MoVE-IT:
Modeling Viable Electronic Information Transfers

Annotations to the Advanced Transfer Workflow

Version 1.0

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Purpose

This presents a theoretical workflow designed using the lessons learned and best practices used as part of the transfers studied in the MoVE-IT project. While it is unlikely that this workflow can be inserted directly into any government records management or archival processes, it has been designed with simplicity and useability in mind. Segments of it, or the intent behind those segments, can be adapted to fit the unique needs of individual states and territories. All the tools discussed in this annotated workflow are currently open-source or included with software/operating systems (Windows) already present in many public archives.

The most up-to-date version of the Sample Workflow is here.

This guide outlines the workflow steps presented in the Sample Workflow, with some rationale for choosing them. **This sample is NOT a one-size-fits-all solution; instead, it should be used as a model for building custom workflows.** Its purpose is to demonstrate how a simple workflow could be created using standard tools.

Key

The workflow is segmented into three columns representing the three major stakeholders to the transfer process: IT agencies/staff, producer agencies/staff, and the archival agencies/staff. It is also divided into six rows, each representing a different phase of the transfer process.

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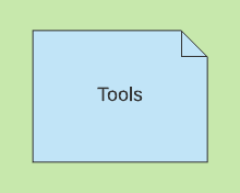
Symbol	Usage
	Blue boxes represent the major process steps of the transfer.
	Gray boxes represent opportunities where documentation can be created. This documentation need not be elaborate, but creating documentation makes for a transparent process and allows a better audit of processes to determine where errors may have occurred.
	Light blue boxes represent possible tools to use for this process step. These are not the only tools, nor are they necessarily the *best* tools for any particular situation. Archives need to work with their stakeholders to ensure that *all* are on the same page when it comes to usage of these tools.
	White hexagons represent the policies, standards, and best practices that support the process. While these are not necessarily *part* of the transfer process, they certainly *inform* the transfer process and thus can be extremely useful.
	Purple hexagons indicate existing software, networks, and platforms that are likely to be available to government agencies and staff in some way, and are prerequisites for this workflow. (Example: one can't transfer records through removable media if there is no removable media available). Collaboration with IT and agency stakeholders should be prioritized to ensure that a sufficient technological environment is available.

Foundations

This workflow assumes the following are in place:

- IT agencies or staff who manage enterprise or agency systems and data storage
- Record schedules or similar regulations that classify and set retention periods for public records

If record schedules are not in place, or not current, then it becomes very difficult for anyone to authoritatively determine whether records are eligible for transfer and will likely result in records remaining indefinitely in their current storage.

Similarly, staff with familiarity, authority, and the accountability for electronic systems and data (most likely IT staff) must be in place and available, as they are most likely to be the ones executing process steps.

Workflow

1. The workflow begins with the producer agency possessing a particular set of records that has been identified as eligible for transfer (for all contributory reasons including schedules, laws, regulations, policies, and such -- these will be different in every jurisdiction). Eligibility should be determined by whatever manner is prescribed by federal, state, and local laws.
2. The two questions that are most relevant for the agency are:
    1. Can these records be transferred(?), and
    2. Should they be transferred now?

    Many jurisdictions do not require that records be transferred immediately when eligible.
3. Once the agency custodians desire to transfer eligible records, they should initiate the transfer. This step *necessarily* expects the creation of a record, such as an email, a form, an automated system message, or the like. This is the ***Transfer Initiation***. This is valuable because a transparent transfer process supported by documentation can be audited and verified if issues arise, and this record is the first. This record then must be transmitted to the archives, but preferably to all the stakeholders involved.
4. The archives (and again, all stakeholders) then need to confirm that they can process and accept the transfer. Whether or not it can be accepted is often governed as much by state and federal law as it is on resources (including storage space, staff availability, etc).
5. If it can be, the stakeholders can work together to develop the ***Transfer Plan***. Creating a transfer plan is not strictly necessary, as it does require time and collaboration, but this is a good opportunity for all the stakeholders to state their requirements and expectations *at the outset*, and to put the plan in writing (and sign-off on, as necessary). One of the big pitfalls of transfers is that, due to the potentially long timeframes involve, circumstances like staff availability and political/institutional priorities change mid-transfer. A documented plan created through a formal process can serve as insulation against midstream changes.

6. If no plan is created, then a *Transfer Approval* will be created. This can be as simple as a "message received" acknowledgement, or it can come with further instructions. Some archives may want both a plan and an approval (perhaps one as a component of the other). Creating authorization checkpoints in the process allows for stakeholders to be able to review and suggest changes if necessary.
7. This moves the agency into ***Selection*** (of records). Selection is, simply, choosing which records will be transferred. This may already be done -- and could have occurred before initiation. But even if some selection has been done, it is important to go through the process formally at this stage. More likely than not, agency or IT staff will be responsible for locating, selecting, and copying/moving records and associated metadata as part of this phase.
8. A formal selection process is valuable because producers often create and retain multiple copies of records, in different formats, and in different locations.
9. As an important part of selection, the agency should identify all records to be part of the transfer, and endeavor to collect as much metadata as possible about those records. This includes, but is not limited to:
    a. Administrative: information about the context of the records' creation, legal requirements, legal exemptions, discovery, etc.
    b. Technical: information about the technical attributes of the records including file format, size, creating program/version, etc.
    c. Descriptive: information that adds context about its nature, its use, and its greater context within government
    d. Structural: information about linkages and relationships with other records (or within sets of records)
10. This metadata may already exist (created as part of business or records-management practice), or it may need to be created (and this does not mean "invented" but closer to "articulated". This could simply mean taking disparate data about records and formatting it in proper schemas). This should be a collaborative process that preferably draws its methods from standards created (again collaboratively) by the stakeholders involved.
11. After gathering records and metadata, the packager should endeavor to generate fixity information both for individual files and the entire transfer package. The simplest way to do all of this is by using Bagger and the BagIT specification. Other tools can be used to generate fixity information on files and directories. **Note:** Avoid tools that compress records using *lossy compression.* Without in-depth knowledge of compression algorithms, valuable data can be lost.
12. All this together (records + metadata + inventory) creates the **Transfer Package**. (In OAIS terminology, one might refer to this as a Submission Information Package.) A transfer project may have potentially many transfer packages (especially long-term ongoing projects), and indeed routine transfers will have packages sent on regular schedules. Once this package is complete, the stakeholders can be notified, and the next step can begin.
13. The *Transfer* phase is relatively short and involves exchanging the physical custody of records. This can be done over a network transfer (the package is copied over network protocols) or through exchange of physical media (e.g. records are copied to an external hard or flash drive). Either way, this exchange should be accompanied by a documentary paper trail that documents

the chain-of-custody. (Proper chain-of-custody preserves authenticity of records, as it helps document that no third party had the opportunity to interfere with records as they were never out of custody. Digital fixity assists since it is nearly impossible to alter records electronically without being discovered).

14. Once received by the archives, an advisable first step is to create a backup of the entire package that serves as a master copy. Some of the verification and/or processing steps involve the accessing and processing of records; digital objects can be changed inadvertently when accessing or moving them if proper care is not taken. To insulate against accidents (and having the agency transmit the package again) it is advised to backup and isolate any incoming package.
15. Archivists can then begin to verify the Transfer Package. This can be complex with many steps, or it could be as simple as verifying the fixity of the records. At a minimum, though, any workflow should include both the verification of the physical integrity of files (were they damaged in transit or interfered with otherwise) and the intellectual organization (did everything that was intended to be sent come, and did it come as described). Bagger, as described, can be used to verify transferred bags on the receiving end.
16. Virus and malware scans are also a must as they prevent the archival repository from becoming infected. There are several freely-available tools for these; the most common is probably Windows Defender. Most important is that these tools are as up-to-date in their definitions as possible;
    1. If any infections are found, isolate and quarantine them from other files, and notify IT professionals (or those designated to mitigate these issues). Determine then how to rescue the "content" of these records if necessary and possible. It is unlikely that merely parts of files will be corrupted; more likely files that appear to be legitimate documents are instead malware. However anything is possible, so be wary.
    2. Eventually, once all public record data is rescued and migrated to safe files, these quarantined objects can be removed following the tools' protocol and state/territorial policy.
17. Once the transfer package is verified, and the archives has the records deposited safely in digital repositories, the producer agency can be notified. This notification serves two purposes:
    1. The archives has taken intellectual/legal custody of the records. Any copies at the agency can be deleted (and *should be* deleted or otherwise labeled as copies). Keeping two duplicate sets of *official* records is generally not advisable. Adhere to federal, state, and local laws and regulations when it comes to this but typically the archives will have the official copies, or the records should be clearly identified as copies.
    2. The chain-of-custody process can be closed out, with the records having fully exchanged custody. Both the records themselves and the ownership/accountability/responsibility for those records are now with the archives.

18. The transfer process is completed with this final notification / transfer of custody. The archives can then perform whatever procedures are necessary (including weeding, normalization/migration, creation of derivatives, virtualization, etc.) to enable long-term preservation and improve public access. These processes may take considerable time, so it is recommended to store transfer packages in archival repositories as-is until such time they can be appropriately processed and accessed. In theory, these processes can take place before the closeout of transfer but it is advisable to store transfer packages in digital repositories for safekeeping during processing rather than relying on agencies to do so – OAIS-compliant digital repositories should be much better equipped to preserve records than line-of-business systems.

The Council of State Archivists (CoSA) is a nonprofit membership organization of the state and territorial government archives in the fifty states, five territories, and District of Columbia. Through collaborative research, education, and advocacy, CoSA provides leadership that strengthens and supports state and territorial archives in their work to preserve and provide access to government records. CoSA facilitates networking, information sharing, and project collaboration among its member organizations to help state and territorial government archives with their responsibilities for protecting the rights and historical documents of the American people. Read more at www.statearchivists.org.

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