

Measuring the Impact of Digital Collections

Digital Content Reuse Assessment Framework Toolkit

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ABSTRACT

Assessing content use and reuse is a considerable challenge for gallery, library, archives, museum, and repository (GLAMR) digital library practitioners. While a number of digital object content use studies focus on quantitative approaches to assessment, including digital object downloads, views, and visits, little research has investigated the ways in which digital repository materials are utilized and repurposed. The Digital Content Reuse Assessment Framework Toolkit, or D-CRAFT, addresses some of these gaps by providing assessment methods, ethical considerations and guidelines, tutorials, and "how to" templates to assist practitioners in understanding how digital objects are used and reused by various audiences. The toolkit enhances and advances the typical digital library use assessment approaches. As such, this paper argues that D-CRAFT can play a critical role in assisting GLAMR digital library practitioners in reuse assessment data collection.

INTRODUCTION

Assessing content use and reuse is a considerable challenge for gallery, library, archives, museum, and repository (GLAMR) digital library practitioners. Popular analytics used in such assessments frequently focus on usage data, such as the number of downloads, views, and clicks. However, these metrics do not provide insight into *how* users engage with content in digital repositories, particularly how they consume or transform objects to fit user needs.¹ While a number of digital object content use studies focus on these quantitative and limited measures, little research has investigated the ways in which digital repository materials are utilized and repurposed. Such data may be of greater value to digital library practitioners in building user-centric digital collections that are responsive to user needs and demonstrably valuable to stakeholders.² The reuse of these materials is a key indicator of the impact and value of digital collections.

The Digital Content Reuse Assessment Framework Toolkit (D-CRAFT) was born out of the work of the Digital Library Federation's Assessment Interest Group's (DLF-AIG) Content Reuse Working Group ("the Working Group"). The goal of the toolkit is to assist digital library practitioners in assessing reuse of the digital objects in their collections. The D-CRAFT project ran from 2019 to

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2023 and produced a free online toolkit that includes assessment methods, engagement and education tools to help train practitioners on the recommended practices including interactive tutorials and “how to” instructions with templates, “Ethical Considerations and Guidelines for the Assessment of Use and Reuse of Digital Content” (hereafter, the Guidelines), and related resources. This project was sponsored by an Institute for Museum and Library Services (IMLS) National Leadership Grant (LG-36-19-0036-19).³ This paper traces D-CRAFT’s development and argues that the toolkit can play a critical role in assisting GLAMR digital library practitioners in reuse assessment data collection.

PROJECT BACKGROUND

D-CRAFT was preceded by two related projects. The first, “Surveying the Landscape: Use and Usability Assessment of Digital Libraries,” was a white paper produced by the Working Group in 2015. The paper analyzed the landscape of use and usability studies conducted for digital libraries, focusing on three core areas identified at the 2014 DLF Forum: usability studies, return on investment, and content reuse. When addressing content reuse, *Surveying the Landscape* concluded that the development of a reuse assessment framework was a critical next step in making the process more accessible to GLAMR digital library practitioners.⁴ Building on these findings, members of the Working Group applied for and were awarded an IMLS National Leadership grant (“Developing a Framework for Measuring Reuse of Digital Objects,” LG-73-17-0002-17) to conduct a formal needs assessment to determine criteria for an assessment framework.⁵ In 2017 and 2018, the grant team conducted surveys, focus groups, and research to identify desired functionality for a future digital content reuse assessment toolkit.⁶ The project concluded with the next step of building an assessment toolkit to compile available resources, best practices, and use cases for studying the reuse of digital assets held by GLAMR organizations.⁷

To accomplish the task of developing the toolkit, the eight-member D-CRAFT Project Team (hereafter, “Project Team”) hired five consultants to lead the work on assessment, diversity, privacy, accessibility, and instructional design. The Project Team also set up an advisory group with representatives from across the GLAMR community, including from public and academic libraries, archives, museums, and scholarly repositories, to provide feedback from the perspective of digital library practitioners in their respective areas.⁸

LITERATURE REVIEW

The launch of D-CRAFT happened during a time in the profession when digital library content reuse assessment best practices were under development. Recent literature addresses three related themes that illustrate the evolving research in digital library assessment. The first theme highlights the popular metrics often deployed in digital library content reuse assessment and surfaces gaps that drive additional research moving forward; the second focuses on the emergence of practical tools and approaches to make digital library content reuse assessment approachable for practitioners; the third explores nuanced differences between use and reuse, including assessment approaches. This literature review will highlight contributions to each of these themes.

Research over the last several years has increasingly identified gaps in digital library content reuse assessment best practices. Several studies have sought to identify valid and meaningful metrics that would supply assessment data. Literature highlights a variety of data sources and types and explores the appropriate circumstances in which to collect this data: Usage statistics, such as number of downloads, views, and clicks; interface design attributes, including user

feedback on interface engagement and functionality; and digital collection content analysis, including evaluations of the content found (and not found) in repositories, all surface as information relevant to assessment.⁹ These articles argue for the need to move assessment approaches beyond popular quantitative metrics, particularly usage data analytics. While metrics such as the number of downloads, views, and clicks are viable approaches for certain library programs and workflows, these metrics do not provide insight into *how* users engage with content in digital repositories, particularly how they consume or transform objects to fit their needs.¹⁰ Data addressing transformative reuses may be of greater value to digital library practitioners in building user-centric digital collections that are responsive to user needs and demonstrably valuable to stakeholders.¹¹

Other scholarship has focused on practical tools and strategies to assist practitioners in performing digital library content reuse assessment. One of the first toolkits aimed at assessing how digital library objects are used was the Toolkit for the Impact of Digitised Scholarly Resources (TIDSR). Intended to measure the impact of five digital projects funded by the Joint Information Systems Committee (JISC), TIDSR was one of the first tools to bring together quantitative and qualitative data collection methods to help practitioners “attempt to understand and collect data for measuring impact from the onset of a project throughout the life-cycle of a digitization effort.”¹² The Project Team has built upon the TIDSR approach, updating viable quantitative and qualitative methods and tools for collecting use and reuse assessment data. The team has also complemented these methods and tools with other documentation that should shape and inform the assessment process, including the Guidelines, which help practitioners consider the social and political forces embedded in digital library content reuse assessment work; “Telling Stories of Impact,” which provides concrete ways for practitioners to utilize reuse assessment data to communicate to various audiences; and a conceptualization of the differences between digital object use and reuse.¹³

The scholarly record explores the concepts of use to a large extent and reuse to a lesser one. Use has been defined in a variety of ways, with definitions focused on the context and/or purpose of engaging with an object, the measurement of a level of engagement with an object, or the intent of the object’s creation.¹⁴ The most compelling definitions of use focused on the idea of consumption of the digital object. The definitions of reuse were more difficult to define, with some scholarship describing it as actions undertaken in response to consumption.¹⁵ Overwhelmingly, the literature failed to differentiate use and reuse terminology or definitions and, consequently, did not address differences between the two concepts. The D-CRAFT Project Team focused on expanding the limited scope and definitions of digital object use and reuse. After a deep study of the literature, which yielded few definitions for digital object reuse, and interviews with practitioners, the researchers developed original definitions of use and reuse along with a matrix in which to apply these definitions on scales of increased engagement (Table 1).¹⁶

- **Use:** Passive interaction with a digital object that indicates potential interest and/or value to an external user.
- **Reuse:** Active interaction with a digital object that demonstrates an interest or value to an external user.

Table 1. Use-reuse matrix.

Use, Reuse		Use	Reuse
		<i>Passive interaction with a digital object that indicates potential interest and/or value to an external user</i>	<i>Active interaction with a digital object that demonstrates an interest or value to an external user</i>
Simple Engagement	Access <i>To come into contact with a digital object</i>	<ul style="list-style-type: none"> Browsing digital repositories for content Clicking a link for a digital object Downloading digital objects Accessing a web archive 	
	Consumption <i>To view, read, listen, or expose oneself to the intellectual content of a digital object</i>	<ul style="list-style-type: none"> Watching a video online Reading an article Viewing a photograph Listening to a song 	
	Reformatting <i>To change the medium or delivery of a digital object without changing the content itself</i>	<ul style="list-style-type: none"> Printing digital objects Scanning a document 	
Spectrum of Engagement	Sharing <i>To expose others to the intellectual content of a digital object by distributing a means of display or access, such as a link or doi</i>	<ul style="list-style-type: none"> Displaying digital collection materials on social media or email Citing a digital object in a scholarly article without adding interpretation Citing a digital object in a Wikipedia article without adding interpretation Publishing/reposting content in online or print publication without adding interpretation Incorporating digital images into documentaries or movies without adding interpretation 	
	Reproducibility <i>To draw upon a digital object or dataset to validate or verify a previous study's methods and/or results</i>		<ul style="list-style-type: none"> Confirming a journal article's results by using an existing data set to reproduce its methods and conclusions Verifying a research study's methodology by replicating its process using a different dataset
	Enhancement <i>To add functionality or accessibility to a digital object</i>		<ul style="list-style-type: none"> Annotating an image or document Translating the text of a digital object from one language to another Transcribing a digital object Creating closed captioning for a video Adjusting lighting or coloring of digital items in order to faithfully represent the original object

Use, Reuse		Use <i>Passive interaction with a digital object that indicates potential interest and/or value to an external user</i>	Reuse <i>Active interaction with a digital object that demonstrates an interest or value to an external user</i>
<i>Spectrum of Engagement</i>			<ul style="list-style-type: none"> • Charting a dataset in a graph or infographic to communicate with others • Recording a book to make an audio book
	Recontextualization <i>To alter the surroundings or space that affect the meaning, purpose, or intent of a digital object.</i>	<ul style="list-style-type: none"> • Aggregating metadata in a discovery tool 	<ul style="list-style-type: none"> • Curating sets of digital material, such as People of Color in Medieval European Art History (https://medievalpoc.tumblr.com/) • Curriculum planning K-12 education, e.g. DocTeachs, LOC Teaching with Primary Sources, etc. • Creating a Pinterest board of digital objects • Citing a digital object in a scholarly article and adding interpretation • Citing a digital object in a Wikipedia article and adding interpretation • Publishing/reposting content in online or print publication that adds interpretation • Incorporating digital images into documentaries or movies while adding interpretation
	Transformation <i>To change or alter a digital object substantially, resulting in a new, distinct entity, including, but not limited to recreations, versions, and mashups.</i>		<ul style="list-style-type: none"> • Creating “then and now” photographs for an exhibit, https://publicdomain.nypl.org/fifth-avenue/ • Painting, drawing, or otherwise artistically representing a digital object • Combining two or more datasets for analysis • Creating a GIF or meme from digital objects • Revising an existing OER object with new content • Overlaying a map with data points • Adding color to a black and white photo or video in order to add artistic value to the original object • Combining datasets from multiple sources and disciplines to produce a new result, intellectual framework, or model?
Complex Engagement			
<p>Note: This table has been reproduced from Kenfield et al., “Toward a Definition of Digital Object Reuse,” 387, Table 1.</p>			

These definitions center on the user's action as an indicator—but not measurement—of value. The definitions are accompanied by a matrix that examines their context on a spectrum of simple to complex user engagement that includes the following categories: access, consumption, reformatting, sharing, reproducibility, enhancement, recontextualization, and transformation. At each level, the amount of user work and involvement increases, indicating a higher level of engagement. At the transformation stage, the original item actually becomes a new item. These proposed definitions provided the framework on which D-CRAFT was built and are shown in Table 1. As such, the researchers include information on use/reuse definitions and the level of engagement matrix within the toolkit.¹⁷

The scholarly record of the digital repository field demonstrates that a more precise understanding of use and reuse would allow practitioners to hone practical applications for their assessment data. In particular, the Project Team argues that this shared understanding would allow for more user-responsive design, focused on value that users find in digital objects. Consequently, this same focus on user engagement allows practitioners to tell more compelling stories to their institutions and funders. The D-CRAFT toolkit brings these user-focused assessment practices and combines them with tools, methodologies, templates, examples, tutorials, recommended practices, and guidelines for more effective assessment practices. This paper will outline the components available in the toolkit, the implications and limitations of the toolkit, and future steps the digital repository community can consider.

D-CRAFT COMPONENTS

The toolkit contains the recommended practices for assessing reuse, ethical guidelines on the use and reuse of digital objects, guidelines and considerations for how to tell stories of the impact of digital collections and write takedown policies, a glossary, and a suite of related resources. Each of these deliverables was identified in the formal needs assessment during the initial “Developing a Framework for Measuring Reuse of Digital Objects” grant process.¹⁸

Recommended Practices

A central component of D-CRAFT is the recommended practices for assessing reuse. The recommended practices are a suite of web pages that guide practitioners through various methods to assess digital content use and reuse, as well as several specific tools that can be employed to collect the data necessary to use each of the assessment methods. The toolkit includes ten data collection methods: alert services, altmetrics, citation analysis, focus groups, interviews, link analysis, point of use surveys, reverse image lookup, surveys, and web analytics. The toolkit includes some major methods like web analytics, which can be used solely for use and note reuse assessment, as practitioners likely need to assess both use and reuse to accomplish the same objective, and many may be unfamiliar with methods for either. The toolkit provides detailed information on each method, including information for beginning practitioners as well as advanced practitioners, explaining the method in an easy-to-understand way from the perspective of assessment in GLAMR institutions specifically. For each assessment method, the toolkit provides a definition, a detailed explanation of how it is used for use and reuse assessment of digital content, a list of common tools that can be used to collect data for this method of assessment, recommended responsible practices that connect the Guidelines to the assessment method, strengths and weaknesses, highlighted examples that demonstrate this method in use at GLAMR institutions, and an interactive tutorial to assist learners in reviewing and absorbing information about the method. Some methods additionally include supplementary materials. For example, the method of focus groups is accompanied by sample recording permission forms,

common ground rules, and a sample script. The section on tools provides a link to a page documenting each tool. In some cases, the tools selected are the full extent of tools available for the method in question. For other methods—such as surveys—there are so many tools that the Project Team simply selected several that were the most used by or accessible to GLAMR institutions or that had capabilities to do specific functions for the assessment method. Information on tools includes the following: how to use the tool specifically for use and reuse assessment; ethical guidelines specific to the tool; strengths and weaknesses of the tool for each method to which it applies, including strengths and weaknesses compared to the other tools documented; other tools that can be used for the same method; and real-world examples (if available) such as linked case studies, articles, or blog posts.¹⁹ The recommended practices offer practical reuse data collection and assessment strategies for GLAMR digital collections practitioners. The documentation fills a critical gap in the assessment landscape as it provides approaches and techniques that move practitioners beyond collecting and assessing usage statistics.

Ethical Considerations and Guidelines for the Assessment of Use and Reuse

The Guidelines focus on ethically assessing reuse, which is distinct from how digital content should be ethically used and reused. To that end, the Guidelines do not examine ethical considerations beyond assessment. The goal of the Guidelines is to put forth a set of principles to guide ethical assessment of reuse. The Project Team identified the need for such a document during the “Developing a Framework for Measuring Reuse of Digital Objects” project.²⁰ To accomplish the task of drafting the Guidelines, the Project Team reviewed GLAMR professional codes of ethics, practices, and guidelines²¹; consulted privacy and ethics working groups focused on GLAMR institutions; and leveraged project consultant expertise in areas of privacy and diversity, equity, inclusion, and accessibility. The Guidelines include six core values: inclusion, diversity, equity, accessibility, social justice (IDEAS); privacy; traditional knowledge, cultural heritage, and intellectual property; professional development and training; transparency; and impartiality. The core values are intended to shape how digital library practitioners collect use and reuse data of digital objects in the collections they steward.²² Embracing the core values couples ethical approaches with reuse assessment practices, making for a more responsible approach to assessment while ensuring that social and cultural variables are key assessment components. To be of use to the widest possible audience of practitioners, the Guidelines are available in English, Spanish, and Chinese.

Telling Stories of Impact

The Project Team recognized that the toolkit not only had to assist practitioners with collecting assessment data using sound methods but also had to guide practitioners to communicate the results of their assessment effectively. The Project Team developed a simple framework for telling stories of impact. The framework requires practitioners to assemble key pieces of information that will build the narrative’s composition, assist with facilitating the storytelling process, and address its audience. It documents facets of information frequently found in impact reporting, including the “who,” “what,” “when,” “where,” “how,” and “why” of the assessment data that practitioners collected. The framework includes a definition and examples for each facet to guide practitioners through thought exercises to help them plan and articulate the stories they will tell. Finally, it offers real-world examples of practitioner storytelling and tools.²³

Understanding the Importance of a Takedown Policy

Although not directly related to assessment practices, the formal needs assessment from the “Developing a Framework for Measuring Reuse of Digital Objects” grant identified that

practitioners wanted “the ability for marginalized communities to report incidents of reuse that the community perceives as culturally exploitive.”²⁴ In response to this, the toolkit includes guidance and sample language for takedown policies for digital repositories. This section first walks practitioners through the considerations they should reflect on while drafting a takedown policy, including identifying their audience (internal or external), the purpose of the policy, the parameters the institution will consider for taking down a digital object, the takedown process that the requestor should take as well as the process the internal reviewers will follow, when and how policies will be revised, and finally the steps that can be taken preemptively to prevent the need for taking down objects. These considerations were crafted following interviews and focus groups with digital repository practitioners to get a broad sense of the circumstances in which the removal of digital objects was requested. Using this template is intended to help practitioners flesh out the language of a policy and process for responding to requests that will fit their institution’s specific rules and situation.

The toolkit also provides practitioners with a sample takedown policy that can be used in whole or in part, as befits their needs. This template defines the potential actions associated with taking down a digital object and outlines a general process for submitting a takedown request and what the review process could look like. It also includes small statements that can be embedded into metadata fields or websites alongside digital objects for easier access by users. Practitioners can use this template and modify the language to fit the decisions made when reviewing the Guidelines.

The takedown policy section also includes links to policy statements already in use on digital repository websites. These links are separated by examples that can be referred to for best practices, examples that focus on sensitive information, and examples that demonstrate mixed-purpose takedown policies that integrate copyright infringement with other purposes for requesting the removal of a digital object.

Related Resources and Glossary

There are two final components to D-CRAFT: Related Resources and Glossary. The Related Resources page cites general readings on user assessment and kindred spirit toolkits. Additionally, the Related Resources page has seven subsections that list tools not otherwise described in D-CRAFT. These are tools that practitioners can use to analyze data gathered for use and reuse assessment but were otherwise considered out of scope for the Toolkit because once use or reuse data are collected, they can be analyzed just like any other data.

Lastly, the Glossary defines specific terms and acronyms used throughout D-CRAFT so as to provide a common understanding of these concepts when encountering them in the toolkit.

CONCLUSION: LIMITATIONS AND REFLECTIONS

While D-CRAFT has the opportunity to complement GLAMR practitioners’ digital object reuse assessments, it is not without its limitations. The researchers highlight several hurdles that will continue to shape the long-term viability and success of the toolkit. Because D-CRAFT relies on some proprietary tools and existing data collection practices as the core of its recommended practices, the toolkit borrows and adapts approaches not specifically designed for reuse assessment. GLAMR practitioners can learn more about the instances of tools not aligning with use and reuse assessment by reviewing the “weaknesses” section in D-CRAFT’s recommended practices documentation. As these third-party resources change over time, so too will the toolkit’s effectiveness in collecting use and reuse assessment data.

Additionally, D-CRAFT reflects work done during a specific time, place, and space—modalities that quickly are outdated by advancements in digital and data curation and management. The researchers devised a sustainability plan to keep the toolkit as current and relevant as possible for a period of three years after its launch. During the sustainability plan period, the researchers will also examine new possible toolkit developments to pursue, potentially including the following: refining or revising recommended practices in light of advances in artificial intelligence (AI) and automated approaches; expanding ethical assessment approaches to incorporate additional cultural and socio-technical developments; and further interrogating the definitions, boundaries, and limitations of use and reuse assessments in a generative AI-based information landscape.

D-CRAFT's development and deployment compiled disparate knowledge, approaches, and tools to standardize digital content reuse assessment practices for GLAMR practitioners. Like a handful of resources before it, D-CRAFT provides a variety of methods to assess for content use—a user's passive engagement with digital objects such as accessing, consuming, and reformatting. By coupling recommended practices with ethical assessment approaches, the toolkit affords GLAMR practitioners with intentional collection evaluation techniques that can move their approaches beyond use assessment. D-CRAFT prepares GLAMR practitioners to identify, collect, and analyze reuse assessment data—data that demonstrate active engagements with digital objects, such as enhancement, recontextualization, and transformation. Combining approaches for use and reuse assessment, the toolkit can play a critical role in strengthening GLAMR practitioners' abilities to tell more meaningful stories about the collections they steward and the engagement opportunities these materials offer diverse audiences.

ENDNOTES

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