



Digital Preservation Decision Tree Model to Establish Whether a Digital Resource Should be Preserved

Revised by Ern Bieman

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Introduction

This digital preservation decision tree helps cultural heritage institutions decide which of their existing digital resources should be preserved for the long term. The tree may be used to help develop the institution's digital preservation policy (a key document that supports and helps determine the institution's digital preservation action plan) or to support an existing policy for resources not already covered by it.

The 2021 version of this tree differs from previous versions in that it includes a detailed subtree for technical considerations. These considerations are a distillation of issues identified and taught by Joe Iraci and Ern Bieman in the Canadian Conservation Institute's "Modern Information Carriers and Digital Preservation" workshops held between 2017 and 2019.

Decision tree to determine if an existing digital resource should be preserved [\(PDF version , 20 KB\)](#)

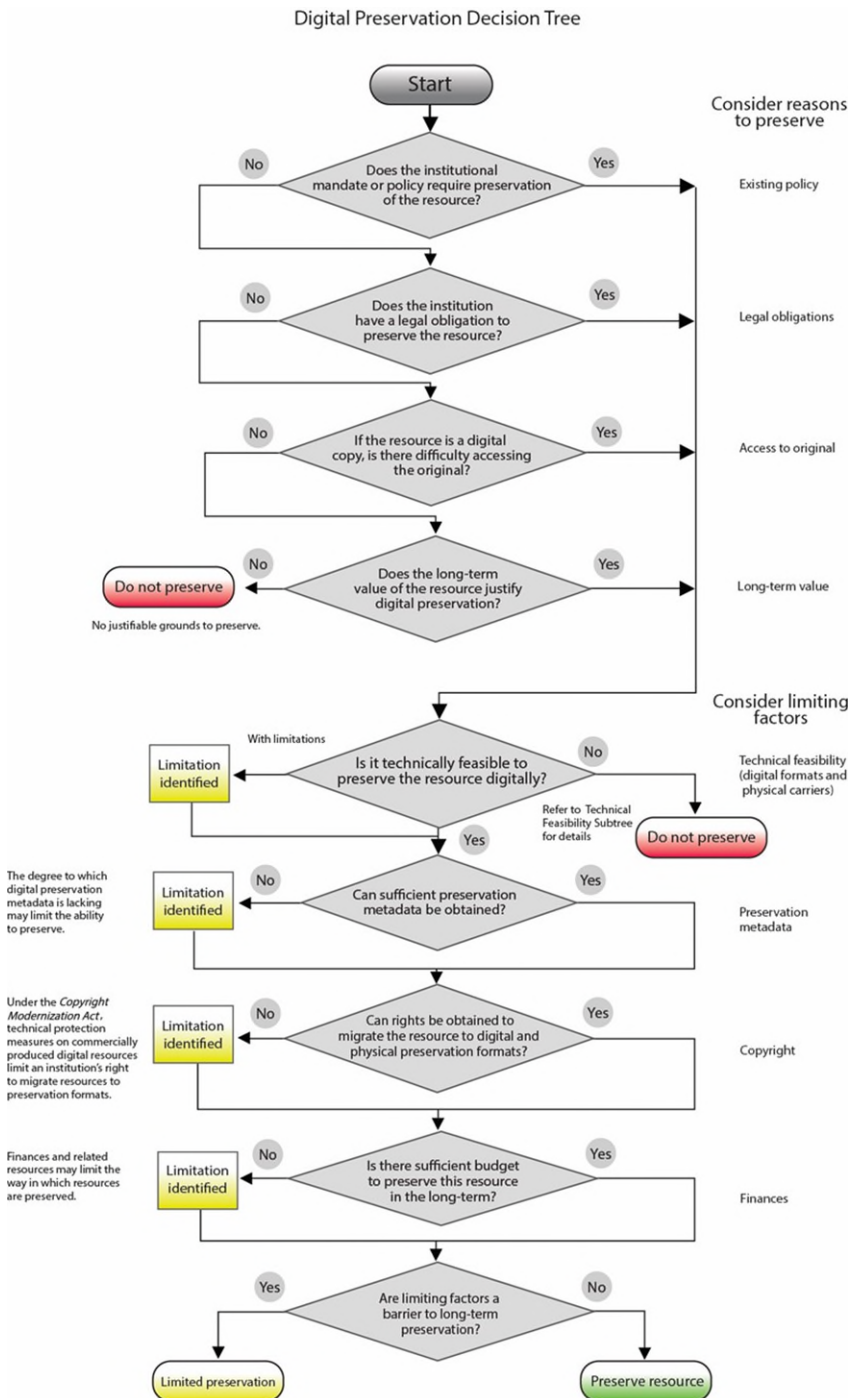


Figure 1. Main decision tree to determine if an existing digital resource should be preserved.

In using this decision tree, users must first consider reasons why the resource should be preserved. These reasons include:

- Existing policy: There may already be an existing digital preservation policy in place which states that digital resources of this nature are to be preserved. Likewise, a related guiding document (such as the institution's mandate) may suggest preservation of the resource.
- Legal obligations: There may be a term within a donation agreement or similar document that legally obliges the institution to preserve the resource.
- Access to the original: It may be the case that an original (physical) resource is difficult to access due to preservation measures, loans to other institutions or deaccessioning.
- Long-term value: The long-term value of the resource to the institution may be sufficient justification to preserve it.

If the answer is “no” to all four of these questions, there is no need to proceed, as there are no justifiable grounds to preserve the resource. Conversely, if the answer to any of the four questions is “yes,” the resource should be preserved.

The remaining part of the tree identifies limiting factors, and while none of these should prevent preservation activity, it may determine to what degree a resource can be preserved. The limiting factors include:

- Technical feasibility: This decision box has been expanded into a [subtree](#) in which three main technical factors are considered: access to technology for physical carriers, carrier health and the digital format access and migration path.
- Preservation metadata: This refers to all information about the digital resource being preserved. It may be detailed and complex (and involve a standard such as PREMIS [*Preservation Metadata: Implementation Strategies*]), or it may be bare-bones (and include little more than the creation date, modification date and authorship information typically included by operating systems and the applications used to create a file). The level of information available will help determine the degree to which long-term access can be guaranteed.
- Copyright: This includes all copyright clearance issues. If, for instance, the digital resource is commercially produced and has a technological protection measure to prevent copying, the *Canadian Copyright Modernization Act* makes it illegal to copy the resource (even for preservation purposes) without a court injunction. In such cases, it may make sense to acquire a second preservation copy or to simply limit access to the current copy. Either way, the ability to guarantee long-term access to the resource will be limited.
- Finances: This includes cash expenditures on any resource or activity necessary for preservation activities. When a preservation plan and technology are already in place,

“finances” will refer to variable costs (additional hours of labour, disk space, etc.) of preserving a digital resource. Alternatively, if the tree is being used to develop a preservation policy (and subsequent plan), then “finances” will refer to both variable and fixed costs (technology chosen, staff assigned, training, etc.) and will be a determining factor in the plan and technology that are chosen. Consult the workflow diagram on the page [How to use the Preservation Toolkit](#) for more information on the order of operations in creating preservation policies and plans.

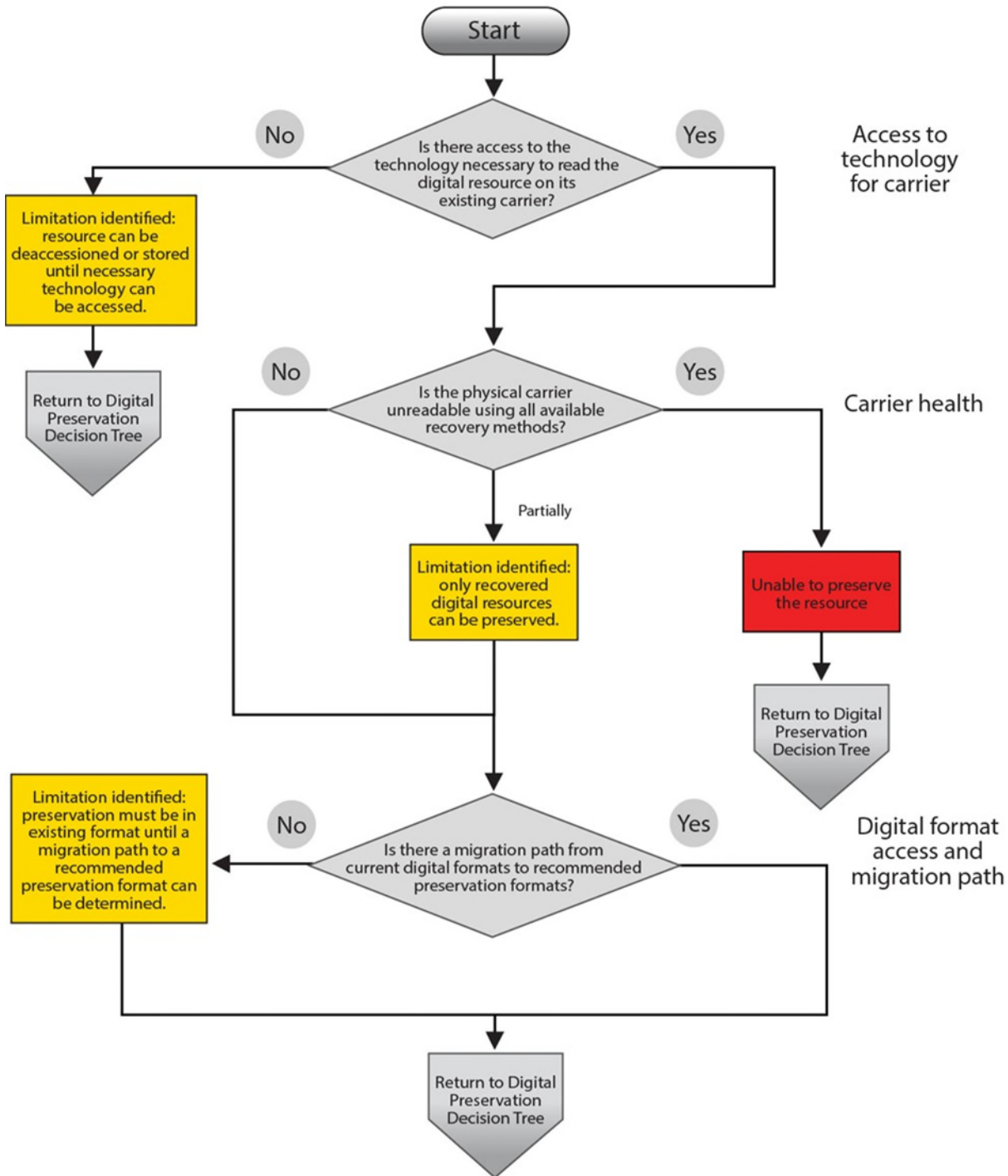
If limitations are surmountable, preserve the resource(s) with the expectation of long-term access. Failing this, preserve the resource(s) as best as possible, or prioritize the work relative to other resources needing preservation.

Decision subtree for technical feasibility of preserving existing digital resources ([PDF version , 15 KB](#))

A technical feasibility subtree has been included to show some of the lower-level details in assessing technical issues associated with preserving a given digital resource. This subtree, which is an expansion of the technical feasibility decision box found in the main tree, considers three main issues. These include access to technology to read a physical carrier (for example, to read an optical disc, a tape or a similar carrier), carrier health (for example, whether a carrier can be fully read or partially read) and availability of a migration path from the current format to a preservation format. These considerations are not to be confused with the technical processes that take place when preserving a resource (there are other processes, such as refreshing older physical media or creating preservation and access copies). The latter are processes that are done as part of a larger workflow, whereas the former are issues that must be considered when establishing whether or not a resource can be preserved.

Decision Subtree for Technical Feasibility of Preserving Existing Digital Resources

(To be used in conjunction with Digital Preservation Decision Tree)¹



(1) As with the Digital Preservation Decision Tree, this subtree should only be used for the consideration of preserving individual digital resources. Additional technical issues may apply to the institution's entire preservation plan or procedures.

Access to technology for carrier

The path through this subtree starts with assessing whether or not technology is available to access the physical carrier in its current format. A digital audio tape player, a laser disc drive and a floppy drive are all examples of hardware that are becoming increasingly rare. The availability of this equipment may be found within your institution, via an external source, such as a partner organization, or through a contractor. If the necessary equipment cannot be accessed, a limitation to preservation has been identified. In such situations, physical carriers can often be stored until the necessary technology can be accessed, and consideration of other technical feasibility issues is postponed until that time.

Carrier health

Assuming the necessary technology can be accessed, carrier health is then determined. This is done initially by visual inspection and then by attempting to read the carrier. If reading a carrier by the standard method is not successful, various remedies are attempted, based on the type of carrier and its condition. If the carrier can be read, or if all information can be extracted using a remedy, then the next issue (migration path to preservation formats) is considered. Conversely, if all known methods of extracting information fail (including any the institution may wish to attempt through external assistance), then the digital objects on the carrier must be considered lost. They cannot be preserved and the carrier is typically discarded. No further steps on the subtree or the main decision tree are necessary. Finally, if only part of the information on the carrier can be extracted, then this is considered a limitation, and only this part may be preserved.

Digital format access and migration path

This final technical consideration focuses on whether or not the resource can be saved in a preservation format. If the existing format of the digital resource is not already saved in a [recommended preservation format](#), then a migration path must be established. Finding a migration path for more common formats is relatively simple, but proprietary formats from older, less known applications may be difficult to access, let alone convert. Solutions beyond attempting to open such files using current software include online conversion tools, loading of older applications on emulators or loading of older software on virtual machines. If funding is ample and the file format specifications are available (they generally are not for older rare formats), or if the file format is simple enough to decode by inspection, a professional coder may be able to access the resource fully or partially for you.

Once considerations for technical feasibility have been made (and assuming the resource can still be preserved), the original tree should be revisited for consideration of the remaining limiting factors.

Glossary

access

Clearance of rights to digitize a resource or to make a copy of an existing digital resource for the purpose of preservation does not necessarily entail the right for a cultural heritage institution to provide access to this material. Expectations about how preserved content will be used must be cleared with the copyright holder.

carrier

The physical object on which a digital resource is stored. Examples include hard disk, floppy disk, optical disc and digital tape.

copyright clearance

Copyright clearance includes obtaining the right to make digital copies of a resource (if applicable, and if this has not already been obtained), to make copies in various formats and on various physical media for the purpose of digital preservation and to provide access to this material (according to the institution's digital preservation policy).

digital preservation action plan

A digital preservation action plan is a core document that considers all relevant aspects of an institution's circumstances and digital preservation objectives to produce a recommended strategy. The plan considers institutional policy objectives, legal obligations, finances, organizational and technical infrastructure and user needs. From this, it considers and evaluates a number of strategies and then recommends a specific action plan, which consists of

- a series of actions to ensure digital content is preserved;
- the identification of who will carry out these actions and with what resources; and
- details on the manner and conditions in which the actions will be carried out.

digital preservation metadata

This type of metadata identifies the resource being preserved and generally includes files such as date preserved, who produced the material, who preserved it, what was used to digitize it, a history of changes made to it during the data management stage, etc. Without knowing this basic information, the content may have little or no meaning and may not be worth preserving.

digital preservation policy

Your institution should have a policy on digital preservation, which addresses issues such as what your institution's digital preservation activities are meant to accomplish, who will be involved and how, what sort of material will be preserved, etc. [The Digital Preservation Policy Framework: Development Guideline Version 2.1](#) (used to produce such policies) can be found in CHIN's [Digital Preservation Toolkit](#).

finances

In general, the costs associated with preserving a single digital resource are already considered as part of your institution's digitization project. However, there may be specific resources which have inordinate preservation costs associated with them (items not yet digitized, proprietary software that may require a programmer's skills, etc.). Physical media maintenance and file format migration costs during the preservation process should also be considered, as these require long-term financial planning.

legal obligations

Content to be preserved for legal purposes may include financial data (point of sales data, other revenues, expenditures, etc.), email relating to agreements, understandings and notices, and other administrative material. It may also include metadata about collections, particularly where there is a legal obligation to preserve the collection and where no other record of the metadata exists. Finally, it may include born-digital content (such as content that exists in no other form), if this content was provided to your institution on the understanding that it be preserved.

long-term value

This issue is often addressed within an institution's digital preservation policy. However, digital resources which might be deemed out of scope by a policy, may, on occasion, be worth preserving solely as a result of their long-term value (either to the institution or its stakeholders).

technical feasibility

Some content may be on physical media formats that are either dated or vulnerable to becoming dated. File formats (less common proprietary formats in particular) also present a problem, as these are vulnerable to being dated and unreadable to future software applications. Technical specifications (for example, what file formats and media are acceptable) must be in place to ensure that such content is transferrable to formats suitable for long-term preservation and that this can be done in a way that prevents or limits loss of information.

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