



IPRES 2023

Digital Preservation in Disruptive Times

19th International Conference ■ Champaign-Urbana, Illinois ■ September 19–22, 2023

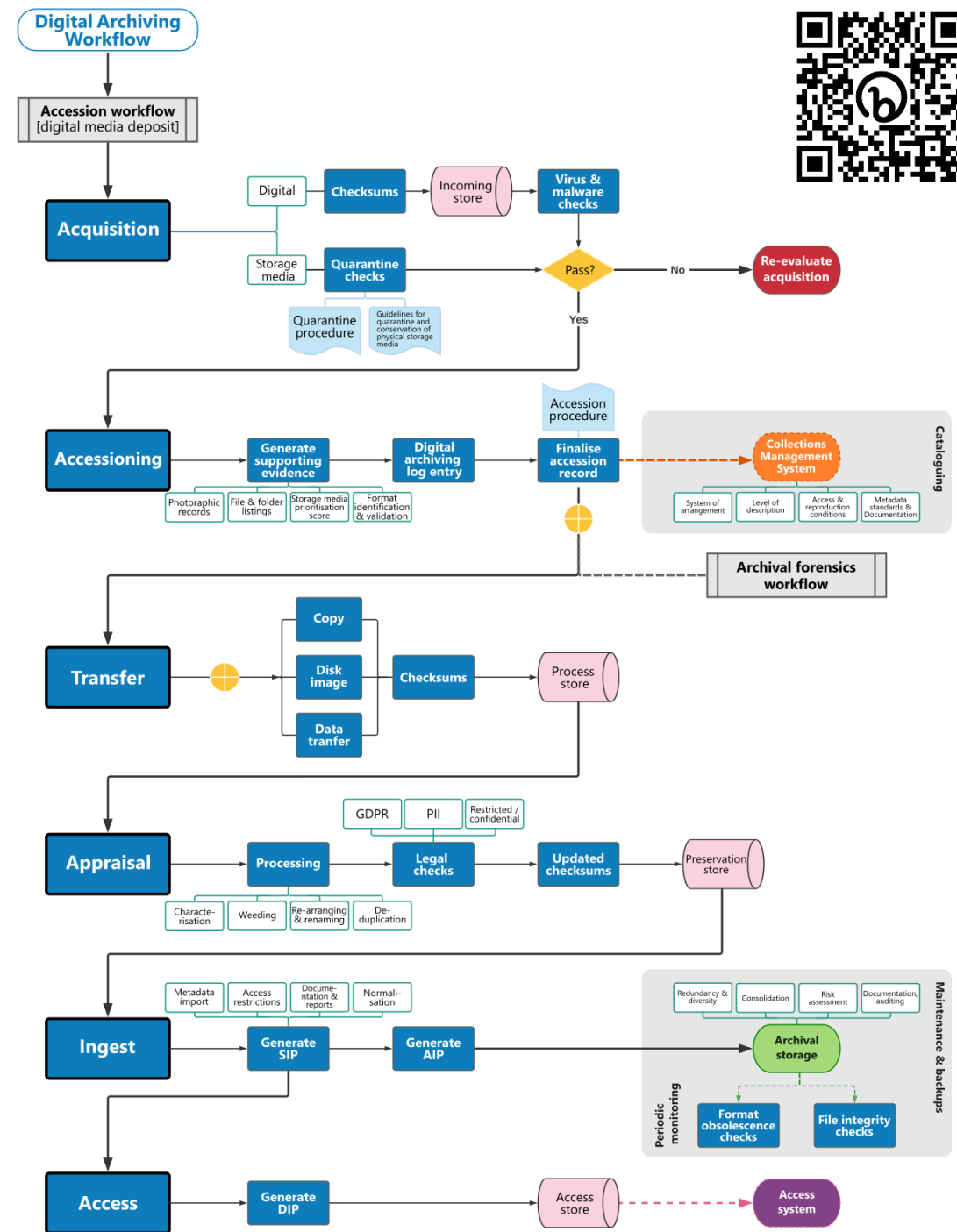
Creating an End-to-End Process for
Implementing a Digital Archiving Workflow:
How we are putting theory into practice

Leo Konstantelos & Emma Yan

Thu 21st Sep 2023, 13:30-15:00

Pilot project ran from Dec 2022 – Sep 2023 to produce an end-to-end process for implementing our digital archiving workflow.

Develop, test and evaluate the necessary framework for delivering robust digital preservation and digital archiving services.





University
of Glasgow

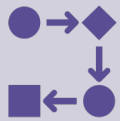
Proposal submission gives more detail on what we intended to achieve



<http://bit.ly/3LmEbYZ>



Key areas



Develop policies, workflows, procedures and tools for digital archiving






Review existing ASC policies and donor agreements



Update digital asset register, create risk register

Outcomes – Archival Forensics Lab access policy

- Policy provides conditions of access for individuals seeking access to the Archival Forensics Lab (AFL).
- Follows and/or complies with the specifications defined in:
 - Interpol Global Guidelines For Digital Forensics Laboratories
 - UK Gov Forensic science providers: codes of practice and conduct, 2021
- AFL access agreement
- AFL access application form

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|--|--------------------------------------|--|----------------|--|---|--|---|--|------------------|--|-------------------|--|----------------|--|---|--|----------------------------|--|------------|--------------------------|---------|--------------------------|------------|--------------------------|---------------|--------------------------|------------------------|--------------------------|---------------------|--------------------------|---------------------------|--|------------------------|--------------------------|---|--------------------------|-----------------|--------------------------|------------------------|--------------------------|--|
|  <p>Archives & Special Collections Application to Access the Archival Forensics Lab (AFL)</p> |  <p>Archives & Special Collections Archival Forensics Lab access policy</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1"> <tr><td>Name of applicant:</td><td></td></tr> <tr><td>Name of University/HEI/Organisation:</td><td></td></tr> <tr><td>Position held:</td><td></td></tr> <tr><td>Supervisor name (if applicable):</td><td></td></tr> <tr><td>Date of application:</td><td></td></tr> <tr><td>Contact address:</td><td></td></tr> <tr><td>Telephone number:</td><td></td></tr> <tr><td>Email address:</td><td></td></tr> <tr><td colspan="2">Application for access to: [tick all that apply]</td></tr> <tr><td colspan="2">F.R.E.D workstation</td></tr> <tr><td>FTK Imager</td><td><input type="checkbox"/></td></tr> <tr><td>FTK 7.6</td><td><input type="checkbox"/></td></tr> <tr><td>BitCurator</td><td><input type="checkbox"/></td></tr> <tr><td>Archivematica</td><td><input type="checkbox"/></td></tr> <tr><td>Preservation store (X)</td><td><input type="checkbox"/></td></tr> <tr><td>TreeSize / WinMerge</td><td><input type="checkbox"/></td></tr> <tr><td colspan="2">ESD-protected area</td></tr> <tr><td>Storage (wall shelves)</td><td><input type="checkbox"/></td></tr> <tr><td>Forensic equipment (tools, drives, packaging)</td><td><input type="checkbox"/></td></tr> <tr><td>Workbench table</td><td><input type="checkbox"/></td></tr> <tr><td>Other, please specify:</td><td><input type="checkbox"/></td></tr> </table> | Name of applicant: | | Name of University/HEI/Organisation: | | Position held: | | Supervisor name (if applicable): | | Date of application: | | Contact address: | | Telephone number: | | Email address: | | Application for access to: [tick all that apply] | | F.R.E.D workstation | | FTK Imager | <input type="checkbox"/> | FTK 7.6 | <input type="checkbox"/> | BitCurator | <input type="checkbox"/> | Archivematica | <input type="checkbox"/> | Preservation store (X) | <input type="checkbox"/> | TreeSize / WinMerge | <input type="checkbox"/> | ESD-protected area | | Storage (wall shelves) | <input type="checkbox"/> | Forensic equipment (tools, drives, packaging) | <input type="checkbox"/> | Workbench table | <input type="checkbox"/> | Other, please specify: | <input type="checkbox"/> |  <p>Archives & Special Collections Archival Forensics Lab (AFL) Agreement</p> <p>Audience This agreement is for all Archives & Special Collections staff; and for any other party (staff member or visitor) who has been granted access to the Archival Forensics Lab to process collections using the equipment, machines and technology available.</p> <p>Purpose This agreement sets out the requirements and responsibilities of those who have access to the AFL and ensures that all parties concerned understand their obligations.</p> <p>AFL agreement For all ASC Staff, Facilities Management staff and Visitors with access to the AFL:</p> <ul style="list-style-type: none"> • I have read and understood the Archival Forensics Lab access policy. • I will follow the conditions of access to the AFL as per the AFL Access Policy. • I understand that any breach of the policy will have appropriate action taken. <p>For ASC Staff and Visitors who have been granted permission to use the AFL facilities:</p> <ul style="list-style-type: none"> • I will follow the guidelines and procedures for the use of equipment, machines, and technology available in the AFL. I understand that it is my responsibility to ask for further guidance from ASC Digital staff if I am unsure of any aspect of the use of the AFL and its facilities. <p>Signed: _____</p> <p>Name: _____ (IN BLOCK CAPITALS)</p> <p>Date: _____</p> <p>Approval Version: 1.0_25/05/2023</p> |
| Name of applicant: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Name of University/HEI/Organisation: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Position held: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Supervisor name (if applicable): | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Date of application: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Contact address: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Telephone number: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Email address: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Application for access to: [tick all that apply] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| F.R.E.D workstation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| FTK Imager | <input type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| FTK 7.6 | <input type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| BitCurator | <input type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Archivematica | <input type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Preservation store (X) | <input type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| TreeSize / WinMerge | <input type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ESD-protected area | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Storage (wall shelves) | <input type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Forensic equipment (tools, drives, packaging) | <input type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Workbench table | <input type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Other, please specify: | <input type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p><small>For ASC administration purposes only</small></p> <table border="1"> <tr><td>Access approved by:</td><td></td></tr> <tr><td>Date approved:</td><td></td></tr> <tr><td>Review Date:</td><td></td></tr> <tr><td>Any conditions (e.g. mandatory training / restriction on equipment available)</td><td></td></tr> </table> | Access approved by: | | Date approved: | | Review Date: | | Any conditions (e.g. mandatory training / restriction on equipment available) | | <p>of Archives & Special Collections (ASC) and policies and procedures.</p> <p>ies\SAFETY.DOC</p> <p>ment forms</p> <p>ies\Access Policy.doc</p> <p>tions defined in:</p> <p>nsics Laboratories of practice and conduct, 2021</p> <p>and material processed in the lab necessitates</p> <p>uals seeking access to the Archival Forensics Lab</p> <p>se unauthorised access to the AFL and further g and temporary storage.</p> <p>Relations & Digital Preservation team authorised</p> <p>yed by Facilities Management team.</p> <p>ho visits AFL premises for any reason.</p> <p>itor.</p> <p>s a Visitor during their time on AFL premises.</p> <p>e the AFL space and/or facilities.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| Any conditions (e.g. mandatory training / restriction on equipment available) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |



Outcomes – Digital holdings

- Updated a previous digital scoping survey to build a digital asset register
- Need to think about integration with our collection management system, particularly around location logging



Outcomes – Quarantine and conservation

- Guidelines for quarantine checks and conservation of computer storage media
- Covers magnetic disks, floppy disks, optical media, cassettes and tapes, solid state media
- Based on British Standards, community resources and own expertise
- Will be released under CC Licence Q1 2024

DIGITAL ARCHIVING STACKS

Quarantine and conservation

Published 14/09/2023

Guidelines for quarantine checks and conservation of storage media acquisitions

Minimum requirements

- All [storage media acquisitions](#) must be handled and transported exactly as specified in this guide for the type of storage medium.
- Acclimatisation is mandatory when taking storage media out of archival storage for processing in an operational environment (e.g. the Archival Forensic Lab).
- Visual inspection must be carried out for all storage media acquisitions. If the number is prohibitive (larger than 50 media as a ballpark), visual inspection must be carried out for a random sample of ca. 50% of the overall number of media.

Introduction

This guide covers requirements and recommendations for quarantine checks, conservation, long- and short-term retention conditions of [computer storage media](#) that are acquired as part of ASC collections; or that have derived as the output of digitisation (e.g. reel-to-reel tape digitised and stored in a DVD).

The guide covers five broad categories of storage media, which are typically found in ASC collections:

- Magnetic disks
- Floppy disks
- Optical media
- Cassettes and tapes
- Solid state media

For each category, the following information is provided:

- Common media types covered.
- Environmental conditions for long-term storage (e.g. in the stacks).
- Conservation guidelines for storage, handling, visual inspection, transportation, acclimatisation and labelling.
- Sources - mostly British Standards documents and other sources as indicated.

Wherever necessary, reference images are provided as visual aids to the guidelines.

Magnetic disks

Floppy disks

Optical media

Cassettes and tapes

Solid state media

Definitions

Sources

- Wikipedia contributors. (2023, September 8). Computer data storage. In Wikipedia, The Free Encyclopedia. Retrieved 15:56, September 14, 2023, from https://en.wikipedia.org/w/index.php?title=Computer_data_storage&oldid=1174430798
- Laszars, M. (2019). Guidelines for Storage and Handling Born Digital Media. Software Preservation Network. Available from: <https://www.softwarepreservationnetwork.org/wp-content/uploads/2020/04/Guidelines-for-Storage-and-Handling-Born-Digital-Media.pdf>
- Krogh, P. (2015). Hard Drive Handling, Data Storage Hardware, Best Practices. American Society of Media Photographers. Available from: <https://www.dobobroff.com/data-storage-hardware/hard-drive-handling.html>
- Preservation Self Assessment Program (PSAP). (nd). Optical media. University of Illinois at Urbana-Champaign. Available from: <http://oggs.library@illinois.edu/conservation-help-center/opticalmedia>
- Brown, A. (2008). Care, Handling and Storage of Removable Media. Digital Preservation Guidance Note 3. The National Archives. Available from: <https://nida.nationalarchives.gov.uk/documents/information-management/removable-media-care.pdf>

Optical media

Media types

CD-ROM, CD-R, CD-RW, Audio CD, DVD-ROM, DVD-RAM, DVD-RW, Blue-ray Disc, MiniDisc

Long-term environmental conditions

| | |
|----------------------------------|-------|
| Annual average temperature (°C) | 20 |
| Minimum average temperature (°C) | 18 |
| Maximum average temperature (°C) | 22 |
| Relative Humidity (%) | 35-45 |

Conservation

| | |
|--|---|
| Storage | No rapid changes in temperature, humidity or both. Dust- and moisture-free storage and operational areas, away from dust-producing peripherals and moisture-emitting equipment. Store in dark environment. No exposure to direct sunlight, high heat and sources of ultraviolet light. Avoid environments that produce acidic and oxidising gases. Avoid dirt, foreign material, fingerprints, smudges, and liquids by wiping with a clean cotton fabric in a straight line from the centre of the disc toward the edge. Use CD/DVD-cleaning detergent, Isopropyl alcohol, or methanol to carefully remove stubborn dirt or material. Avoid original packaging for optical media, especially DVDs, which can be less than desirable as the hubs may be too large or require excessive pressure to be applied in order to remove the disc. Always store vertically, in an upright position. Store in inert plastic or steel containers with a non-damaging centre hub, if the disc is to be kept long-term. Store in archival quality sleeves in all other cases. Store on shelves within metal, fire resistant cabinets. |
| Handling | Handle discs only by the outer edge or the centre hole. Avoid dirt or other foreign matter from touching or sticking to disc, including fingerprints from touching the disc's surfaces. If caddies are used, repeated loading and extraction of discs should be avoided to minimize disc damage. Do not allow contact with liquids, dust or smoke. Remove from drives that have been switched off and should be removed from drives that are inactive for long periods. Follow Storage guidelines where suitable while handling. |
| Visual inspection | Inspect for surface scratches, gouges, smudges, dirt, and dust that can inhibit playback of the disc. If gouges or scratches are deep enough, they may cause permanent damage to the disc and should be reported. Inspect the container and the disc for mould. Mould on the container is a good indicator that the mould has travelled to or from the disc. Inspect for "disc rot" - oxidation of the aluminum recording surface. observable indications of disc rot are pin-sized holes in the reflective layer, most visible when viewed against a light source, a bronze discoloration of the disc, and crazing distortion in the reflective appearance. Crazing can be seen in snowflake- or fractal-like milky-white patterns on the disc. |
| Transportation | Keep discs in protective containers as prepared for Storage. Maintain in cool, dry conditions and do not allow condensation to occur on the disc surface. Follow acclimatisation and handling guidelines when unpacking at destination. |
| Acclimatisation in operational environment | Ideally acclimatise for 24h before use. Minimum acclimatisation of 6h within protective envelope or case. Mandatory 24h acclimatisation for discs that have been stored in environmental conditions outside recommendation above, to avoid condensation forming on disk surfaces. |
| Labelling | Adhesive labelling kits must never be used, since these can disturb the mass balance of the disk and damage the data layer. If adhesive labels are present, do not try to peel off or reposition. Discs may be marked on the upper surface using a soft tipped pen with water-soluble, permanent ink. Do not use pencil, pen, fine-tip marker or markers that contain solvents to write on the disc. Never write on the laser-reading side of optical discs. Labels can be safely applied to caddies, sleeves, or containers used to store optical discs. |

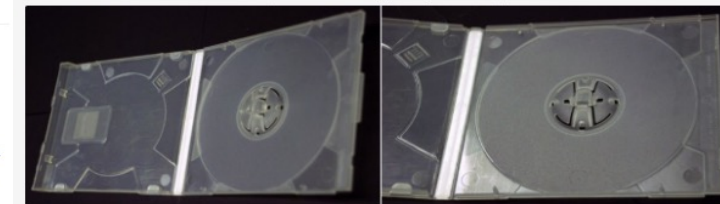
Reference

BS 4783. Part 3: 1988, [2], [4], [5]

Reference images



Examples of disc rot on the recording and reading surfaces of a disc [4]

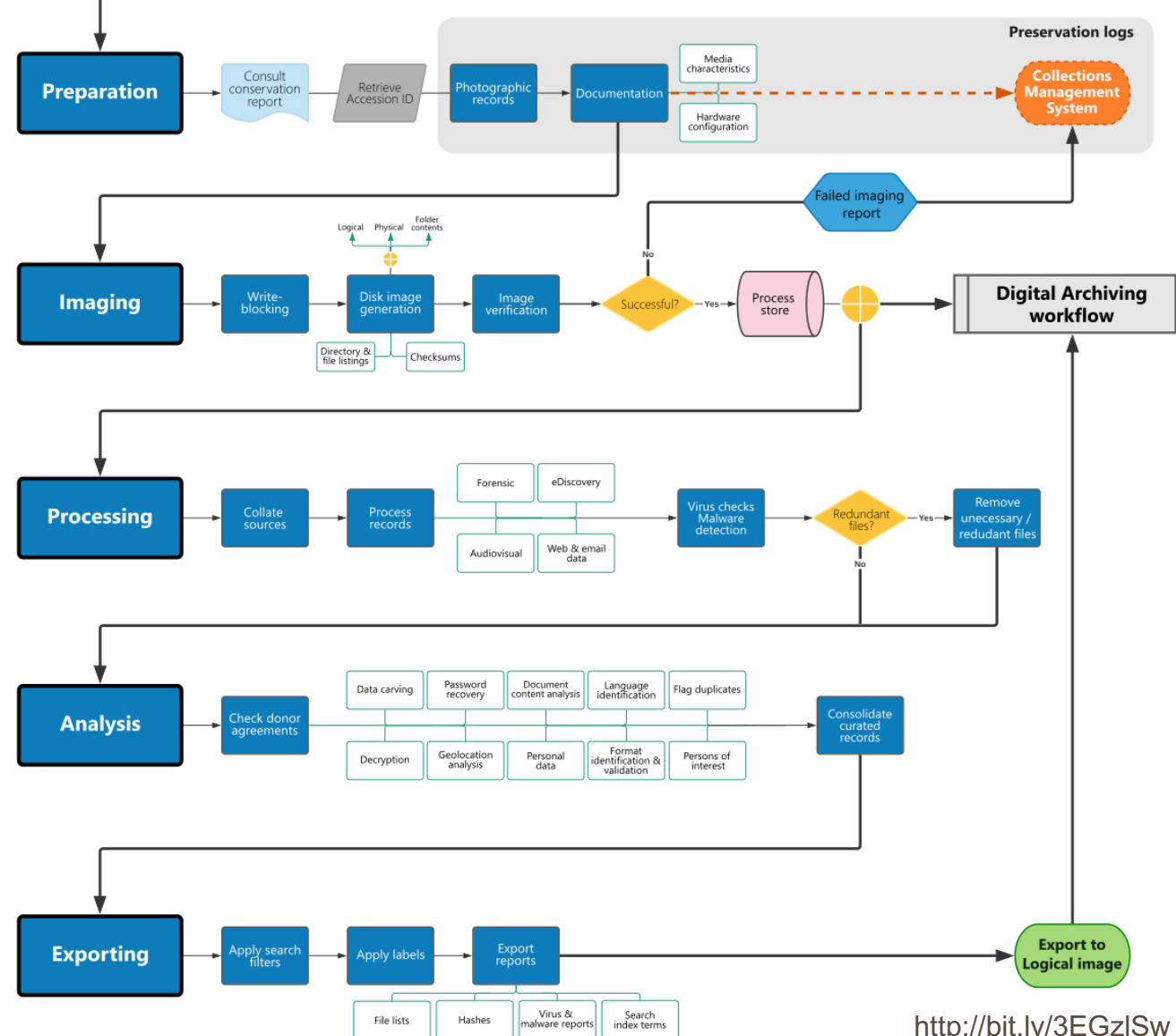


Front (left): contains with easy-rotate hub [4]

Outcomes – archival forensics workflow



Archival Forensics Workflow (Storage media deposit)



Outcomes – Digital archiving logs



Archives & Special Collections

Digital Archiving Toolkit

PROCESSING LOGS

View

Add

Edit

Delete

View log: GLAASC-Test-1-1-2-5

Download CSV

Record details Transfer Appraisal Ingest Archival forensics Priority score

General

Accession/Record number: GLAASC-Test-1-1-2-5 Acquisition date: 20-04-2023

Description: ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur.

Deposit type: Storage media Accrued? No

Quarantine

Quarantined? Yes

Quarantine findings: Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur.

Media characteristics

Medium type: lomega.zip disk Serial number: 492834723948742

Details and characteristics: Physical Evidentiary Item (Source) Information: [Device Info] Source Type: Physical

Supporting documentation

File manifest filename and path: X:\GLAASC-Test-1-1-2-2\MANIFEST\ Photographic record filename and path: X:\GLAASC-Test-1-1-2-2\PHOTOS\

View log: GLAASC-Test-1-1-2-5

Download CSV

Record details Transfer Appraisal Ingest Archival forensics Priority score

Storage

Virus free? Not scanned In process store? Yes

Virus details: Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur.

Process store filepath: X:\GLAASC-Test-1-1-2-2\

Archivemata

Transfer type: Directory copy Time taken to process (minutes): 380

Transfer microservices successful? Partly

Details of any failed microservices: Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum

SIP created? Yes SIP name: Test-1-1-2-2

UUID: 432u40482304928340232030948

View log: GLAASC-Test-1-1-2-5

Download CSV

Record details Transfer Appraisal Ingest Archival forensics Priority score

Archival processes

Original order maintained? Yes Have files been deleted? As part of deduplication

Details of any deletions and/or changes to original order: Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum

Any deleted files found? Yes Deleted files kept? Yes

Details of decision to restore/remove deleted files: Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum

Legal checks

Legal checks completed? Yes

Legal checks detail: Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum

Archivemata

SIP moved to AM backlog? No

View log: GLAASC-Test-1-1-2-5

Download CSV

Record details Transfer Appraisal Ingest Archival forensics Priority score

Storage medium

Technical characteristics: Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur.

Hardware configuration: Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur.

Disk imaging

Disk image type: Physical Disk image successfully created? Yes

FTK listing filename and path: X:\GLAASC-Test-1-1-2-2\ FTK imaging report filename and path: X:\GLAASC-Test-1-1-2-2\

Disk image filename and path: X:\GLAASC-Test-1-1-2-2\

FTK / BitCurator analysis

Processing profile name: Custom Virus / malware free? Yes

Analyses used: Data carving Decryption Personal data Duplicate KFF Language analysis Persons of interest Geolocation analysis Password recovery Identify formats

FTK / BitCurator exports

Logical image successfully exported? Yes Exported logical image filename and path: X:\GLAASC-Test-1-1-2-2\

Reports exported: Search index terms Hashes Virus and malware report File & folder listing

Outcomes – Risk register

47 risks identified across 9 root causes:

- Management
- Legal liabilities
- Operations
- Staffing
- Technical infrastructure
- Security
- Acquisition and ingest
- Preservation and archival storage
- Metadata

Based on:

- Digital Repository Audit Method Based on Risk Assessment (DRAMBORA)
- Risk assessment handbook and self-assessment tool (TNA)
- Managing digital continuity (TNA)
- Digital Preservation Handbook, Risk and change management (DPC)

| Risk Ref | Title | Date Raised | Risk Owner | Root Cause | Risk Description | Impact | Category | Initial Impact | Initial Probability | Initial Assessment | Mitigation Type | Mitigation Posture | Mitigating Actions |
|----------|--|-------------|------------|---------------------------------|---|--|---------------------------------|----------------|---------------------|--------------------|-----------------|--------------------|---|
| DP32 | Conservation of physical storage media | 01/04/2022 | [DPWG] | Acquisition & Ingest | Deposited physical storage media (e.g. hard drives) suffer from conservation issues, such as pest infestation and mould. | Conservation issues may compromise the accessibility of deposited physical storage media. | Service Delivery and Operations | 3 | 3 | 9 | Control | Reduce | 1. Develop conservation checks for deposited physical storage media, including quarantine rules. 2. Develop conservation practice and documentation for optimal storage conditions of physical storage media. 3. Maintain procedures for the timely check of submitted media, and for determining action with damaged media (disposal, resubmission request). |
| DP33 | Transfer and handling issues with physical storage media | 01/04/2022 | [DPWG] | Acquisition & Ingest | Deposited physical storage media are damaged or altered during transfer or due to inappropriate handling. | Transfer and handling issues may compromise the accessibility of deposited physical storage media. | Service Delivery and Operations | 3 | 3 | 9 | Control | Reduce | 1. Develop guidelines for transfer and handling of storage media for transport/deliver services to follow. 2. Develop procedures and guidance for depositors, e.g. to properly label packages as fragile. 3. Maintain procedures for the timely check of submitted media, and for determining action with damaged media (disposal, resubmission request). |
| DP34 | Inability to validate effectiveness of ingest process | 01/04/2022 | [DPWG] | Acquisition & Ingest | Inability to validate effectiveness of ingest process for deposited digital records, and demonstrate that their integrity and authenticity were maintained during ingest. | Between the points of receipt and ingest of digital materials, the received package is subjected to inadvertent changes or corruption, which is not monitored or checked, thus rendering the materials inaccessible. | Service Delivery and Operations | 3 | 3 | 9 | Control | Reduce | 1. Create checklists throughout the submission and ingest process, and compare at the time of ingest to ensure integrity and authority of ingested records. |
| DP35 | Loss of confidentiality | 01/04/2022 | [DPWG] | Preservation & Archival storage | Preserved records protected by confidentiality agreements are made available to communities, in contravention of those agreements. | The University becomes involved in legal proceedings due to legal liabilities resulting from digital preservation activities. | Legal & Governance | 5 | 2 | 10 | Control | Reduce | 1. Ensure software and hardware systems and preservation strategies are capable of meeting confidentiality requirements. 2. Ensure policies and procedures cater for confidentiality requirements. 3. Develop action pathways for dealing with loss of confidentiality cases. |
| DP36 | Loss of availability | 01/04/2022 | [DPWG] | Preservation & Archival storage | Preserved records cannot be accessed or do not render correctly. | Digital preservation services are unable to provide access to preserved digital records, for which access ought to be available. | Service Delivery and Operations | 4 | 2 | 8 | Control | Resolve | 1. Ensure software and hardware systems and preservation strategies are capable of meeting access requirements. 2. Ensure policies and procedures cater for access requirements. 3. Develop access pathways for preserved digital records. |
| DP37 | Loss of authenticity | 01/04/2022 | [DPWG] | Preservation & Archival storage | Inability to demonstrate that preserved records are what they purport to be. | The credibility of digital preservation services, as well as the trustworthiness of preserved records, are undermined. Potential loss of information. | Service Delivery and Operations | 4 | 2 | 8 | Control | Reduce | 1. Ensure software and hardware systems and preservation strategies are capable of meeting authenticity requirements. 2. Maintain and review policies and procedures to ensure adequate recording of provenance information to demonstrate that archived material represents authentic representation of what was initially deposited or received. |
| DP38 | Loss of integrity | 01/04/2022 | [DPWG] | Preservation & Archival storage | Preserved records have been subjected to unauthorised or unanticipated changes, rendering them no longer representative of originally deposited content. | Preservation services are incapable of demonstrating that the integrity of information has been maintained since it is received, and that what is stored corresponds exactly with what was originally received. | Service Delivery and Operations | 4 | 2 | 8 | Control | Reduce | 1. Ensure software and hardware systems and preservation strategies are capable of meeting integrity requirements. 2. Ensure policies and procedures cater for integrity requirements. 3. Maintain and review policies and procedures to ensure adequate recording and completion of checklists to demonstrate that archived |

Outcomes – End-to-end digital archiving case study



Evidence-based approach to delivering digital preservation and digital archiving services.



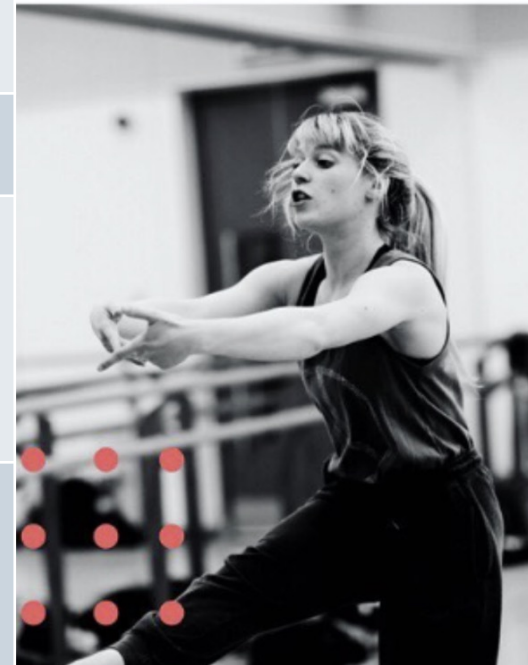
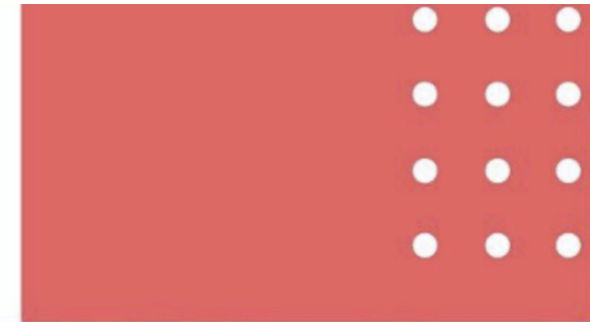
Implement an end-to-end digital archiving case study using one of our collections to test workflows, explore benefits of archival forensics.



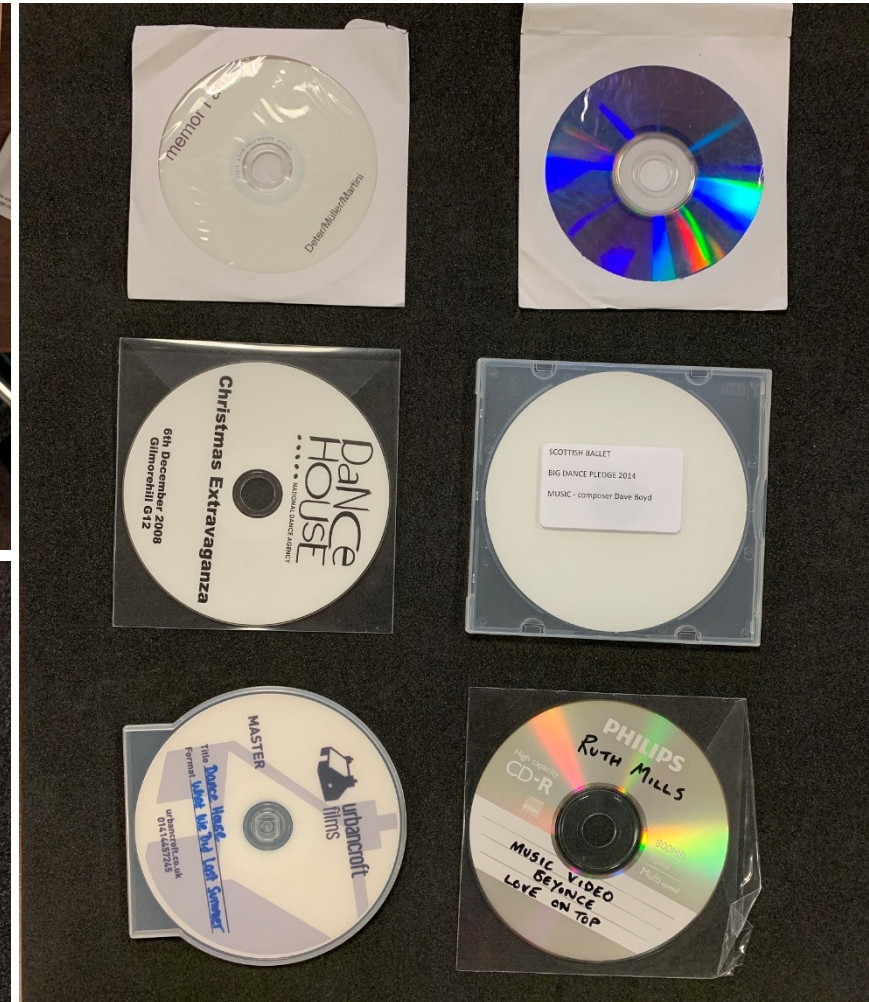
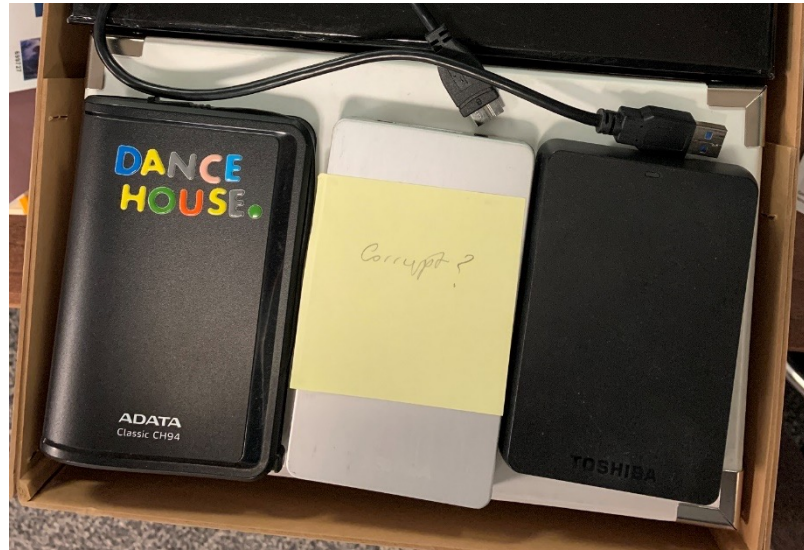
Highlight areas where improvements and further investment are required.

Outcomes – End-to-end digital archiving case study

| | |
|--------------------|---|
| Description | Dance House Glasgow was a creative arts organisation involved in supporting the city’s professional dance sector and offering community development programmes for over 20 years. In 2018, it lost its Creative Scotland funding and ceased operating. |
| Variability | The whole collection consists of records relating to Dance House Glasgow dating from c.1990 to 2018. It includes governance, financial, staff and project records, along with photographs, audio and video, press cuttings, and promotional material. |
| Volume (digital) | 6.3TB |
| Representativeness | Hybrid – both born digital and paper records. Digital records across three HDDs and 90 optical media discs. At least one of the hard drives and some of the CD-ROMs not functioning, as per a survey of the material in 2021. |
| Legal issues | The records came to UofG ASC via the Business Archives Surveying Officer and were gifted to us in 2019. As a creative arts collection, we expected issues around IPR and rights for the music used in the collection. As a business collection, we expected issues around personal information, confidential records etc. |



Outcomes – End-to-end digital archiving case study



Dance House Glasgow collection: computer storage media

Outcomes – End-to-end digital archiving case study



F.R.E.D workstation imaging a corrupt hard drive



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Outcomes – End-to-end digital archiving case study



Archives & Special Collections Digital Team progress meeting

Outcomes – End-to-end digital archiving case study



boogie babies and mini movers

Fridays 16 Sep - 2 Dec 2011
Boogie Babies (age 0 - 2) 11.30 - 12.15
Mini Movers (age 2 - 5) 12.30 - 13.15

Partick Burgh Halls
9 Burgh Hall St Glasgow G11
For booking & info please call:
0141 552 2442

£50 for 12 weeks or £5 per session

These fun, energetic parent & child classes are devised to promote coordination, movement skills and imaginative play using movement, storytelling and games. Children of all abilities are welcome and adults attending the children's classes are expected to join in!

DANCEHOUSE.ORG



**DaNce
HOUSE**
GLASGOW

MAKE A MOVE

GET
SCOTLAND
DANCING

Examples of born-digital items in the collection

Outcomes – End-to-end digital archiving case study

Forensic analysis – FTK and BitCurator:

- Data carving
- Decryption and password recovery
- Personal data analysis (Bulk extractor)
- Document content analysis
- Format identification and validation (FTK, Droid, JHOVE)
- Duplicate flagging
- Index search in FTK

FTK – Weeding:

- Duplicates
- Deleted files
- Free space / file slack
- Recycle bin items
- OS / system files

| | Pre-appraisal | Post appraisal | Difference | Notes |
|---------------------------|---------------|----------------|------------|---|
| Total volume (GB) | 6363 | 423 | -5941 | Total volume reduced by 5.94TB |
| Total file size | 55936 | 17954 | -37982 | Total files reduced by 37,982 |
| Selected file categories: | | | | |
| Archives | 1572 | 48 | -1524 | Difference includes deleted and temporary files |
| Databases | 2 | 1 | -1 | Difference includes deleted and temporary files |
| Documents | 1802 | 219 | -1583 | Difference includes deleted and temporary files |
| Email | 2 | 2 | 0 | |
| Executables | 510 | 0 | -510 | |
| Graphics | 24225 | 15278 | -8947 | Difference includes deleted and temporary files |
| Internet | 35 | 35 | 0 | |
| Multimedia | 1456 | 979 | -477 | Difference includes deleted and temporary files |
| OS/File system | 1081 | 0 | -1081 | |
| Presentations | 2 | 2 | 0 | |
| Slack/free space | 20512 | 0 | -20512 | |
| Spreadsheets | 12 | 11 | -1 | Difference includes deleted and temporary files |
| Selected file status: | | | | |
| Deleted files | 557 | 9 | -557 | |
| Duplicate items | 14995 | 3607 | -11388 | |
| KFF Alert files | 37 | 0 | -37 | |
| KFF Ignore files | 1288 | 0 | -1288 | |
| From recycle bin | 3060 | 0 | -3060 | |

Outcomes - final thoughts

What we didn't complete:

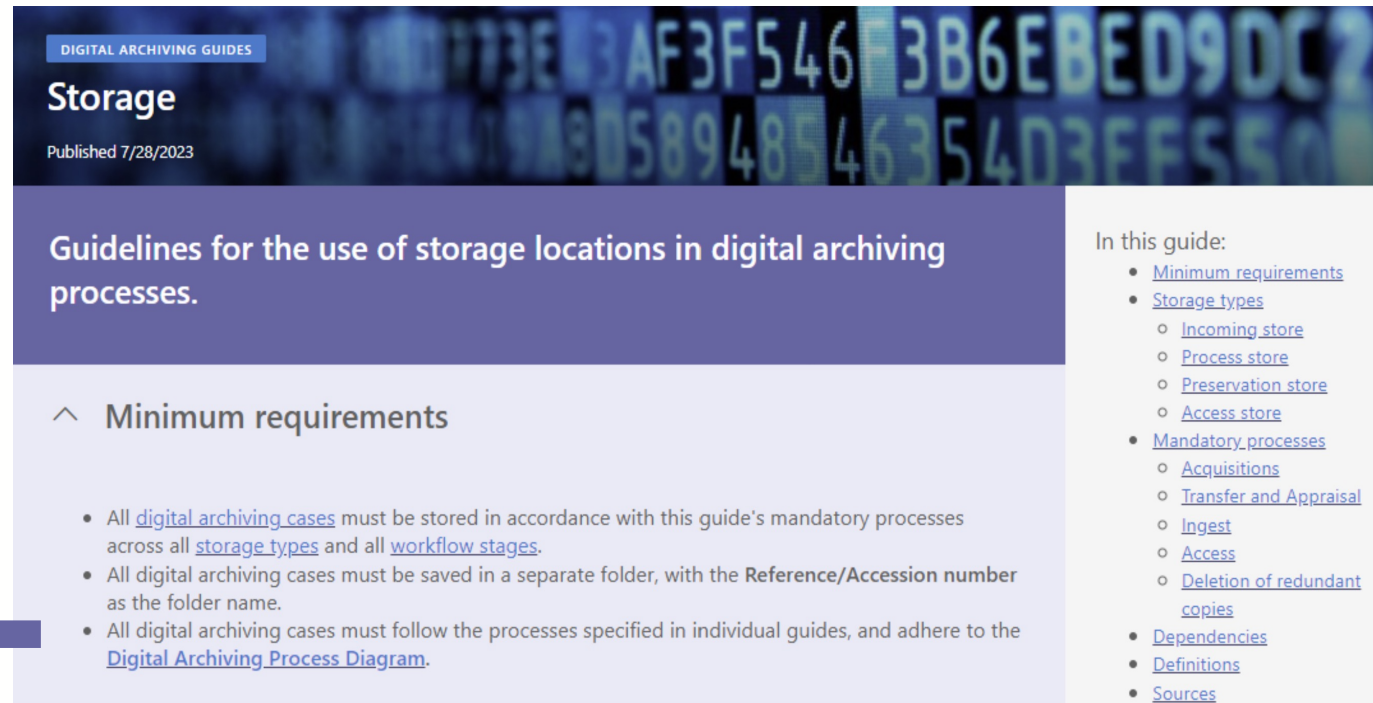
- Donor agreement updates
- Collection Development policy update
- Research data end of life

Moved to planning for 2023/2024 academic year.

[Read about our work on the new DPC Digital Preservation Documentation Guide](#)

By the end of the pilot, we achieved what we needed to, plus more.

- Digital archiving guides



DIGITAL ARCHIVING GUIDES

Storage

Published 7/28/2023

Guidelines for the use of storage locations in digital archiving processes.

^ Minimum requirements

- All [digital archiving cases](#) must be stored in accordance with this guide's mandatory processes across all [storage types](#) and all [workflow stages](#).
- All digital archiving cases must be saved in a separate folder, with the Reference/Accession number as the folder name.
- All digital archiving cases must follow the processes specified in individual guides, and adhere to the [Digital Archiving Process Diagram](#).

In this guide:

- [Minimum requirements](#)
- [Storage types](#)
 - [Incoming store](#)
 - [Process store](#)
 - [Preservation store](#)
 - [Access store](#)
- [Mandatory processes](#)
 - [Acquisitions](#)
 - [Transfer and Appraisal](#)
 - [Ingest](#)
 - [Access](#)
 - [Deletion of redundant copies](#)
- [Dependencies](#)
- [Definitions](#)
- [Sources](#)



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Come and talk to us!

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Emma.Yan@glasgow.ac.uk

**WORLD
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GLASGOW**

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