeholder sessions, the high-level requirements of a system were defined as:

- Provide for the preservation of, and enable sustained access to, reliable, authentic and usable digital resources of enduring value, using a solution which conforms to the recognised standards for digital preservation.
- Facilitate the deposit of digital material, with appropriate metadata.
- Store content securely, ensuring confidentiality, integrity and availability of digital objects.
- Enable partners to provide access to their content, in conformance with rights and confidentiality issues.
- Provide restricted access to non-public information.
- Provide technical support.
- Be cost-effective and sustainable.
- Enable partners to remove their content easily.
- Enable partners to conform with the National Digital Preservation Policy for Wales.
- Rule ‘current records’ are not within this service’s scope (although no definition of what this means is provided).

Thanks to annual grant funding from the Welsh Government, the National Library of Wales developed a system based on the open-source solution Archivematica, which provides the digital preservation functionality. The content is preserved within the National Library of Wales' Digital Archive, with access enabled through the partners' own cataloguing systems.

Work has been project-based to date and in 2019 an attempt was made to understand the costs to establish a service sustained by partner contributions. This indicated that the indicative costs would be £8,106 per annum per partner based on ten partners, averaged over three years.

Table 4 summarises the ARCW digital preservation system benchmarked against the NDSA Levels of Digital Preservation. It is based on an unpublished report created by the National Library of Wales (Tomkins, 2020) and other documentation.

*Table 3 – Partner archive services benchmarked against the NDSA Levels of Digital Preservation*

| Functional Area | Level | | | |
|---|---|---|---|---|
| | **Level 1 (know your content)** | **Level 2 (Protect your content)** | **Level 3 (Monitor your content)** | **Level 4 (Sustain your content)** |
| Storage | Have two complete copies in separate locations<br>**Most services are storing digital collections on a networked Council drive which are backed up in accordance with Council procedures. Where applicable, the original portable media may also be kept in the strong room. One service is using external hard drives stored in strong rooms.** | Have three complete copies with at least one copy in a separate geographical location | Have at least one copy in a geographic location with a different disaster thread than the other copies | Have at least three copies in geographic locations, each with a different disaster threat |
| | Document all storage media where content is stored<br>**Some services have created digital asset registers which list what collections they hold and where they are stored.** | Document storage and storage media indicating the resources and dependencies they require to function | Have at least one copy on a different storage media type.<br>**If content arrived on portable media, then this is usually kept also, but not all material will arrive like this.** | Maximise storage diversification to avoid single points of failure |
| | Put content into stable storage<br>**There have been efforts in some services to move digital collections from portable media onto the Council networked storage.** | | Track the obsolescence of storage and media<br>**Networked Council storage monitored is usually monitored in accordance with Council policies.** | Have a plan and execute actions to address obsolescence of storage hardware, software and media |

| Functional Area | Level | | | |
|---|---|---|---|---|
| | Level 1 (know your content) | Level 2 (Protect your content) | Level 3 (Monitor your content) | Level 4 (Sustain your content) |
| Integrity | Verify integrity information if it has been provided with the content **Not usually provided or collected by services.** | Verify integrity information when moving or copying content | Verify integrity information of content at fixed intervals | Verify integrity information in response to specific events or activities |
| | Generate integrity information if not provided with the content **Only one service is undertaking this.** | use write-blockers when working with original media | Document integrity information verification processes and outcomes | Replace or repair corrupted content as necessary |
| | Virus check all content; isolate content for quarantine as needed **Not usually undertaken, although some services will have access to their Council antivirus software.** | back up integrity information and store copy in a separate location from the content | Perform audit of integrity information on demand | |
| Control | Determine the human and software agents that should be authorised to read, write, move and delete content **Where services are using a networked Council drive, this is usually a secure part of the network, and only certain staff have access to it.** | Document the human and software agents authorised to read, write, move and delete content and apply these | Maintain logs and identify the human and software agents that performed actions on the content | Perform periodic review of actions/access logs |
| Metadata | Create inventory of content, also documenting current storage locations **Some services have created digital asset registers which record their location. Digital collections are usually accessioned on the Accession Register of the service.** | Store enough metadata to know what the content is (this might include some combination of administrative, technical, descriptive, preservation and structural) **Very little technical metadata is captured at services at present. Most services will be capturing descriptive metadata (e.g. accession register).** | Determine what metadata standards to apply | Record preservation actions associated with content and when those actions occur |

| Functional Area | Level | | | |
|---|---|---|---|---|
| | **Level 1 (know your content)** | **Level 2 (Protect your content)** | **Level 3 (Monitor your content)** | **Level 4 (Sustain your content)** |
| | Back up inventory and store at least one copy separately from content.<br>**Accession register or digital asset register will usually be backed up in accordance with Council policy.** | | Find and fill gaps in your metadata to meet those standards | Implement metadata standards chosen |
| Content | Document file formats and other essential content characteristics, including how and when these were identified<br>**File formats are usually not identified at present. If they are identified, it is by using the file properties.** | Verify file formats and other essential content characteristics<br><br>Build relationships with content creators to encourage sustainable file choices | Monitor for obsolescence, and changes in technologies on which content is dependent | Perform migrations, normalisations, emulation, and similar activities that ensure content can be accessed |

*Table 4 – ARCW digital preservation system benchmarked against the NDSA Levels of Digital Preservation*

| Functional Area | Level achieved | Description |
|---|---|---|
| Storage | 2 | • Archival Information Packages (AIPs)[2] are stored on three magnetic tapes (LTO8). Two copies are stored in different places in the National Library of Wales. A third is stored elsewhere securely in Aberystwyth.<br>• Details of the tape library and storage media, along with instructions on loading tapes and accessing data stored on them, are documented internally.<br>• Obsolescence is monitored by the National Library of Wales storage and backup administrator. |
| Integrity | 4 | • Checksums are created by each partner when they create the Submission Information Package (SIP)[3]. They use AVPreserve Exactly to generate a Bagit-compliant zip of their data and metadata.<br>• At ingest, Archivematica will verify fixity.<br>• At ingest Archivematica also undertakes an antivirus scan of all content using ClamAV software, halting the ingest process if any infections are found.<br>• The library also has a process for receiving content on physical media, including write blockers, a standalone non-networked PC and virus scanning. This process is also documented internally.<br>• Ongoing fixity checks are undertaken and documented. |

[2] **"**Archival Information Package (AIP): An Information Package, consisting of the complete set of digital files and a complete set of metadata for the AIP (to support preservation and access) that is preserved within an OAIS archive" (https://libguides.bodleian.ox.ac.uk/digitalpreservation/oaismodel).

[3] "Submission Information Package (SIP): An Information Package that is delivered by the Producer to the OAIS for use in the construction or update of one or more Archival Information Packages (AIPs) and/or the associated Descriptive Information" (https://libguides.bodleian.ox.ac.uk/digitalpreservation/oaismodel).

| Functional Area | Level achieved | Description |
|---|---|---|
| Control | 4 | • Partners send their SIP to the National Library of Wales using Pydio software which uses SSL encryption.<br>• There are security procedures in place to prevent authorised access to any data stored on Pydio or Archivematica.<br>• A Linux audit system logs all file actions performed on preservation content held on the Pydio and Archivematica servers. PREMIS actions are also logged by Archivematica and stored in the METS XML metadata.<br>• The BlackPearl software that manages digital tape archive allows for granular permissions to be set and logs all file operations. The library has performed a successful audit of these logs via BlackPearl and are looking at scheduling a report of these logs to be sent out automatically at fixed intervals.<br>• Archivematica can encrypt the AIP as part of the ingest process.<br>• For restricted access material, it is possible to choose not to create access copies and therefore render it unavailable to the public.<br>• All security procedures are documented internally.<br>• The system meets Cyber Plus Essentials standard. |
| Metadata | 4 | • Each partner provides simple descriptive metadata as part of their SIP, captured in a spreadsheet. More detailed descriptive metadata is recorded by the partner on their collections management system or catalogue.<br>• Archivematica captures various technical metadata.<br>• All preservation actions performed by Archivematica are also logged and added to a METS XML file. |
| Content | 3/4 | • Archivematica identifies and verifies file formats.<br>• At present, the system accepts pdf, Microsoft Office documents and various image formats. They are currently working on audio-visual formats.<br>• Archivematica normalises the file formats. The team are engaging with the wider digital preservation community to ensure that the file formats they normalise to (for example PDF-A) are monitored for obsolescence. |

## 4.3 Current barriers and opportunities

This section summarises the key barriers and opportunities for Councils and archive services when preserving and providing long term access to digital information, particularly in line of business systems. It is based on the thematic analysis of the interview notes.

### 4.3.1 Barriers

#### Awareness of recordkeeping requirements

There is a lack of awareness of recordkeeping requirements in Councils and how they apply to their line of business systems. Information Asset Registers are not being used to baseline, plan and manage. The implementation of retention requirements for digital records is much more difficult than for paper: requiring identification of triggers and calculating of dates. The intangible nature and scale of digital make it hard for information asset owners to conceptualise.

Councils are using a wide range of business systems. Information about these is sometimes inconsistent and incomplete. Recordkeeping requirements including official marking, data protection issues and retention are not always understood. Responsibilities of information asset owners are not always well understood, identified or supported.

#### Perceptions and disconnections

There are perceptions in Councils that archives and records management are limited to paper and not digital. Digital is viewed as an ICT issue involving technology and systems. There is a disconnect between some archive services and information/records management services in their Councils. Some archive services are also viewed as disconnected from the Councils' day-to-day work delivering vital services to residents. This is especially the case for the large joint archive services.

#### Lack of digital preservation systems

The archive services are collecting a small amount of born-digital records and are hardly actively collecting. Most services felt they could not be more proactive in this area until they have a 'proper' digital preservation system.

The ARCW digital preservation system offers a potential solution, but archives services are not using it. The revenue costs that each archive service/partner would need to contribute has slowed

progress. Archive services are struggling to identify a budget for it. Some also admitted that they have been relying on this project and have therefore not progressed things as much as they could at a service level.

Some services also highlighted the lack of governance for the system. It is not clear what the contractual arrangement between the partner and ARCW/National Library of Wales is. Are they procuring a product or becoming a member of a partnership? At present, there are no service level agreements or data processor agreements in place for the system/partnership.

In terms of the Councils, there are no precedents/pilot projects, existing systems or processes for undertaking digital preservation activities. However, there are standard ICT processes of ETL (export transform and lift) and common adoption of open data formats (e.g. JSON) within ICT departments' day-to-day business.

### Functionality

There were some concerns from archive services that the ARCW digital preservation system lacks the functionality for the types of digital data that Councils create. This included working with a wide range of file formats, complex or large deposits and, in particular, the security of sensitive data.

ARCW undertook a survey of Councils in 2018 to try and understand their data security requirements. The survey responses suggested that approaches differed between Councils, but the standards mentioned included Cyber Essentials Plus, ISO 27001, encryption in rest (for sensitive data) and Transport Layer Security V1.2 (for data transfer). Our interviews also suggest that in terms of data security Councils are using a spectrum of standards or approaches.

### Capacity and resource

A lack of resource and staff capacity makes it difficult for archive services to undertake digital preservation. Other service priorities have meant that digital preservation has been 'put on hold'. In some cases, archives staff lack the skills or confidence to deliver digital preservation.

The lack of staff capacity was also sometimes highlighted as an issue for records/information management and ICT in delivering transformation. Covid-19 has put additional pressures on staffing capacity and Council budgets.

### 4.3.2 Opportunities

#### Information and data agenda

Councils increasingly see information and data as an asset worthy of effective management. Maturing approaches encompass information and data management alongside business continuity/resilience, cybersecurity, and business process mapping. Some Councils pro-actively use existing information asset registers to identify change projects and to prioritise resources. Some Councils have integrated information management/governance and ICT functions, or these work closely together already.

#### Shared line of business systems

Shared line of business systems are often jointly procured and adopted where these are economical and appropriate for Councils. Councils want to learn from others to reduce risk, accelerate change and to use resources effectively. Shared systems at a regional level appear particularly common in North Wales. There is a Welsh Government agenda and funding for national solutions which are already being implemented. For example, there is an integrated health and social care system using Careworks (WCCIS). There are also some systems commonly used by the majority of Councils in Wales, such as Civica Modern.gov for democratic services, although these are not shared systems.

#### Collaboration on digital preservation

Despite progress slowing down recently, archive services acknowledge that working with ARCW and the National Library of Wales on a joint digital preservation system was an opportunity. ARCW (with Welsh Government support) have also provided valuable funding to archive services for digital preservation training. Archive services felt that any digital preservation solution should be collaborative.

However, archive and record management services also felt it was important that any joint digital preservation system or solution could be used for Council records with long-term retention requirements. This is currently out of scope for the ARCW digital preservation system. However, it would make it easier for archives services to create a business case for investment. It would also enable them to start conversations with records/information management, Council departments and ICT.

Some archive services have started to develop simple digital preservation workflows and processes inhouse. Some services acknowledge they could develop this 'minimal repository' approach further and this would benefit from collaboration.

### Advocacy and engagement

Archive services acknowledged they need to do more advocacy around digital preservation and recordkeeping. There are opportunities to engage with elected members, senior managers, and Council departments/services. For example, the joint services report to Joint Committees consisting of elected members. Other services have taken Council reports about archives and records management to their Scrutiny Committees, Cabinets or the Information Governance Groups. A strategic focus on residents/citizens may highlight the individual benefits/avoidance of harms aspects of appropriate recordkeeping in some areas.

Those archive services which are integrated with records management already have strong links with different departments/services. Other archive services know they need to do more work to develop these relationships. It is also important to engage with ICT and make them aware of digital preservation and recordkeeping. Those Council staff we spoke to expressed an interest and enthusiasm in this project.

### Legacy systems and unstructured information

Some staff in ICT and records management we spoke to raised issues with legacy systems. For example, contractual arrangements, proprietary formats/no open data, or lack of the necessary functionality make change difficult. However, there are projects underway to manage out legacy systems and harmonise systems onto a single platform. Cloud-based Microsoft Office 365 seems to be the preferred solution for many Councils. The shift to remote working has accelerated the pace of change and proved that rapid and radical change is possible.

Not all digital information with long-term retention requirements will be held in a line of business system. Some information may be unstructured, e.g. stored on networked drives. Other information may be stored in an Electronic and Document Records Management Systems (EDRMS). Line of business systems will sometimes link to information on a networked drive or EDRMS. However, infrastructure changes - including moving to Cloud-based platforms - usually involve reviewing unstructured digital information on networked drives. Following review data is often either cleansed and migrated to the new platform, moved to 'cold' storage, or deleted.

# 5. Learning from others

This section outlines a series of case studies relating to the preservation of digital information from line of business systems and collaboration in digital preservation. Each case study is based on the references provided in the further reading sections.

## 5.1 Line of business systems and databases

### 5.1.1 Archives First – Council born-digital records

#### Background

Archives First is a consortium of eleven Council archive services in England which has been investigating "digital preservation preparedness".

#### Relevance for Wales

Archives First has focused on Council adoption records and Council minutes.

#### Their approach

Archives First initially considered how records previously collected in paper are now being created and managed digitally within Councils, and how these can be transferred to archive services for preservation and access. They successfully exported digital records from Civica Modern.gov (Council minutes) and OLM Eclipse (adoption records) systems. They had less success with some other systems. In terms of sensitive records, they suggest encrypting an Archival Information Package on a Council network before ingesting it into a digital preservation system.

#### Further reading

Cothey, V. & Pickavance, C. (2017). *Final Report of the Archives First Digital preservation project*. Retrieved from https://www.gloucestershire.gov.uk/media/18083/201709-archivesfirst-digital-preservation-final-report.pdf

Cothey, V. (2020). *Archives First: digital preservation. Further investigations into digital preservation for local authorities*. Retrieved from https://www.gloucestershire.gov.uk/media/2094490/digital-preservation-for-local-authorities.pdf

### 5.1.2 Nuclear Decommissioning Authority – extensive retention periods

#### Background

The Nuclear Decommissioning Authority (NDA) is accountable for enormous numbers of civil nuclear records across the UK, including those held by various commercial organisations. The NDA must ensure its digital records are secure, their integrity remains intact (many of them will be required for hundreds of years), and that they are accessible in line with legislation and the relevant regulations.

#### Relevance for Wales

The NDA has established a new archive for digital and analogue records from scratch within the last decade. This has entailed significant advocacy with stakeholders to develop strategies for managing records.

#### Their approach

The NDA is in the early stages of preserving its digital records, with key priorities including:

- Understanding the digital records which need to be preserved, using the organisation's retention schedule and extensive information asset surveys across both paper and digital records.
- Internal advocacy, getting understanding and cooperation from stakeholders at all levels within an organisation, including records creators.
- Assessing organisational maturity, understanding the organisational context and mission, and establishing high-level digital preservation principles.

With the Digital Preservation Coalition, the NDA is now assessing processes and tools to preserve a wide range of formats. These include data in EDRM systems, Geographical Information Systems and 3D models, as well as more common audio-visual, images and text formats.

#### Further reading

Nuclear Decommissioning Authority. (2019). *Managing NDA Information: requirements.* Retrieved from https://www.gov.uk/government/publications/imp06-managing-nda-information-requirements

Digital Preservation Coalition. (2020a). *Digital preservation goes nuclear: project highlights and future directions.* Retrieved from https://www.dpconline.org/events/past-events/nda-webinar-dec20

Digital Preservation Coalition. (2020b). *Reliable, Robust and Resilient Digital Infrastructure for Nuclear Decommissioning.* Retrieved from https://www.dpconline.org/digipres/collaborative-projects/nda-project

### 5.1.3 Archiving the Crossrail project using JSON

#### Background

Crossrail was Europe's largest infrastructure project. It had no initial budget for creating or running an archive, and there was "an initial perception that [archiving] was a relatively uninteresting compliance issue (even suggestions that the data could all be printed rather than stored electronically)". The team had to find a sponsor and a minimal cost strategy which would allow the records to be useful beyond the life of the Crossrail Project and to be archived appropriately at Transport for London.

#### Relevance for Wales

The project dealt with proprietary line of business systems using a common output format.

#### Their approach

The project focussed on:

- Supporting regulatory and contractual data retention requirements. This was seen as the most compelling justification for the archive.
- Minimising the risk of loss of associated knowledge about information and applications held across numerous contractors and functions.
- Ensuring the records were fully encrypted at all stages, had a retention end date assigned, and were classified for security access and level of personal data held.

Millions of electronic files and 25 different proprietary applications (each containing millions of unique transactions) were formed into a unified archive which could be stored and accessed in a consistent manner. The core business objects within the applications were identified, along with the

screen(s) or report(s) needed by users to view these objects. Data and screen views were then extracted to form archived business objects which had previously been stored across numerous tables in relational databases. The project then output each business object to a JavaScript Object Notation (JSON) object and assigned additional metadata.

JSON was chosen as "…a lightweight data-interchange format which is easy for humans to read and write. It is easy for machines to parse and generate…. an ideal data-interchange language". Each JSON object represents a single business object as a set of labels with associated values. By describing the labels in a way that matches the business view of the information and using arrays to provide a structure within the object, the team ended up with a human-readable document which can be searched and displayed.

### Further reading

Crossrail Learning Legacy. (2016). *Information handover principles.* Retrieved from https://learninglegacy.crossrail.co.uk/documents/information-handover-principles/

Digital Preservation Coalition. (2018). Archiving Crossrail – Europe's largest infrastructure project, Crossrail and Transport for London. Retrieved from https://www.dpconline.org/events/digital-preservation-awards/archiving-crossrail-tfl

Goodall, A. (2018). How to sell an archive. Retrieved from https://www.dpconline.org/blog/wdpd/how-to-sell-an-archive

### 5.1.4 Public Record Office Victoria – SIARD research project

#### Background

The Public Record Office Victoria is the archive of the State Government of Victoria and has been assessing the issues around the archiving of structured data for some time.

#### Relevance for Wales

As a result of this research, they have adopted the SIARD suite normalisation tool to archive relational databases, but also accepted a pragmatic approach is needed.

#### Their approach

The 'SIARD Research' project focused on understanding the suitability of the SIARD format to capture the State Government of Victoria's structured data. SIARD Suite is a set of tools to convert proprietary databases into the non-proprietary SIARD file format. The Swiss Federal Archives originally developed it in 2004. Following testing, the research report recommended that the record office formally adopt both the SIARD format and the use of the SIARD suite.

The report also recommended the record office take a pragmatic approach to acceptance of relational databases that is guided by:

- Is it technically feasible?
- Is the 'record' expressed better as reports generated from the database, or as documents enhanced with metadata from the database?
- Is there value in taking both the relational database and generating records?

#### Further reading

Public Record Office Victoria. (2016). *SIARD Research (2013-0387) 2014-15 Report*. Retrieved from https://prov.vic.gov.au/sites/default/files/files/Govt%20Services%20General/SIARD%20Research%202014-15%20Report.pdf

### 5.1.5 National Archives of Denmark – the normalisation approach

#### Background

The National Archives of Denmark collects and preserves archives from Denmark's national authorities and has been undertaking database archiving for several years.

#### Relevance for Wales

Data from systems is submitted to the archives at frequent intervals.

#### Their approach

Their approach is to build on the following principles:

**Early identification and approval of systems.** National authorities must notify new ICT systems to the archive who then decide whether data in the system should be preserved.

**Frequent submission in a non-system dependent format.** Data is submitted at frequent intervals, normally every five years. Therefore data can be held simultaneously in the authority's ICT system and by the Danish National Archives. It also means that the Danish National Archives may hold several copies of the data because a submission could contain data included in earlier submissions.

The archive has also been involved in the development and the piloting of the Database Preservation Toolkit (DBPTK), a set of tools to store relational databases in a standard archival format (SIARD2). Other archives who have used DBPTK include the National Archives of Estonia and the National Archives of Hungary. The National Archives (UK) has also been looking at it.

#### Further reading

Ferreira, B., Faria, L., Ramalho, J. C., & Ferreira, M. (2016). *Database preservation toolkit: A relational database conversion and normalization tool.* Retrieved from https://core.ac.uk/download/pdf/76177291.pdf

Strategy for archiving digital records at the Danish National Archives. (2013). Retrieved from https://www.sa.dk/wp-content/uploads/2014/12/Strategy-for-archiving-digital-records-2013.pdf

### 5.1.6 Conceptual model for digital preservation activities (draft) – Tim Gollins, National Records of Scotland

#### Background

This draft conceptual model was presented to a "semi-active records briefing day" organised by the Digital Preservation Coalition in July 2020. The DPC had convened an "EDRMS taskforce" in February 2020) which aims to publish resources later in 2021.

#### Relevance for Wales

Gollins developed a draft conceptual model for digital preservation activities which was initially presented to the taskforce. This is based on the use case for digital data in systems.

#### The approach

The required functionality of the system and the required retention period of the data form the use case. The possible digital preservation actions required to achieve this are summarised and evaluated as shown in Figure 9 below.

The scoring indicates the level of complexity involved:

- Green: relatively straightforward to understand and to achieve either within ordinary ICT management (e.g. upgrade to a new version of a system) or using existing digital preservation solutions.
- Yellow: version control makes this more complex. Key benefits may include business continuity and deliberate sampling of material for its historical value.
- Amber: very much more complex, particularly as paradigm changes are likely - making it difficult for ICT professionals to plan so far ahead.
    - Other issues include version control (as with yellow); management of workflows; difficult to maintain functionality requirements over a long retention period.
    - Key benefits may include essential insurance against loss achieved by moving data to archive.
- Red: although ICT and digital preservation professionals have no solutions, "for ever" is actually comprised of a series of shorter time periods. So solutions include iterative adoption of green, yellow and amber solutions following the principle of parsimony (only taking the minimal action necessary when required).

| | | Retention period | | | |
|---|---|---|---|---|---|
| | | 0-7 years | 5-15 years | 10 – 50 years | 40 years + |
| **Required functionality** | Full | No special preservation action | Migrate business system (Export, transform and load/ETL) | Migrate business system (Export, transform and load/ETL) ?AND? Move to Archive | ??? |
| | Modify or update | No special preservation action | Migrate business system (Export, transform and load/ETL) | Migrate business system (Export, transform and load/ETL) ?AND? Move to Archive | ??? |
| | Extension only (e.g. new versions) | No special preservation action | Migrate business system (Export, transform and load/ETL) ?AND? Move to Archive | Migrate business system (Export, transform and load/ETL) ?AND? Move to Archive | ??? |
| | Read only | No special preservation action | Migrate business system (Export, transform and load/ETL) OR Move to Archive | Move to Archive | Move to Archive |

*Figure 9 - Draft conceptual model of digital preservation activities accounting for required functionality of systems and retention period of data*

## Further reading

Gollins, T. (2020). *Preserving Semi-Current Records: EDRMS Task Force – Reflections* (presentation to the DPC "Semi-Current Records Briefing Day") available to DPC members at https://youtu.be/WGUOM6HHGf4

## 5.2 Digital preservation collaboration

### 5.2.1 Digital Preservation Guidance for Scottish Local Authorities

#### Background

The National Records of Scotland worked with Scottish Council archive services to develop digital preservation guidance.

#### Relevance for Wales

A simple and pragmatic interim solution is better than doing nothing.

#### Their approach

In 2016 The National Records of Scotland began working on a digital preservation guidance and capacity planning project and recruited two Skills for the Future trainees to develop this. The project's output was 'Digital Preservation Guidance for Scottish Local Authorities', which introduces digital preservation in a Council context and includes practical advice. It includes a case study of the 'interim solution' developed at The National Records of Scotland which could be adopted by the Council archive services. This consisted of:

- Secure storage on a networked server.
- Encrypted portable media to transfer digital records from depositors to the secure network.
- A standalone (non-networked) computer with write blocker.
- Software to run some archival and technological processing before ingest.
- An archivist to manage these systems and processes.

#### Further reading

Digital Preservation Guidance for Scottish Local Authorities. (2017). Retrieved from https://www.nrscotland.gov.uk/files/record-keeping/public-records-act/nrs-digital-preservation-guidance-for-local-authorities.pdf

Bit by bit: Processing Born Digital Accessions at National Records of Scotland. (2018). Retrieved from https://www.dpconline.org/blog/bit-by-bit

### 5.2.2 Archives West Midlands, England

#### Background

Archives West Midlands (AWM) is a charitable incorporated organisation with 23 members from Council, university and specialist collections.

#### Relevance for Wales

Their approach focuses on developing templates, training and shared learning rather than developing a single digital preservation system.

#### Their approach

**Developing policies, procedures, templates and a model business case for use by services to encourage a consistent approach across the region.** Archivists from member organisations collated existing policies and guidance to develop a suite of template documents.

**Dedicated training, networking and sharing experiences.** In 2019-2020 this included:

- Digital Preservation Coalition introductory course.
- A practical session on 'fixity'.
- Fifteen-minute sharing sessions are routinely held at AWM meetings to allow members to network informally and compare progress in digital preservation.

**Hands-on trials of the systems offered by Preservica and Archivematica.** Workshops sessions demonstrated two digital preservation solutions. These helped archivists understand the differences between the systems and assess the most appropriate for their circumstances.

#### Further reading

Archives West Midlands Case Study. (2020). Retrieved from https://www.nationalarchives.gov.uk/archives-sector/case-studies-and-research-reports/case-studies/digital/digital-preservation/archives-west-midlands/

Archives West Midlands. (2020). *Annual Review 2019/20*. Retrieved from https://www.archiveswestmidlands.org.uk/wp-content/uploads/2020/09/AWM-Annual-Review-2019-2020.pdf

### 5.2.3 Local Authority Digital Preservation Consortium

#### Background

Dorset History Centre, West Sussex Records Office and the Wiltshire & Swindon History Centre, selected Preservica's Cloud Edition for consortia, to safeguard and provide greater public access to their long-term and permanent records.

#### Relevance for Wales

A business case for digital preservation can be built around long-term preservation of the Council's digital information. Consortia can help achieve value for money in terms of procurement, although the consortium edition is no longer offered by Preservica.

#### Their approach

Dorset County Council's adoption records have statutory retention periods of 100 years. Dorset History Centre created a business case to purchase Preservica to manage these records and other digital records at risk of loss.

Through the Archives First partnership, it also became apparent that other services were looking at purchasing a digital preservation system. Wiltshire and West Sussex expressed an interest in a consortium approach. Preservica's Cloud Edition for consortia was made available to groups of three or more non-profit organisations. This allowed the services to secure a discounted price.

The benefits of the collaboration are not merely financial - there is the mutual support and learning, both with the system, but also with the record types that are to be preserved that the partnership offers. In 2019 the three existing members were joined by the Oxford History Centre, Staffordshire Archives, Berkshire Record Office, Kent Archives and Birmingham City Archives and Collections. This offered a further discounted price for the services.

#### Further reading

Local Authority Digital Preservation Consortium: Dorset History Centre, West Sussex Records Office, Wiltshire & Swindon History Centre. (2020). Retrieved from https://www.dpconline.org/events/digital-preservation-awards/local-authority-digital-preservation-consortium

### 5.2.4 The Digital Repository of Ireland

#### Background

The Digital Repository of Ireland is a national digital repository for Ireland's humanities, social sciences, and cultural heritage data.

#### Relevance for Wales

Their governance and membership model may offer a solution for the ARCW Digital Preservation project.

#### Their approach

The Digital Repository of Ireland (DRI) was originally built by a research consortium of six academic partners working together to deliver the repository, policies, guidelines and training. Core academic institutions continue to manage the repository and implement its policies, guidelines and training. These are the Royal Irish Academy, Trinity College Dublin and Maynooth University.

There are two routes an organisation may take to deposit material with the DRI Repository. An organisation can decide to become a DRI member or instead utilise an existing DRI member's expertise and knowledge. There are membership fees, a brochure outlining membership benefits, a Membership Policy and a terms of deposit.

DRI receives a core operating grant from the Department of Education and Skills via the Higher Education Authority and the Irish Research Council covering a percentage of operating costs. The remainder of operating costs are raised through membership fees and external grants.

#### Further reading

Digital Repository website at https://repository.dri.ie/

## 6. SWOT

The results of the various strands of the research have informed the creation of this SWOT for preserving and providing long-term access to Council digital information, particularly in line of business systems.

| | **Helpful to the objective: how to maintain long-term access to records held on Council line of business systems in Wales** | **Harmful to the objective: how to maintain long-term access to records held on Council line of business systems in Wales** |
|---|---|---|
| **Internal origin: ARCW / Archive Services (organisational attributes)** | **Strengths**<br>• There is established collaboration through ARCW on Digital Preservation, including resources, training, and the ARCW system.<br>• Some archive services have started to develop and implement simple digital preservation workflows and processes inhouse.<br>• Some archive services are integrated with records/information management.<br>• Some information and records management services are integrated with Council ICT functions and have access to their existing knowledge and expertise.<br>• Some archive services have strong links with Council service departments.<br>• This project has developed services' understanding of the wider digital preservation sector and work elsewhere. | **Weaknesses**<br>• There are gaps between archive service collecting policies and how these are implemented for Council records. Retention schedules and Information Asset Registers are not generally used for this.<br>• Recordkeeping requirements including official marking, data protection issues and retention are not always understood by archive services.<br>• Some archive services are disconnected from Council information/records management services. Some archive services are also viewed as disconnected from the Councils' day-to-day work delivering vital services to residents.<br>• Archive services lack resources and staff capacity.<br>• Archive services are collecting a small amount of born-digital records and are not actively collecting digital. Most services felt they cannot be more proactive in this area until they have a 'proper' digital preservation system.<br>• Aspects of the ARCW system are not clearly defined and are poorly understood (e.g. governance, costs, security levels, types of records covered). It covers limited digital formats. |

| | Helpful to the objective: how to maintain long-term access to records held on Council line of business systems in Wales | Harmful to the objective: how to maintain long-term access to records held on Council line of business systems in Wales |
|---|---|---|
| **External origin: Wider Councils / ARCW system / Welsh Govt (environ. attributes)** | **Opportunities**<br>• Established expertise, knowledge and use in ICT of standard ETL (Export Transform and Lift) processes and open data formats.<br>• Councils increasingly see information and data as an asset worthy of effective management. Some Councils have a more mature and pro-active approach. Some have integrated information management/governance, and ICT functions.<br>• Outcomes for residents are underpinned by effective recordkeeping, including digital preservation. This can be advocated to key stakeholders (e.g. elected members, senior management, other Council departments).<br>• The digital transformation agenda includes changes to infrastructure, managing out legacy systems, and embedding remote working. These changes depend on effective information management and recordkeeping.<br>• There are strong precedents for collaboration within Wales, including communities of learning, joint procurement and shared systems. It is a key agenda for the Welsh Government.<br>• Expertise in the long-term retention of Council information may help archive services to build a case for digital preservation.<br>• The 'minimal repository' approach to digital preservation could be developed further within archive services using existing tools and resources.<br>• The ARCW system could move from the research & development phase into production. | **Threats**<br>• There is a lack of awareness of recordkeeping requirements in Councils and how they apply to their line of business systems. Responsibilities of information asset owners are not always well understood, identified or supported.<br>• The implementation of retention requirements for digital records is much more difficult than for paper: identifying triggers and calculating dates.<br>• The intangible nature and scale of digital records make it hard for information asset owners to conceptualise.<br>• Councils are using a wide range of business systems. Information about these is sometimes inconsistent and incomplete.<br>• There are perceptions in Councils that archives and records management are to do with paper and not digital. Digital is viewed as an ICT issue involving technology and systems.<br>• Councils lack resources and staff capacity. Budgets are likely to be more pressured in the future. |

# 7. Going forward

## 7.1 Developing opportunities

The Steering Group held a workshop which focused on the results of the research and next steps. The SWOT from section 6 of this report was presented to the Steering Group. Members were then placed in four breakout groups and were asked to consider one of the following:

- How could we use these strengths to take advantage of these opportunities?
- How could we overcome these weaknesses that prevent us from taking advantage of these opportunities?
- How could we use these strengths to reduce the likelihood and impact of these threats?
- How could we address these weaknesses that will make these threats a reality?

Each group reported their discussions back to the main group. Following this, each breakout group took a different question and were asked to think about anything new to add to what the first group had already said.

The results of the discussions were summarised, and four key themes emerged:

1. Undertaking advocacy with decision-makers, e.g. Councillors, portfolio holders, senior management, Welsh Government.
2. Building relationships within Councils, e.g. with ICT, information asset owners, records/information management.
3. Developing practical digital preservation work within archive services.
4. Strengthening the ARCW Digital Preservation Group and system.

Steering Group members were asked to vote on which theme they saw as the top priority. Theme 1 was viewed as the highest priority, followed by 2 and 3/4. However, it was acknowledged that these themes were not mutually exclusive and they need to take all four forward. The logic model in Section 7.2 starts to show how these themes and their outcomes relate to each other.

*Table 5 - Summary of themes*

| Description | Benefits | Risks | Resource required |
|---|---|---|---|
| **1. Undertaking advocacy with decision-makers, e.g. Councillors, portfolio holders, senior management, Welsh Government** | | | |
| Developing advocacy resources focussed on outcomes and benefits to citizens, Council/Government strategic priorities and agendas.<br><br>AND<br><br>Using these resources to advocate to appropriate stakeholders in appropriate ways for specific changes which are suitable, feasible, and acceptable. | Archive and records management staff will have the skills, confidence and tools to increase awareness of the continuity of digital data among portfolio holders and strategic programme managers (both within Councils and within Welsh Government).<br><br>Strategic programmes will include digital data continuity.<br><br>Digital data within highest risk functions will have requirements defined and will be available with the characteristics of authenticity, reliability, integrity and useability to support service delivery for citizens and help improve outcomes for individuals and communities. | Incremental and continuous changes in behaviours, policies, interventions and technical realities will be required over a considerable period of time from numerous people.<br><br>No immediate product or service to develop.<br><br>“Digital preservation for posterity/archives” is not a resonant concept by itself.<br><br>Depends on building internal relationships (theme 2). | Within Councils and Welsh Government: time and skills from archives and records management staff. Skills include interpersonal, strategic and political awareness.<br><br>Stakeholder time and attention (to varying levels and in varying contexts over time). |

| Description | Benefits | Risks | Resource required |
|---|---|---|---|
| **2. Building relationships within Councils, e.g. with ICT, Information Asset Owners, records/information management** | | | |
| Explicitly linking long-term data continuity to existing governance, processes and strategic agendas.<br><br>AND<br><br>Developing specific use case(s) for highest risk functions (section 4.1.3 above) and/or business critical data to define and pilot suitable, feasible and acceptable approaches to digital data continuity. Taking a collaborative approach to this work. | Information Asset Owners, ICT and archive and records management staff will have the skills, confidence and tools to improve the continuity of digital data in specific systems and/or functional areas.<br><br>Recordkeeping requirements of specific systems will be more clearly understood and managed, including national systems and those systems where there is effectively a monopoly).<br><br>Collaboration among Councils in Wales (and beyond) will enable improved negotiations with suppliers where system development is required.<br><br>Strategic programmes both within Councils and nationally will include digital data continuity.<br><br>Digital data within highest risk functions will have requirements defined and will be available with the characteristics of authenticity, reliability, integrity and useability to support service delivery for citizens and help improve outcomes for individuals and communities. | Incremental and continuous changes in behaviours, policies, interventions and technical realities will be required over a considerable period of time from numerous people.<br><br>“Digital preservation for posterity/archives” is not a resonant concept by itself;<br><br>The concept of “business critical” data is context dependent.<br><br>Depends on advocacy with decision-makers (theme 1).<br><br>Aspects may be mutually dependent on practical digital preservation work (theme 3).<br><br>Aspects may depend on the ARCW system being in production (theme 4). | Time and skills from archives and records management staff. Skills include interpersonal, strategic and political awareness as well as a basic level of digital skills.<br><br>Positive relationships with stakeholders.<br><br>Time from Information Asset Owners, Information Governance, and ICT staff.<br><br>Cost of systems development where/when piloting takes place. |

| Description | Benefits | Risks | Resource required |
|---|---|---|---|
| **3. Developing practical digital preservation work within archive services** | | | |
| Developing the skills and confidence of archives and records management staff in digital preservation.<br><br>Using existing resources to develop simple workflows and processes for collecting and preserving digital data (the "minimal repository" approach).<br><br>Integrating archive services collections development activities with Council information management arrangements. | Archive and records management staff will have the skills, confidence and experience to undertake digital preservation.<br><br>Archive services will be able to actively collect and preserve digital collections and meet NDSA Levels 1/2.<br><br>Archive and records management services will change perceptions that they are limited to paper by being proactive in digital preservation.<br><br>Archives and records management staff will have the confidence to talk to decision-makers and Council colleagues about preserving digital data in the long-term. | The advocacy and relationship building will also be required to change perceptions of decision-makers and Council colleagues (themes 1 and 2).<br><br>Archive and records management may not be allowed to use simple open source/free software.<br><br>The minimal repository approach may not be able to cope with large and complex data, e.g. data from line of business systems.<br><br>To meet NDSA Levels 3/4 a more sophisticated approach or system will be required.<br><br>Aspects may depend on the ARCW system being in production (theme 4). | Time from archives and records management staff.<br><br>Support from ICT to install some simple open source/free software.<br><br>Cost of Council networked server storage. |

| Description | Benefits | Risks | Resource required |
|---|---|---|---|
| **4. Strengthening the ARCW Digital Preservation Group and system** | | | |
| Removing the disconnect between archive heads of service and the ARCW Digital Preservation Group<br><br>Increasing the ownership of the work of the ARCW Digital Preservation Group and system by archive heads of service.<br><br>Moving the ARCW Digital Preservation system from R&D phase into service, with clarity over governance (in its widest sense), information governance framework & processes including security, costs [etc.]. | Increased engagement of archive services and records management in the ARCW Digital Preservation Group and system.<br><br>Work of the group is more likely to reflect Council priorities and needs.<br><br>Robust digital preservation solution in which Councils can have confidence. | The future development of the system does not meet the needs of Councils. As a result, Councils will be reluctant to invest in the system.<br><br>There is currently no roadmap or business case for further system development. | ARCW/National Library of Wales staff time.<br><br>Time from archives and records management staff.<br><br>Apply project/service management processes/roadmap. |

## 7.2 Logic model - providing long term access to Council digital information and data

**Situation**

Principal Councils in Wales hold digital data which are required in the long-term (25 years or more). In general the governance and technical capabilities of the line of business systems used for structured and unstructured data do not account for these retention requirements to be met.

In recent years, archive services in Wales have been working collaboratively to develop digital preservation solutions to ensure the continuity of some forms of digital data. This work may provide some technical solutions, as may other digital preservation activity carried out by others. However behaviour change, policy frameworks and processes are required in addition to technical solutions to ensure long-term digital data continuity.

These are at differing levels of maturity and are not consistent across all Councils and/or national systems. As a result digital data continuity is threatened which results in increased risks to Welsh citizens.

**INPUTS**

**What we invest**

Council staff time, expertise and knowledge - archives, information/records management, IT, and Information Asset Owners (IAOs).

Costs to develop systems and processes.

Partner time, expertise and knowledge (ARCW, National Library of Wales, Welsh Government).

Digital preservation systems and processes.

Information management systems and processes.

**OUTPUTS**

**What we do**

Advocacy with decision makers.

Build relationships within Councils and linking long-term data continuity to existing governance, processes and strategic agendas.

Provide training for archives/records management staff.

Archive services develop a minimal repository approach in the short-term.

A governance review of the ARCW Digital Preservation Group and system.

Services start to use and subscribe to the ARCW digital preservation system.

**OUTCOMES - IMPACT**

**Short term**

Increased awareness of the risks and opportunities with decision makers.

Stronger relationships between archives/records management and other parts of the Council, including IT and IAOs.

Council staff have the skills, confidence and tools to improve the continuity of digital data and increase awareness of this with decision makers.

Archive services will actively collect digital information and data.

Clear governance and roadmap for the ARCW Digital Preservation Group and system.

**Medium term**

Change of perceptions within Councils of archives and records management.

Strategic programmes will include digital data continuity.

Councils understand what digital data they hold has long-term retention periods and recordkeeping requirements of specific systems will be more clearly understood.

Increased investment from Councils to manage the issue.

The ARCW digital preservation system meets the needs of Council archives/records management services.

**Long term**

Digital continuity of authentic, reliable, complete and usable data will be secured which supports the delivery of the Well-being of Future Generations Act and improves Welsh citizens' social, cultural, environmental and economic well-being.

## 7.3 Recommendations and next steps

These recommendations start to identify how the opportunities in section 7.1 could be delivered in practice. We recommend that detailed project initiation documents and action plans are developed for each workstream.

| What? | When? | Priority? | Links? | Who? |
|---|---|---|---|---|
| **1. Undertaking advocacy with decision-makers, e.g. Councillors, portfolio holders, senior management, Welsh Government.** | | | | |
| 1.1 Develop initial advocacy resources, including key messages and stakeholder mapping. Stakeholders will include key groups such as the Welsh Local Government Association, Socitm Cymru, IRMS O365 working group. | Short term | High | 1.2 | Project steering group/ARCW. |
| 1.2 Develop an advocacy plan to deliver and measure this work over time both within individual Councils and for national programmes (e.g. WCCIS, Hwb). | Short term | High | 1.1 | Project steering group/ARCW. |
| 1.3 Consider developing Archive Service Accreditation scheme further as a service improvement tool for digital preservation. | Medium term | Medium | - | ARCW and Welsh Government Culture and Sport Division representatives on Accreditation partnership/panel. |

| What? | When? | Priority? | Links? | Who? |
|---|---|---|---|---|
| **2. Building relationships within Councils, e.g. with IT, information asset owners, records/information management.** | | | | |
| 2.1 Develop scalable and measurable plans to integrate long-term data continuity with existing governance, processes and strategic agendas within individual Councils and the Welsh Government.<br><br>Specific areas of work will vary among Councils, but areas to consider could include:<br>• Representing archives/long-term perspective on information governance groups;<br>• Applying digital preservation activity matrix (section 5.1.6 above) to IT systems management processes;<br>• Including data continuity in digital transformation or similar annual workplans;<br>• Identifying digital data continuity on corporate and/or programme risk registers with ownership by the SIRO;<br>• Including a 'big-bucket' retention approaches (replacing numerous individual retention triggers) in Information Asset management regimes;<br>• Influencing data continuity approaches for national systems, particularly WCCIS and Hwb. | Medium term | High | 1.1 | Project steering group/ARCW/individual services. |

| What? | When? | Priority? | Links? | Who? |
|---|---|---|---|---|
| 2.2 Develop specific use case(s) for Council function(s) with the highest digital preservation risk (identified in report section 4.1.3 above) and/or business critical data. | Short term | Medium | 1.1 | Project steering group/ARCW. With Information Asset Owners. |
| 2.3 Pilot suitable, feasible and acceptable collaborative approaches to digital data continuity for a specific use case. This may form an alpha project in a future round of digital transformation funding.<br><br>Note that this will require the use of open-source software/tools (such as those referred to in report section 5) and must follow the Welsh Government Digital Service Standard. | Medium term | Medium | 2.1<br><br>2.2 | Project-specific Board or steering group/ARCW. |
| **3. Developing practical digital preservation work within archive services.** | | | | |
| 3.1 Ensure all Council archives and records management staff (whatever their position) in Wales undertake the Novice to Know-How: Online Digital Preservation Training. | Short term | Medium | 3.2 | Services to arrange with The National Archives/Digital Preservation Coalition. |
| 3.2 Deliver practical hands-on training on using open-source/free software for integrity checking and DROID to archives staff in Wales. | Short term | High | 3.1 | ARCW Digital Preservation Group. |

| What? | When? | Priority? | Links? | Who? |
|---|---|---|---|---|
| 3.3 Use The National Archives' 'Digital preservation workflows' to develop their own workflows for a 'minimal repository' including or strengthening existing workflows (listed in order of priority)<br>• Ongoing integrity checking.<br>• Pre-ingest/deposit workflows.<br>• Ingest/accessioning workflow, including capturing technical metadata and checksums. | Short term | High | 3.1<br>3.2<br>2.1 | ARCW Digital Preservation Group and individual services. |
| 3.4 Pilot these workflows with Council minutes and agenda papers[4] (using the current functionality of Modern.gov system). | Medium term | Medium | 3.3 | Individual services and Democratic Services. |
| 3.5 Review their existing collections for gaps where records are now digital and identify relevant Information Asset Owners within Councils. | Medium term | High | 1.1 | Individual services. |
| 3.6 Pro-actively review Council retention schedules and identify areas for permanent preservation. | Medium term | High | 2.1 | Individual services. |

[4] Note – Current legislation means that Council minutes should be printed/signed, but this does not apply to agenda papers/reports and background papers.

| What? | When? | Priority? | Links? | Who? |
|---|---|---|---|---|
| 3.7 Look out for forthcoming resources from the DPC EDRMS taskforce (expected later in 2021) which may include additional solutions/tools/collaborations etc. | Short term | High | - | ARCW Digital Preservation Group. |
| 3.8 Use the Digital Preservation Coalition's Rapid Assessment Model (DPC RAM) or The National Archives' DiAGRAM tool to help inform future digital preservation planning. | Medium term | Medium | - | Individual services (archives and records management) |
| **4. Strengthening the ARCW Digital Preservation Group and system.** | | | | |
| 4.1 Review the governance of the ARCW Digital Preservation Group, including the creation of a Project Board and a terms of reference. | Short term | High | - | ARCW. |
| 4.2 Create governance arrangements for the ARCW digital preservation system, including service level/partner agreements and a roadmap. | Short term | High | 4.2 | ARCW and National Library of Wales. |
| 4.3 Start using and subscribe to the ARCW digital preservation system for an initial period of three years. | Medium term | Medium | 4.1<br>4.2 | Individual services. |

| What? | When? | Priority? | Links? | Who? |
|---|---|---|---|---|
| 4.4 Bring ‘current records’ into scope for the ARCW digital preservation system, and reflect this in any future developments or roadmap. | Short term (bringing into scope).<br><br>Long term (roadmap). | High | 2.1-3<br><br>4.3 | ARCW and National Library of Wales. |

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