
Fixity in digital archive

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Abstract

Fixity is the state of being unchanged or permanent.
Paper will discuss problem of fixity in relation to archives of digital photos.

National Digital Stewardship Alliance, consortium of over 200 institutions specialized in preservation of digital information suggests 4 levels of data integrity techniques.

- 1 level: check file fixity on ingest and create if it wasn't provided
- 2 level: check fixity on all ingests, use write-blockers when working with original media, virus checking of high-risk content
- 3 level: check fixity on content in regular intervals, maintain logs, ability to detect corrupt data, virus checking of all content
- 4 level: check fixity on specific events, ability to replace/repair corrupted data, no one should have write access to all copies

Paper will discuss how to implement them with regard to fixity and archive integrity in examples how it works in real life archive and how it could be implemented in ideal world.

Base method to test fixity are checksums. Various algorithms will be discussed with their relation to security (which ones should be avoided), economics, convenience.

- MD5 and why you must not ever use it in anything related to security
- SHA1 and why it should be avoided
- SHA2 and its various levels

Paper will suggest way how to store (and test) checksums inside of file without changing of checksum of visual information. This method and its variants could be also used for fixity of audio files.

Paper will present how various changes in file reflect on checksum value.

Keywords: fixity, digital archive, visual information, checksums

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