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Digital Preservation

NDSA Levels of Preservation

The NDSA Levels of Digital Preservation

The "Levels of Digital Preservation"are a tiered set of recommendations for how organizations should begin to build or enhance their digital preservation activities. A work in progress by the NDSA, it is intended to be a relatively easy-to-use set of guidelines useful not only for those just beginning to think about preserving their digital assets, but also for institutions planning the next steps in enhancing their existing digital preservation systems and workflows. It allows institutions to assess the level of preservation achieved for specific materials in their custody, or their entire preservation infrastructure. It is not designed to assess the robustness of digital preservation programs as a whole since it does not cover such things as policies, staffing, or organizational support. The guidelines are organized into five functional areas that are at the heart of digital preservation systems: storage and geographic location, file fixity and data integrity, information security, metadata, and file formats.

It is expected that the Levels of Digital Preservation will be updated over time as additional feedback is received, experience is gained implementing its recommendations and as empirical research provides detailed information about data loss. For this reason, each iteration of the Levels will be versioned. Version 1 (PDF) is shown below.

Table 1: Version 1 of the Levels of Digital Preservation

	Level 1 (Protect your data)	Level 2 (Know your data)	Level 3 (Monitor your data)	Level 4 (Repair your data)
Storage and Geographic Location	- Two complete copies that are not collocated - For data on heterogeneous media (optical discs, hard drives, etc.) get the content off the medium and into your storage system	- At least three complete copies - At least one copy in a different geographic location - Document your storage system(s) and storage media and what you need to use them	- At least one copy in a geographic location with a different disaster threat - Obsolescence monitoring process for your storage system(s) and media	- At least three copies in geographic locations with different disaster threats - Have a comprehensive plan in place that will keep files and metadata on currently accessible media or systems
File Fixity and Data Integrity	- Check file fixity on ingest if it has been provided with the content - Create fixity info if it wasn't provided with the content	- Check fixity on all ingests - Use write-blockers when working with original media - Virus-check high risk content	- Check fixity of content at fixed intervals - Maintain logs of fixity info; supply audit on demand - Ability to detect corrupt data - Virus-check all content	- Check fixity of all content in response to specific events or activities - Ability to replace/repair corrupted data - Ensure no one person has write access to all copies
Information Security	- Identify who has read, write, move and delete authorization to individual files - Restrict who has those authorizations to individual files	- Document access restrictions for content	- Maintain logs of who performed what actions on files, including deletions and preservation actions	- Perform audit of logs
Metadata	- Inventory of content and its storage location - Ensure backup and non-collocation of inventory	- Store administrative metadata - Store transformative metadata and log events	- Store standard technical and descriptive metadata	- Store standard preservation metadata
File Formats	- When you can give input into the creation of digital files encourage use of a limited set of known open formats and codecs	- Inventory of file formats in use	- Monitor file format obsolescence issues	- Perform format migrations, emulation and similar activities as needed

The overall structure of the chart is progressive -- the actions in the first level are either necessary prerequisites for those in the second to fourth levels or are themselves the most pressing activities to accomplish first. Broadly speaking, as one moves up each of the tiers from Level 1 to Level 4, one is moving from the basic need to ensure bit preservation towards broader requirements for keeping track of digital content and being able to ensure that it can be made available over longer periods of time.

The United States Geological Survey Fundamental Science Practices Advisory Committee Data Preservation Subcommittee has developed a set of preservation recommendations (pdf) based on the original NDSA levels guidelines.

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