Managing Your Digital Collection

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Introduction

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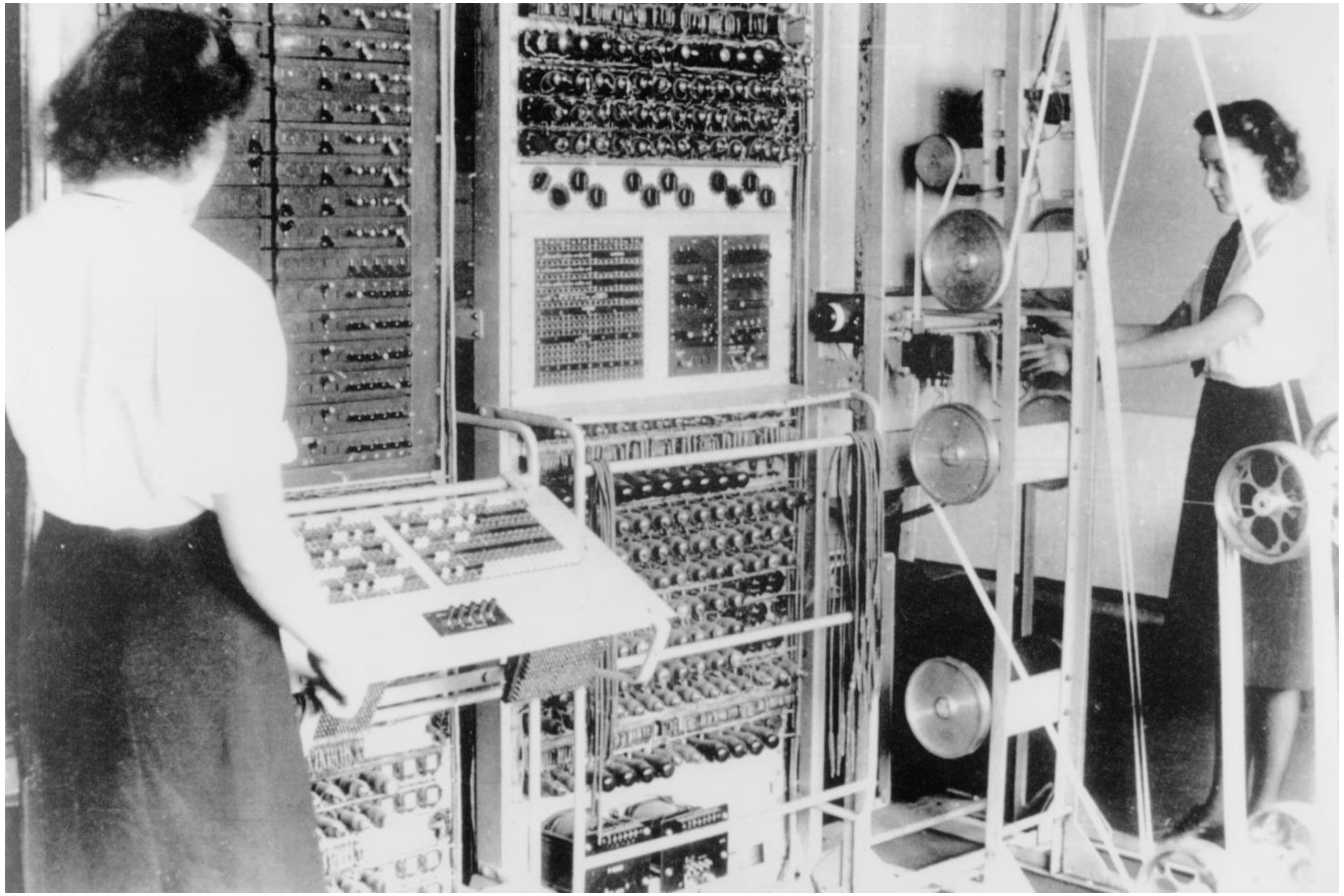
What We’ll Discuss

- Challenges in managing digital collections
- Key terms
- Characteristics of digital records
- Basic activities in digital preservation
- Digital preservation self-assessment

Challenges



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DISK EXTENDED COLOR BASIC 2.1
COPR. 1982, 1986 BY TANDY
UNDER LICENSE FROM MICROSOFT
AND MICROWARE SYSTEMS CORP.

OK
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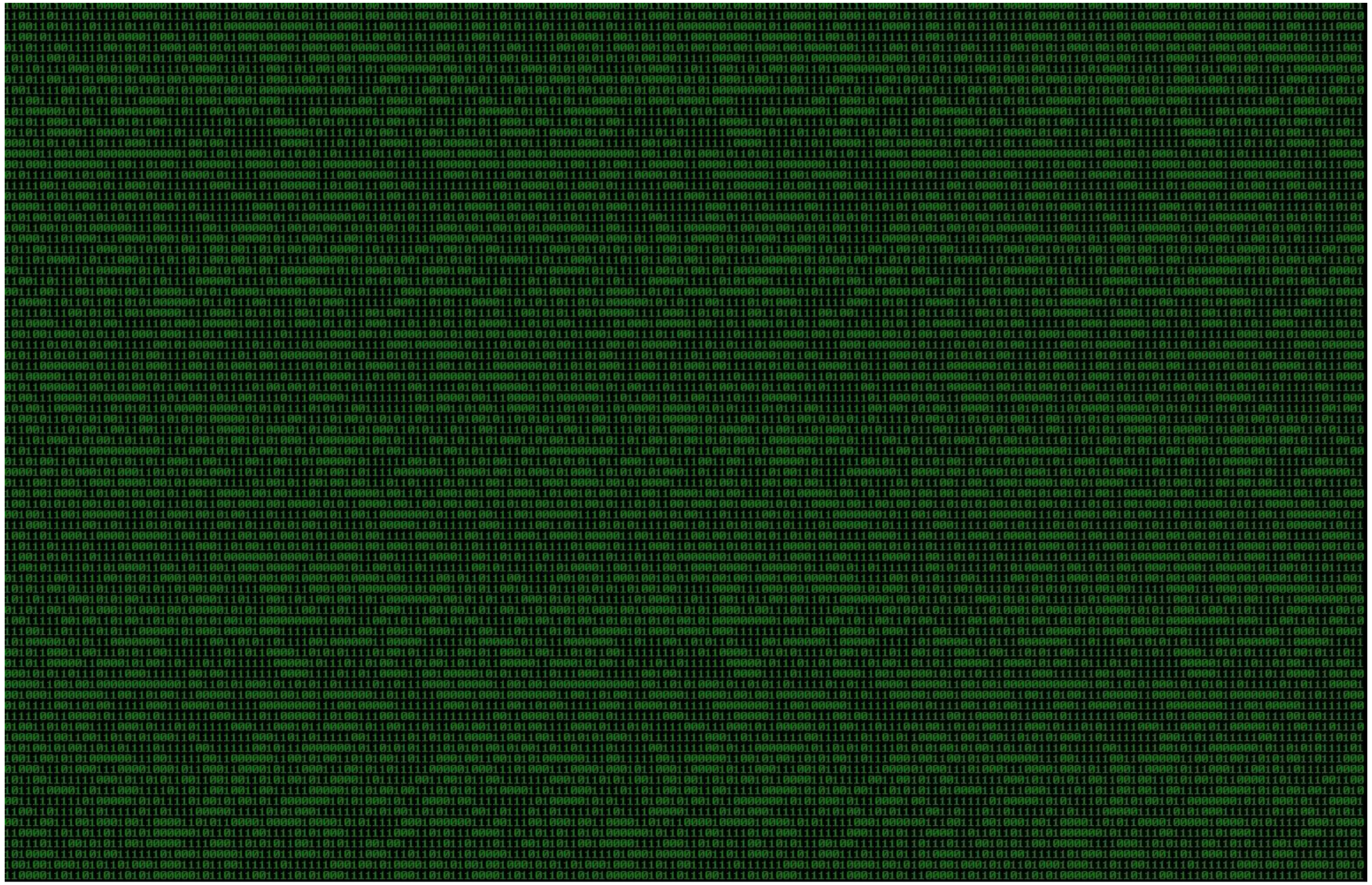
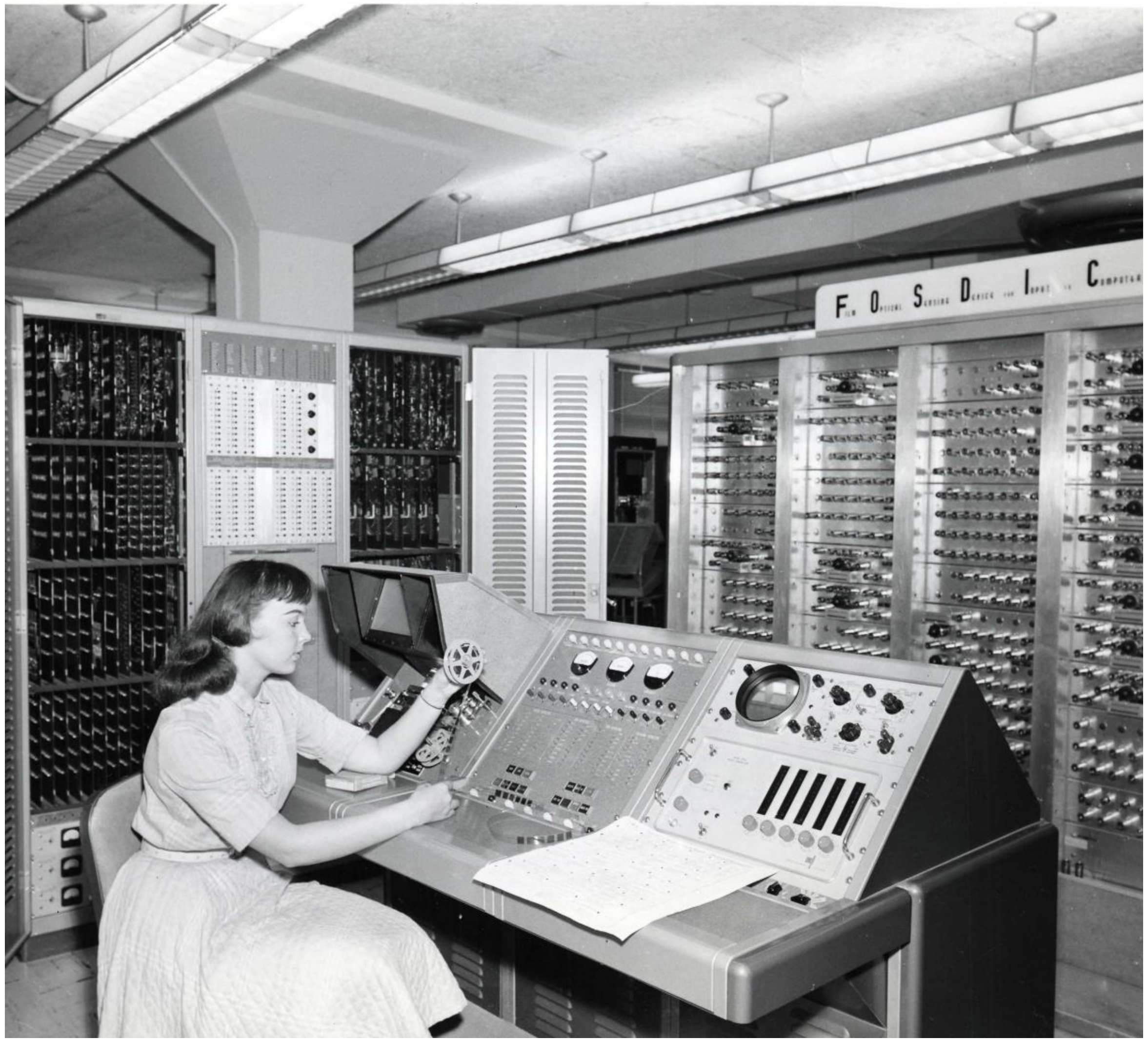
Dependence on Technology



Volume

Error or Attack



Feels Overwhelming

Key Terms

- Archive / Digital Record
- Digital Preservation
- Digitized / Born-Digital
- File Format
- Media
- Metadata
- Fixity / Checksum

Archive

Materials created or received by a person, family, or organization, public or private, in the conduct of their affairs that are preserved because of the **enduring value** contained in the information they contain or as **evidence** of the functions and responsibilities of their creator.

Digital Record

Data or information that has been captured and fixed for storage and manipulation in an **automated system** and that **requires the use of the system to render it intelligible by a person.**

Credit: Society of American Archivists

Digital Preservation

Digital preservation combines policies, strategies and actions to ensure access to reformatted and born digital content regardless of the challenges of media failure and technological change. The goal of digital preservation is the **accurate rendering of authenticated content over time**.

-American Library Association

Digitized

- Born-analog material
- Scanned or photographed from a physical format
  - Example: TIFF file from a negative, document, or book

Born-Digital

- Files created with software
  - Example: Word documents, InDesign layouts, databases, email, websites

File Format

- Conventions for encoding data into human-readable form
- Can be proprietary or open-source
- Examples: TIFF, JPEG, DOC, MP4, WAV, PDF

Media

- Where the file is stored
  - Hard Drive
  - Server
  - The Cloud
  - Digital Repository
  - Portable / Removable Media

Metadata

Information that describes, explains, locates, or makes it easier to retrieve, use, or manage the information resource

Some metadata mirrors what is created for physical records

- Descriptive – Dublin Core, MARC
- Administrative – Copyright and access restrictions

Some is specifically for digital records

- Technical – Scanner/camera, date created, pixel dimensions, etc.
- Structural – File’s relation to other files
- Preservation – Checksums, history of data corruption or recovery

Fixity / Checksum

- Fixity is the assurance that a digital file has remained unchanged
- Done by creating a checksum, or “digital fingerprint”
- Digital Preservation Coalition site on Fixity and Checksums https://www.dpconline.org/handbook/technical-solutions-and-tools/fixity-and-checksums

Characteristics of a Digital Record

- Authenticity
- Reliability
- Integrity
- Usability

Digital preservation is the ongoing maintenance of all characteristics over time.

Credit: Society of American Archivists

Authenticity

Can it be proven that the digital record is what it attests to be?

Authenticity can be established by adding metadata

- Administrative metadata
- Technical metadata
- Descriptive metadata
- Preservation metadata

Reliability

Is the digital record complete and accurate?

Reliability can be established through structural metadata

- Is the digital record part of a larger group? Does it represent one page in a group of letters?

Integrity

Is the digital record complete and unaltered over time or in transit?

Integrity can be established by:

- Computing a checksum
- Using a system that assigns a unique ID to all records, avoiding duplication
- Storing final files as “read-only”

Usability

Is the digital record accessible?

Usability can be established by:

- Using a consistent file and folder naming schema
- Creating indexes and inventories of the digital records
- Employing a system for search and retrieval (that is not just full-text search in a server, could use a CMS, DAMS or Excel sheet)

Digital Preservation Activities

- **Identify** digital content that you have
- **Select** content that warrants preservation
- **Process** the selected content by arranging, describing, and preparing it for storage
- **Store** selected content
- **Maintain** selected content over the long term through monitoring, migration, and recovery

Adapted from Library of Congress and Digital POWRR

Identify

- Goal: Take stock of the digital materials that are in your care.
- Strategy: Talk with staff, interns, volunteers, supervisors, IT as needed
- Tools: Excel, Access, Google Sheets, or other database tools
- Resulting Document: Digital asset register

Digital Asset Register: Information to Gather

- Name of collection / content
- Person / department responsible for maintaining the collection
- Size of collection
- Location of files
- Backup policy
- File formats
- Retention policy
- Ownership, rights, and data protection issues
- Associated risks
- Estimated value of content

Select

- Goal: Select which digital materials require “long-term preservation”
- Strategy: Talk with staff, interns, volunteers, supervisors, IT as needed
- Tools: Staff knowledge, mission statement, and other guiding documents
- Resulting Document: Digital Preservation Selection Policy

Selection Criteria

Selection criteria should:

- Support your mission
- Reflect criteria for preserving physical material
- Inform the creation of new digital content through digitization and collecting born-digital content
- Prioritize file formats that are widely adopted and not platform-specific

A Note on File Formats

- Widely adopted
  - Common file types that lots of people use are more likely to stick around
- Platform-independent
  - It can be opened in multiple programs

Library of Congress Recommended Formats Statement
https://www.loc.gov/preservation/resources/rfs/TOC.html

Smithsonian Recommended Preservation Formats for Electronic Records
https://siarchives.si.edu/what-we-do/digital-curation/recommended-preservation-formats-electronic-records

Process

- Goal: Establish the characteristics of digital records
- Strategy: Begin to process digital materials before accession
- Tools: BitCurator, Archivematica, and others
  - POWRR Tool Grid: https://digitalpowrr.niu.edu/digital-preservation-101/tool-grid/
  - DPC Article on Tools: https://www.dpconline.org/handbook/technical-solutions-and-tools/tools
- Resulting Documents: Metadata procedures, data dictionary, donor agreements, access policies

Process: Steps

- Gather contextual information
- Perform a conservation assessment
- Identify access restrictions
- Arrange the records
- Describe the records
- Create access tools

Process: Gather Contextual Information

- How were materials created? Why?
- How were they previously managed?
- What is their current context?
- What hardware and software dependencies are there?

Process: Conservation Assessment

- Virus scan
- Identify and validate file formats
- Generate a checksum
- Identify preservation issues

Process: Identify Access Restrictions

- Identify Personally Identifiable Information (PII)
- Identify copyright status if possible
- Identify embargo restrictions
- Identify culturally sensitive information

Process: Arrange Materials

- Determine if digital records have an original order, and keep a record of this
- Identify relationships between groups of materials
- Rearrange files into series

Process: Describe Materials

- Does not need to be item-level
- Create descriptive, administrative, structural, and preservation metadata

Process: Metadata

How is metadata associated with a file?

- It can accompany the file as an Excel spreadsheet
- It can be embedded into the file itself through Adobe Bridge or other tools
- It can be input through a content management system

such as TMS, PastPerfect, or ContentDM

Process: Create Access Tools

- Finding aids
- Online catalog access
- Online image access

Store

- Goal: Establish or maintain authenticity and integrity of digital records
- Strategy: Regularly perform fixity checks and assess security of storage system
- Tools: Local Servers, cloud storage, digital preservation systems, digital repositories
- Resulting Document: Storage and backup procedures

Store

- Perform a fixity check or generate a checksum if possible
- Store processed digital records in a “read-only” directory on your server
- Practice 3-2-1 backup procedure
  - 3 copies, 2 media types, and at least 1 copy maintained offsite
  - Media types include:
    - Network servers
    - Cloud storage
    - Digital repositories
    - Removable media

Manage

- Goal: Ensure ongoing access to the digital records over time
- Strategy: Monitor files and migrate as needed. Monitor field of digital preservation
- Tools: Fixity
- Relevant Document: Digital Preservation Policy

Manage: Monitor Files

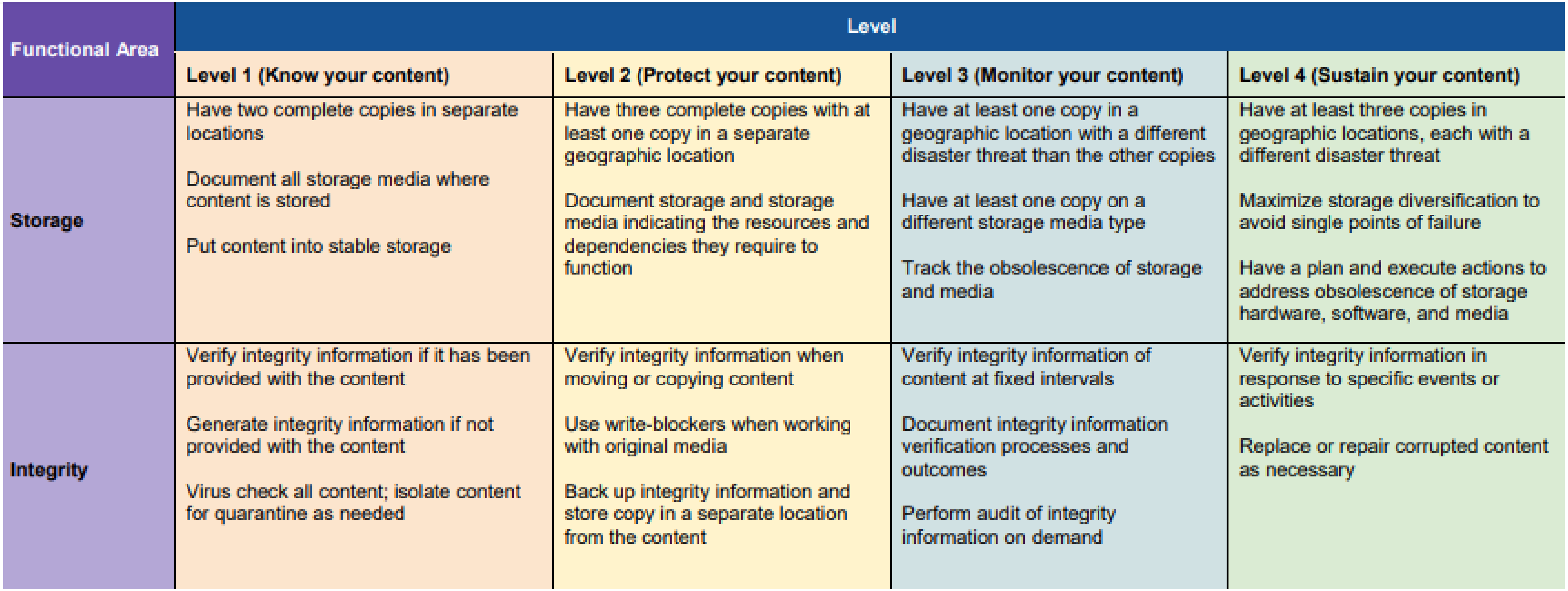
- Monitor files
  - Continue to perform fixity checks
- Perform preservation audits
  - Ensure that processing actions are meeting stated obligations
- Maintain technical infrastructure:
  - Performing maintenance on hardware, software, facilities, supplies, and technical components used for storage and access, as needed
- Migrate files
  - Convert data to latest file formats or relocate to new storage media as required
  - Consider a migration schedule every 5-10 years

Manage: Monitor Field

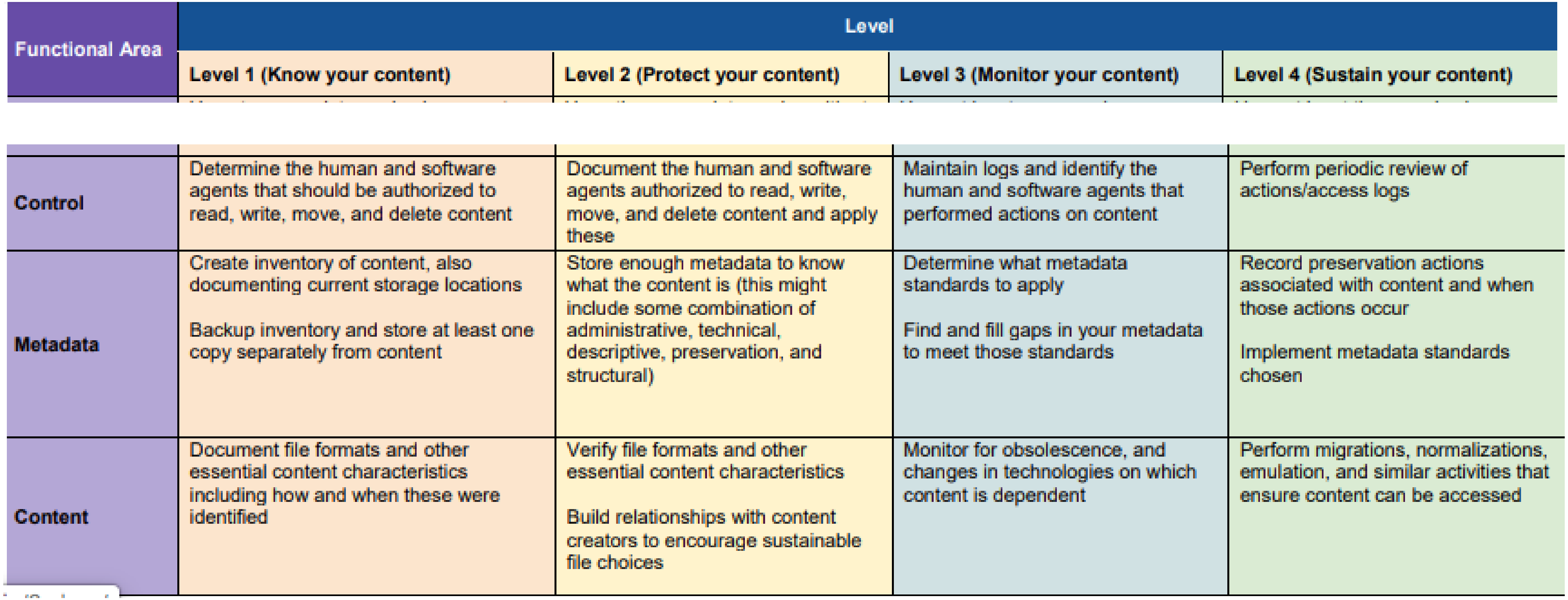
- Monitor the field of digital preservation
  - Digital Preservation Coalition – dpconline.org
  - American Library Association DigiPres listserv – https://lists.ala.org/sympa/info/digipres
  - Sustainable Heritage Network – https://sustainableheritagenetwork.org/
  - DHPSNY and CCAHA webinars - https://dhpsny.org/webinars / https://ccaha.org/events
  - Lyrasis courses – https://www.lyrasis.org/services/Pages/Classes.aspx
  - SAA Digital Archives Certificate – https://www2.archivists.org/prof-education/das
  - POWRR – https://digitalpowrr.niu.edu/

National Digital Stewardship Alliance: Levels of Digital Preservation

- Tiered set of recommendations on how to build or enhance digital preservation activities
- A lightweight tool for self-assessment and to encourage organizations to think about digital preservation goals
- Categories include Storage, Integrity, Control, Metadata, and Content



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 Document all storage media where content is stored Put content into stable storage	Have three complete copies with at least one copy in a separate geographic location Document storage and storage media indicating the resources and dependencies they require to function	Have at least one copy in a geographic location with a different disaster threat than the other copies Have at least one copy on a different storage media type Track the obsolescence of storage and media	Have at least three copies in geographic locations, each with a different disaster threat Maximize storage diversification to avoid single points of failure Have a plan and execute actions to address obsolescence of storage hardware, software, and media
Integrity	Verify integrity information if it has been provided with the content Generate integrity information if not provided with the content Virus check all content; isolate content for quarantine as needed	Verify integrity information when moving or copying content Use write-blockers when working with original media Back up integrity information and store copy in a separate location from the content	Verify integrity information of content at fixed intervals Document integrity information verification processes and outcomes Perform audit of integrity information on demand	Verify integrity information in response to specific events or activities Replace or repair corrupted content as necessary



Functional Area	Level			
	Level 1 (Know your content)	Level 2 (Protect your content)	Level 3 (Monitor your content)	Level 4 (Sustain your content)
Control	Determine the human and software agents that should be authorized to read, write, move, and delete content	Document the human and software agents authorized to read, write, move, and delete content and apply these	Maintain logs and identify the human and software agents that performed actions on content	Perform periodic review of actions/access logs
Metadata	Create inventory of content, also documenting current storage locations Backup inventory and store at least one copy separately from content	Store enough metadata to know what the content is (this might include some combination of administrative, technical, descriptive, preservation, and structural)	Determine what metadata standards to apply Find and fill gaps in your metadata to meet those standards	Record preservation actions associated with content and when those actions occur Implement metadata standards chosen
Content	Document file formats and other essential content characteristics including how and when these were identified	Verify file formats and other essential content characteristics Build relationships with content creators to encourage sustainable file choices	Monitor for obsolescence, and changes in technologies on which content is dependent	Perform migrations, normalizations, emulation, and similar activities that ensure content can be accessed

Conclusion

- There are many unique challenges in managing digital collections.
- When we understand the characteristics of a digital record, we can take actions to preserve them, and reduce the risks of these challenges in our collections.
- As we work toward our goals, it is helpful to periodically assess where we are and what we might take as next steps.

Questions?

THANK YOU!

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