

An Example Self-Assessment Using the NDSA Levels of Digital Preservation

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ABSTRACT

There are multiple tools and frameworks created by and for the digital preservation community that can be used to assess practices, infrastructure, programs and organizations. As part of an effort to develop a roadmap for expanded digital preservation services, Harvard Library used several of these assessment tools along with other data collection methods to identify gap areas in the Library's preservation repository and program. This paper describes the Library's experience using one of these tools, the NDSA Levels of Digital Preservation.

Categories and Subject Descriptors

K.6.4 [Management of Computing and Information Systems]: System Management – *management audit*; K.7.3 [The Computing Profession]: Testing, Certification and Licensing

General Terms

Management, Measurement, Standardization.

Keywords

Self-assessments, Digital Preservation, Preservation Repository, Guidelines

1. ASSESSMENT INTRODUCTION

There are many different assessment, audit and certification tools and frameworks created by and for the digital preservation community. They vary in several key ways: by the target of assessment, by the level of effort they require, by the degree to which they prescribe activities or processes, and by the assessment result (grade, certificate, etc.).

The target of assessment may be as narrow as the degree to which a particular collection is adequately preserved, or it may be as broad as an entire program or organization. In between these two extremes, the target may be a preservation component, system or repository.

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Some of these tools are relatively simple and come in the form of guidelines or checklists, for example the Library of Congress' personal archiving guidelines for individuals who want to preserve their own digital content [9]. Others are much more complex, requiring a great deal of time and resources to document the evidence of meeting criteria. For example a self-assessment using ISO 16363 [2] can take months to complete [1].

The tools also vary in the degree to which their underlying guidelines or criteria are prescriptive in nature. Whereas TRAC [12] tends not to prescribe particular standards or best practices, instead assessing "whether a repository can meet its stated commitments"; others such as the National Digital Stewardship Alliance (NDSA) Levels of Digital Preservation [11] prescribe particular activities and standards to meet.

Lastly, the result of performing assessments using these different tools varies. Some, such as TRAC, result in grades or ratings, or even the attainment of seals or certificates; while others simply identify key gap areas for improvement.

Digital preservation organizations need not choose just one among these tools. These assessment tools serve different purposes and can be used together to meet diverse objectives. An institution may want to assess different aspects of a program or infrastructure, for example the NDSA Levels of Digital Preservation to assess their technical infrastructure and TRAC to assess their preservation program. Or even where assessment tools assess the same general target, such as the overall program, they may want to use several assessment tools so that the results can be compared or confirmed, especially where the tools use different underlying guidelines and criteria or were developed by different organizations.

2. HARVARD LIBRARY ASSESSMENTS

Starting in the fall of 2009, the Harvard Library went through a large-scale reorganization which resulted in a new governance, funding and organizational model. In August of 2012 the new "shared services" were put into place, including a new unit called Preservation, Conservation and Digital Imaging (PCDI). PCDI includes the Library units related to preservation, both analog and digital, that were previously separate. Because this preservation services unit was redesigning itself, it presented a good opportunity to define roadmaps for the sub-units such as digital preservation services [3] that should be expanded to meet the growing needs at the university.

Work on the digital preservation services roadmap began in October 2012 by simultaneously collecting data to identify unmet preservation needs while performing multiple self-assessments.

The data that was being collected for this exercise was extensive. It included an inventory of the Harvard and external disciplinary and commercial facilities and repositories that were being used by Harvard units or its researchers for “valuable” digital content; preservation services offered by other institutions; requests to support additional formats in Harvard Library’s preservation repository, the DRS [5]; and additional preservation services requested either by Harvard libraries, archives and museums or Harvard researchers. Given the large amount of data that was being collected, the fact that this was largely being done by one person, and the deadline to complete the roadmap (Sept. 2013); the self-assessments needed to be done relatively quickly. This ruled out using any assessments such as TRAC or ISO 16363 that would take a lot of time and staff resources to complete.

In this context the purpose of self-assessment was not to achieve certification or proof of trustworthiness; it was to identify the key deficiencies of the preservation repository and digital preservation program to be incorporated into the roadmap along with service needs identified in the parallel data collection. While it’s likely that several different assessment tools could have served this purpose the ones that were chosen were:

1. Anne Kenney and Nancy McGovern’s Five Organizational Stages of Digital Preservation [8]
2. Tessella’s Digital Archiving Maturity Model [14]
3. NDSA Levels of Digital Preservation
4. Anne Kenney and Nancy McGovern’s Survey of Institutional Readiness [7] created for the Digital Preservation Management Workshop [6]

The first and fourth listed above were used to assess the overall program; the second and third were used to assess the Library’s preservation repository (DRS). Each gave different insights into strengths and gap areas. More could be said about the specific utilities of each of these tools and how they relate to each other but this paper focuses on just one of these, the NDSA Levels of Digital Preservation, and it’s utility in this particular context.

3. NDSA LEVELS OF DIGITAL PRESERVATION

The Levels of Digital Preservation are a tiered set of guidelines developed by the National Digital Stewardship Alliance (NDSA) [10]. The NDSA is a diverse group of over 150 different institutions of all types: academic institutions; public libraries; museums; commercial, public media and nonprofit organizations; professional associations; and federal, state and local governments. Some of these institutions have well-established preservation programs; others are just beginning to take first steps towards preserving digital content.

The Levels were developed to occupy the niche area between the somewhat overly-simple personal archiving guidelines and the much more complex guidelines required for trustworthy repository certification. They needed to be usable both by institutions with established programs and by those just starting out. They needed to be approachable and practical. They needed to include specific best practices rather than leaving it to each institution to determine.

The Levels were not intended to be used to assess an entire program or organization. They don’t address policies, resources or other organizational elements which are not easily transferable among different institutions. Instead they focus on technological

infrastructure and preservation activities that can be distilled into a set of best practices applicable across institutions responsible for digital preservation.

The Levels are presented as a matrix of five functional areas and four progressive levels of preservation across the functional areas. A simplified version is shown in Figure 1. The full matrix can be seen on the Levels web site [11].

Figure 1. Simplified version of the NDSA Levels of Digital Preservation

| | Level 1 | Level 2 | Level 3 | Level 4 |
|---------------------------------|------------------|---------|---------|---------|
| Storage and Geographic Location | ● —▶ ● —▶ ● —▶ ● | | | |
| File Fixity and Data Integrity | ● —▶ ● —▶ ● —▶ ● | | | |
| Information Security | ● —▶ ● —▶ ● —▶ ● | | | |
| Metadata | ● —▶ ● —▶ ● —▶ ● | | | |
| File Formats | ● —▶ ● —▶ ● —▶ ● | | | |

4. USE OF THE LEVELS FOR SELF-ASSESSMENT

The Levels can be used in different ways, including self-assessments, as described by Phillips et al. [13]. The tool is flexible in that the matrix as a whole can be used to assess the degree to which particular collections are adequately being preserved, or the matrix can be used to assess entire preservation repositories. Alternatively, an institution can focus on particular rows in the matrix, for example to assess the storage component of a preservation repository. Harvard Library chose to use this tool’s entire matrix to identify the gap areas of its preservation repository, the DRS.

As previously noted in this paper, one of the criteria used by Harvard Library to select assessment tools was that it couldn’t be a lengthy process or require additional staff due to the large amount of other projects being conducted simultaneously at the Library. The self-assessment using the Levels took approximately 2 hours and was conducted by the repository manager who was very knowledgeable about the DRS’ technical infrastructure and the implemented practices. It should be noted though that this manager was one of the original co-authors of the Levels and was deeply familiar with the matrix categories and guidelines. It is possible that others who aren’t as familiar with the Levels may require more time for a self-assessment using the Levels, if they need to look up terms or aren’t sure how to interpret the guidelines.

When this self-assessment was performed, the Levels were fairly new and there weren’t any published examples of using it for

repository assessments. The process followed was to work through the matrix row-by-row, evaluating for each functional area the degree to which the DRS implemented the guidelines in each cell. At the time of this assessment, a large multi-year project to enhance the DRS (“DRS2” [4]) was underway. The enhancements that would be made as part of the DRS2 project were taken into account during the self-assessment. For each guideline one of five values was assigned:

1. PASS = we already implement this satisfactorily
2. PASS (improved after DRS2) = we already implement this but we will have a better implementation after DRS2
3. PASS (after DRS2) = we don’t implement this yet but will after DRS2
4. INCOMPLETE = we already implement this but we could improve the implementation
5. FAIL = we haven’t implemented this and DRS2 does not address this

The next step was to assign one of these five values to each matrix cell. The reason this extra step was needed is because some cells contain multiple guidelines and in some cases cells ended up with a mix of values, for example 2 PASS values and one INCOMPLETE value. Because the point of this exercise was to identify gap areas the cell was assigned the “lowest” value among its values. For example the cell with 2 PASS values and one INCOMPLETE value was assigned an aggregated value of INCOMPLETE. If an institution were using the Levels matrix for a different purpose, for example to highlight the benefits of their repository, they might choose to highlight the guidelines they meet rather than those they do not.

The next step was to create a visualization of the result by shading the matrix table one of four colors:

1. GREEN = the cell had value PASS
2. LIGHT GREEN = the cell had value PASS (improved after DRS2) or PASS (after DRS2)
3. YELLOW = the cell had value INCOMPLETE
4. RED - the cell had value FAIL

This visualization proved to be a very powerful communication tool to show the strengths of the DRS, the benefits of the DRS2 project, and the areas in which we needed additional improvement.

The final step was to create a textual summary description of the result, including a bulleted list of areas for improvement. This information was then incorporated into the larger set of data that was collected from the other assessments and other methods of identifying areas of improvement and unmet preservation needs described earlier in this paper.

5. CONCLUSION

Of the five items identified as needing either improvement or to be implemented by the Levels self-assessment; only one of these had been identified by other means. The self-assessments using the Digital Archiving Maturity Model and the Survey of Institutional Readiness had both prompted identification of one of these items.

One reason why the Levels identified gaps that the other assessment tools did not is because it is more prescriptive than the other assessment tools that were used. Many of the Levels’ guidelines are very specific, for example have one copy in a geographic location with a different disaster threat. This makes sense because the Levels’ guidelines were intended to be clear and practical steps reflecting consensus within the digital preservation community on best practices.

The other non-assessment data collection activities did not identify any of these 5 items. This is most likely because the Levels’ guidelines are focused on “back-end” management activities whereas the other data that was collected focused on the needs and priorities of users of the repository, whether they were content creators, depositors, reformatting labs or curators. These users identified the improvements that would be visible to them, for example additional consultation, deposit, conversion and reporting services; support for more formats; training and education. By using these different data collection methods together, a fuller picture of the needs was obtained.

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