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"Omeka" for Online Exhibitions: A Multidisciplinary Analysis & Evaluation

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Abstract (English)

This paper examines how the content management and web exhibition tool “Omeka” can be a potential standardizing tool for publishing digital humanities (DH) online exhibitions. Through a qualitative analysis, I ask if Omeka can benefit small to medium-sized cultural collections as an alternative to custom-coding or outsourcing website creation. To address this question, I first conduct close readings of primary sources provided by Omeka and secondary sources on Omeka, such as reviews, to understand Omeka itself. Secondly, I assess which projects it suits by evaluating how Omeka treats multiple digital objects (exhibitions and collections) and single digital objects. The multiple object level analysis draws from the following areas of study: information visualization, close and distant reading/viewing, digital interfaces, and Emily Marsh’s “exhibit orientations.” The single object level analysis discusses the complexity of digital objects, descriptive metadata, and materiality. Thirdly, I evaluate which projects Omeka creates in practice by presenting three case studies and observations from my survey of 31 selected project examples. Finally, through user studies and digital design principles, I determine which users Omeka is suitable for by focusing on researchers as expert users and the broader public as casual end-users. I argue that Omeka is mainly a finished product but is an actively used tool kept alive by its users and community developers. It benefits projects where Omeka’s learning curve or cost is significantly lower than the learning curve or cost to learn another tool, code a website, or invest in additional resources. Further, it is a flexible tool that can integrate extendable features through numerous external software add-ons. However, researching them all, learning how to use Omeka, and adding customizations are time-consuming for exhibition creators. Additionally, Omeka does not alleviate existing problems digital humanities projects may face, such as metadata errors, lack of project documentation, and uncertainty in project sustainability. Smaller projects will likely display default settings and templates without customizations with limited object views and interactivity. However, projects will likely comply with basic web accessibility by being usable for website visitors with disabilities and can work across various screen sizes. Furthermore, researchers and exhibition creators need to assess if Omeka’s benefits outweigh its constraints as a tool regarding a project’s material, domain-specific needs, and the skill set of a creator or team.

Abstract (Deutsch)

Diese Arbeit untersucht, inwiefern das Content-Management- und Webausstellungs-Tool „Omeka“ ein potenzielles Standardisierungstool für die Veröffentlichung von Online-Ausstellungen in den Digital Humanities (DH) sein kann. Anhand einer qualitativen Analyse erfragt diese Arbeit, ob Omeka für kleine bis mittelgroße kulturelle Sammlungen eine Alternative zu Custom-Coding oder zum Outsourcing einer Website-Erstellung sein kann. Um dieser Frage nachzugehen, recherchiere ich zunächst die von Omeka zur Verfügung gestellten Primärquellen und Sekundärquellen über Omeka, wie z. B. Rezensionen, um Omeka selbst zu verstehen. Zweitens beurteile ich, für welche Projekte es geeignet ist, indem ich bewerte, wie Omeka mehrere digitale Objekte (Ausstellungen und Sammlungen) und einzelne digitale Objekte behandelt. Die Analyse auf der Ebene mehrerer Objekte stützt sich auf die folgenden Forschungsbereiche: Informationsvisualisierung, Close und Distant Reading/Viewing, digitale Interfaces und die „exhibit orientations“ von Emily Marsh. Die Analyse von einzelnen Objekten befasst sich mit der Komplexität digitaler Objekte, deskriptiven Metadaten und der Materialität von Objekten. Drittens bewerte ich, welche Projekte Omeka in der Praxis erzeugt, indem ich drei Fallstudien vorstelle, gefolgt von Beobachtungen aus meiner Untersuchung von 31 ausgewählten Projektbeispielen. Schließlich bestimme ich anhand von UserInnenstudien und digitalen Designprinzipien, welche UserInnen Omeka eignen, indem ich mich auf ForscherInnen als ExpertInnen und die breitere Öffentlichkeit als Casual End-UserInnen konzentriere. Ich behaupte, dass Omeka ein meist fertiges Produkt und noch ein aktives Tool ist, das von seinen UserInnen und den Community-EntwicklerInnen aktuell gehalten wird. Dies kommt Projekten zugute, bei denen die Lernkurve oder die Kosten für Omeka deutlich niedriger sind als die Lernkurve oder die Kosten für das Erlernen eines anderen Tools, die Programmierung einer Website oder die Investition in zusätzliche Ressourcen. Außerdem ist Omeka ein flexibles Werkzeug, das durch zahlreiche externe Software-Add-ons erweiterbare Funktionen integrieren kann. Dennoch ist es für AusstellungserstellerInnen zeitaufwendig, diese zu recherchieren, zu lernen, wie man Omeka benutzt, und Individualisierung vorzunehmen. Darüber hinaus kann Omeka bestehende Probleme, mit denen Digital-Humanities-Projekte konfrontiert sein können, wie z. B. Metadatenfehler, fehlende Projektdokumentation und Ungewissheit in Bezug auf die Nachhaltigkeit eines Projekts nicht beheben. Kleinere Projekte

tendieren dazu, Standardeinstellungen und Templates zu verwenden, die keine Individualisierungen haben, mit eingeschränkter Objektansicht und Interaktivität. Projekte können jedoch grundlegenden Anforderungen an Internet-Barrierefreiheit erfüllen, indem sie für Website-BesucherInnen mit Behinderungen nutzbar sind und auf verschiedenen Bildschirmgrößen verwendbar sind. Darüber hinaus müssen ForscherInnen und AusstellungerstellerInnen abwägen, ob die Vorteile von Omeka seine Einschränkungen als Tool im Hinblick auf den Inhalt eines Projekts, die domänenspezifischen Anforderungen und die Fähigkeiten der ErstellerInnen oder Teams überwiegen.

1. Introduction

The use of standardizing tools in digital humanities (DH) to publish online collections is not yet widespread despite the increased development of software and the need to research and publicize ever-growing amounts of cultural data. I use the phrase "standardizing tools" to refer to tools that can be applied to and customized for multiple research projects, aiding their creation process. Additionally, cultural heritage organizations, galleries, museums, libraries, and archives are experiencing a shift from a content provider role. The implementation of digital innovation creates a need for cultural institutions to engage audiences through interactive spaces that focus on a user's experience (Portalés et al. 2018, 1). However, even small collections employ more time-consuming custom-coded solutions, requiring technical skills beyond those of most digital humanities scholars (Kamposiori 2020, 7; Ibid., 11). Open-source content management systems (CMS) and tools like Omeka, which are developed for scholars to build websites, claim to accelerate the creation of digital exhibits through "ease of use," with a decreased learning curve and no programming skills needed.[1] In turn, it should save time, monetary costs, and resources, which smaller organizations would otherwise need to spend on technical staff and external agencies. Cultural organizations and scholars that intend to publicize small to medium-sized collections should, therefore, be able to create and share their material themselves with tools like Omeka.[2]

1.1. Problem Statement

My thesis is concerned with and focused on finding solutions to the following main problems I name in DH:

- The "Big Data" & Resource Problem
- The Default Tools Problem

[1] For examples of Omeka framing their tool as "easy" to use, see the Omeka.org project page in the About section (e.g., "We believed that publishing accessible collections and exhibitions that utilize standards-based metadata could be accomplished by building a free, open-source platform that, like blogging software, offered an easy-to-use administrative interface, provided syndication for sharing content, and extended the core function of publishing content with a flexible plugin architecture and rich design theme API."), the Omeka.net subtitle states: "Getting started is easy with Omeka with our hosted service." For a summary and criticism of Omeka's "ease of use" marketing rhetoric, see Morgan (2018), 215–216.

[2] Omeka is recommended for small to medium libraries and archives by Kucsma, Reiss, and Sidman (2010). Emily Marsh recommends it as DH's current best GUI-based exhibit and project platform (E. Marsh 2023, 142).

- User Problems

Firstly, there is a “Big Data” and Resource Problem, where there is too much data that researchers cannot approximate with their limited time and resources. However, DH and cultural institutions aim to make data accessible and add new value through digital methods. There is also a Default Tools problem where DH needs to develop its own tools and cannot adopt another discipline’s approaches without critical reflection since digital systems (hardware and software) and tools inherently have built-in constraints and decision requirements (Drucker 2013b; Drucker and Svensson 2016). Nevertheless, I propose that knowledge, tools, and technology from other disciplines, like information studies and even commercial design sectors, can still be used productively in DH (Smithies 2017). I describe the last issue as User Problems, as cultural institutions and DH are experiencing a shift towards focusing on audiences and users. They aim to involve the broader public and provide knowledge but may struggle to achieve engagement in online spaces. Moreover, many humanities researchers lack the technical skills to create tools and publish websites, yet DH aims to develop and use tools from their own disciplines.

I chose Omeka as a specific tool to focus on as it directly addresses these problems. It is a long-standing, well-known no- to low-code tool for publishing exhibition websites. Omeka software is still updated regularly and has an active user community. Omeka proposes to reduce the effort and resources needed for researchers and is a tool developed and intended for scholars. There are two other similar and widely used online exhibition platform tools, Drupal and Scalar. However, I chose to focus on Omeka rather than the other two tools because its lower learning curve and focus on visually presenting digital objects differentiates it (E. Marsh 2023, 138–142). Additionally, my thesis originated from an interest in whether it is possible to find a “simplest” solution. I see Omeka as a “standardizing tool,” which may provide default features that are general enough to be usable for many different project needs and disciplines. However, the broad net Omeka casts may not be suitable for highly domain-specific needs. Omeka provides a tool where minimal technical skills are necessary to publish material publicly, and it has the potential to reach audiences across the web. Finally, it is a tool I have had personal experience

using within the context of an undergraduate digital art history project as part of a university course.

1.2. Aim, Hypothesis & Scope

The aim of this thesis resulted from the attempt to find possible solutions for the aforementioned problems in online DH exhibition projects. The principal hypothesis of my thesis is that using Omeka for online exhibitions can be beneficial for small to medium-sized cultural collections since it could offer a viable alternative to custom-coding or outsourcing the creation of a website. To answer this hypothesis, I conducted qualitative research with theoretical perspectives from multiple disciplines to evaluate Omeka. Moreover, I evaluated existing Omeka projects through selected examples in combination with literature on users of digital interfaces and tools. This literature included user studies conducted on researchers as users and sources on digital usability. My thesis focuses on scholarly projects, since Omeka intends to be a "scholarly tool." It is meant to publish data with metadata and has been used by many academic institutions. At the same time, it still intends to be accessible to all audiences on the web that want to publish an exhibition website. The scope of my research includes perspectives from DH, cultural heritage (CH), galleries, libraries, archives, and museums (GLAM organizations), as these areas share intersecting research objects and material. My qualitative research scope was limited by my chosen literature, where sources directly referred to Omeka or described a feature inherent to Omeka.

1.3. Research Questions

This thesis answers the following research questions:

1. What is Omeka?
   Before evaluating Omeka, I had to understand its capabilities and limitations. The sources to do so include primary material provided by Omeka, reviews of Omeka, and Omeka descriptions or tutorials by secondary sources.
2. Which DH projects is Omeka suited for?
   This question aims to answer whether Omeka can be used to publish scholarly projects and, if so, which projects they are. I will evaluate how content is represented and presented through the following two main categories: Digital Exhibitions & Collections (what can Omeka do on a multiple

object level?) and Digital Objects (what can Omeka do on a single object level?).

3. Which DH projects can Omeka create?
   This question derives from the previous one, asking how Omeka projects are created in practice. I first analyze three case studies in detail and then discuss general observations and conclusions from multiple examples or reviews of Omeka websites.
4. Which users and audiences is Omeka suitable for?
   Primarily through user studies, I assess if Omeka is suitable for researchers or experts and the broader public as casual end-users of an Omeka website.

2. Theoretical Framing & Literature

To understand Omeka as well as its history as a tool, I have consulted primary material Omeka provides online, such as its websites ("Omeka" n.d.; "Omeka S" n.d.; "Omeka.net" n.d.), documentation ("Omeka Classic Developer Documentation" n.d.; "Omeka S Developer Documentation" n.d.), user manuals ("Omeka Classic User Manual" n.d.; "Omeka S User Manual" n.d.; "Help for Omeka.net" n.d.), and forums ("Omeka Forum" n.d.). These sources have allowed me to assess how its capabilities and functionalities may work in theory and how Omeka has evolved as a product over time. In the first section (4.1.) of the findings chapter (4), I present my research on Omeka's history and its development.

The evaluation of digital exhibitions and collections in Omeka (4.2.1.) begins in section 4.2.1.1. where I draw on significant works on topics in information visualization. I evaluate how multiple objects can be presented and explored through Omeka. Specifically, I discuss and apply the widely known information visualization tasks defined by Shneiderman (1996) to the views of objects within Omeka. Moreover, Whitelaw (2015) and Greene et al. (2000) guide my discussion on how Omeka can allow exploring an interface through "browsing." Within the context of digital cultural collections, Whitelaw proposes the idea of "generous interfaces" that can offer multiple views and interactions suited for users with no specific goals when approaching an online cultural collection. These interfaces should ideally reflect a collection's scope and the richness of its content. Greene et al. specify how browsing can work in practice by creating "previews" and "overviews" for digital libraries.

Section 4.2.1.2. is dedicated to close and distant reading/viewing methods in Omeka. The concept is mainly associated with Moretti's (2013) work in literary studies, where he shows that "distant reading" can be a method to analyze texts comparatively at a large scale through network analysis. I expanded on this to include visual data through the approach of "distant viewing" (using digital methods to analyze visual data at a large scale), defined and discussed by Arnold and Tilton (2019). They explain visual material's unique challenges versus text-based material and illustrate examples of distant viewing methods in practice. To evaluate Omeka as a tool with an interface, the following section 4.2.1.3. considers the interface as the leading site of user interactivity that represents choices and constraints. Drucker (2013b) and Drucker and Svensson (2016) emphasize that any digital tool will always have pre-made default decisions that determine the output a tool can give. They discuss how using an interface or a digital tool will always require a critical theoretical reflection, especially if they come from outside DH or a commercially oriented field. I further discuss Omeka's interface constraints through the theoretical lens of Nathan Shedroff's (2014) "continuum of interactivity," in which he states that interactivity occurs on a spectrum. They can range from actions where users are actively engaged to those where they carry out more passive tasks. I base my discussion on exhibit types in the 4.2.1.4. Orientations section on Emily Marsh's (2017; 2023) exhibit orientation typology. She is a digital librarian, an interaction design expert, and an experienced Omeka user who has been creating many Omeka exhibition websites for the National Agricultural Library in the United States since 2015. She defines three main orientation types: information-oriented, object-oriented, and user-oriented exhibits. Through her framework and examples of orientation-type goals in practical examples of Omeka websites, I evaluate which characteristics Omeka displays. In this discussion, I further differentiate which constraints exhibition creators and visitors experience that influence achieving exhibition goals through Ramsay's (2016) definition of "soft" and "hard" constraints in software.

My object-level evaluation of Omeka (4.2.2.) begins in section 4.2.2.1. and is firstly based on Nurmikko-Fuller's (2023) definition and discussion on the complexities of humanities data. She explains how it can often be messy, heterogeneous, and unstructured, making it challenging to work with. In addition to these aspects, she also discusses how the goal of openly accessible scholarship presents an additional

layer of complexity. I further discuss how data may be treated and represented through Pitti's (2004) work, which largely groups data as either more data-centric or document-centric. Section 4.2.2.2. evaluates Omeka's use of its default descriptive metadata standard, Dublin Core, primarily through Gartner's (2016) work that explains the purposes and uses of metadata as well as the intent and aims of Dublin Core. Furthermore, my understanding of common metadata errors within Omeka projects is based on my own surveys of examples and Maron and Feinberg's (2018) critique of Omeka. The authors view Omeka's adaption of Dublin Core (DC) as problematic as Omeka claims to enable projects that integrate DC standards. However, multiple practical examples show common metadata errors. In section 4.2.2.3., my understanding of materiality in Omeka is driven partially by Geismar's (2018) discussion of digital objects within the context of a museum. While her exploration is mainly based on physical exhibitions, she conveys how the nature of digital objects is wide-ranging and nuanced and has its own materiality. Both Geismar (2018) and Cameron (2007) also emphasize how digital surrogates of analog objects can offer new potential forms of analysis that would not be possible for an analog object due to its physical limitations. I further refer to Witcomb's (2007) work that illustrates how exhibitions that involve digital media can be affective and evoke emotional responses from visitors.

The user-related aspects of my thesis are rooted in the previously mentioned information visualization sources and works from digital design. Steve Krug's (2014) book *Don't Make Me Think* is one of the most influential works on interface design and usability and is still highly relevant today. It represents both a theoretical framework and a best practice guide on how to design for the web. My discussions on website usability and designing for non-experts in the first section (4.2.4.1.) of the Users chapter (4.2.4.) are based on Krug's work, which explains basic digital design principles. Further, my evaluation of how users interact with Omeka rests on Nielsen's (2020) well-known design heuristics that provide best practices for digital interfaces. When considering how interfaces should be intuitive to users, I refer to the influential design concept of "affordances" defined by Gibson (2014), as well as the addition of a "perceived affordance" by Norman (2013). My discussion on the user behaviors and needs of researchers or expert users in section 4.2.4.2. is mainly based on DH user studies. Through an analysis of case studies, Warwick (2012)

argues for the importance of considering user requirements in DH and explains the problems users have with using digital resources. Furthermore, Bulatovic et al. (2016) and Thoden et al. (2017) find that common problems DH researchers have when using digital tools are not DH-specific but are usually general usability problems. Additionally, Münster and Terras (2020) define the specific needs of visual digital humanities researchers, who mainly deal with visual material. In discussing how librarians and archivists can collaborate with DH researchers, Kamposiori (2020) states that art historians face problems related to the quality and access of digital images. Furthermore, Gibbs and Owens (2012) advocate for better usability of DH tools to increase their adoption, as reasoned in their findings in their conducted survey and panel discussion with historian users who mostly do not use digital tools for their existing methodological practices.

Lastly, the evaluation framework of Omeka as a tool and the chosen examples of Omeka projects are guided by specific evaluation criteria and frameworks, which I will expand on in the following methodology chapter. The evaluation of case studies and examples in section 4.3. end the findings chapter.

3. Methodology

There are two parts to the thesis's methodology: the approach to evaluate Omeka and the approach to evaluate the Omeka project case studies. The methodology sub-chapters will explain from which perspectives I chose to evaluate and why.

3.1. Use of Terminology & Definitions

Throughout this thesis, I define the use of the following terminology:

Information versus Data

Information is unstructured and usually analog. I refer to information as any knowledge that exists in its original form without alteration. When referring to data, I explicitly mean digital and structured information that has been quantified or made machine-readable.

DH versus CH

I see the digital humanities as an umbrella term for humanities research involving digital methods and practices implemented intentionally, consciously, and with critical reflection. Thus, cultural heritage, with its related and often shared research objects, falls under this category, as well as its digital methods when referring to digital cultural heritage.

Exhibitions versus Collections (Omeka)

Exhibitions are curated or narrated multi-object presentations, which a visitor or user (when exhibitions are digital or online) engages with. Collections are multi-object presentations that may be structured like exhibitions, and an exhibition can consist of one or multiple collections. Omeka's terminology and structure of "exhibitions" and "collections" have similar implications. Omeka exhibitions are narrated and selected views of selected objects by exhibition creators, while collections are groups of items that creators may organize by shared characteristics.

Projects versus Websites versus Exhibitions (Omeka)

I refer to Omeka websites and Omeka projects synonymously. I may also refer to a website as an exhibition website or exhibition. It is important to note that an Omeka website may have multiple exhibitions.

Add-on versus Plugin versus Module

Omeka can be customized by installing additional software with extendable features and functionalities beyond core pre-installed capabilities. Omeka S calls this software "modules," while Omeka Classic and Omeka.net refer to the same concept as "plugins." I use both terms to refer to their use in their respective Omeka product. I use the term add-on to refer to both plugins and modules. Omeka has official add-ons, either developed or registered (approved) by Omeka, which are added to their list of official add-ons on their websites. Other add-ons exist beyond Omeka's provided list created by developers in Omeka's community. I refer to them as unofficial, third-party, or external add-ons, plugins, or modules. Both official and unofficial add-ons can offer external functionalities by, for instance, connecting to another digital product or website.

User versus Visitor

When I refer to audiences that engage with any digital interface, digital tool, or digital exhibition, I describe them as users. Within the context of Omeka, users may be exhibition creators or end-users who visit the website. I use the term visitor for end-users of any exhibitions, whether digital or physical.

(Exhibition) Creator versus (Exhibition) Visitor

Any individual who creates or participates in creating an Omeka exhibit is a creator. In contrast, visitors are strictly end-users of Omeka websites and have no administrative or editing rights. They may, however, actively contribute to an Omeka website through crowdsourcing, i.e., submitting material or items for creators to review and potentially publish.

Researcher, Scholar, Academic, and Expert

While there are nuances and distinctions between researcher, scholar, academic, and expert, I interchange these terms to refer to domain experts of specific fields and disciplines.

3.2. Evaluating Omeka

I chose three main categories of evaluating Omeka resulting from the literature:

1. Digital Exhibitions & Collections
2. Digital Objects
3. Users

The first category examines how multiple objects are represented and presented through a web interface in Omeka. The second category assesses how Omeka represents humanities data on an object level and how a single object may be presented. Finally, the third considers the interface from the perspective of two types of users: researchers or expert users and the broader public as casual users who interact with the website as visitors.

I evaluated the tool through a framework from Hariri and Norouzi, who collected multiple evaluation criteria from selected literature within the context of a digital

library interface. In table 1, I categorized their findings of highly used criteria to evaluate digital library interfaces (Hariri and Norouzi 2011, 716–717).

Category	Criterium
User Tasks & Actions	Searching
	Navigation
	Learnability
	Customization
	User workload
	Flexibility
	User control
Interface	Consistency
	Design
	Presentation
	Visibility of system status
	Match between system and the real world
	User support
	Guidance
Usability	Interaction
	User experience
	Language
	Accessibility
	Ease of use
	Feedback
	Compatibility
	Error management (recovery)

Table 1. My categorized table is based on the table from Hariri and Norouzi digital library interface criteria (Hariri and Norouzi 2011, 716), table v., https://doi.org/10.1108/02640471111177116.

The second framework of criteria for evaluating Omeka, pictured in table 2, explains the practical barriers to adopting DH tools for researcher users and thus makes common tool problems explicit (Liu et al. 2021, 224).

Aspect	Influencing factors	Meaning	Sources
Content	Matching ability	Match between users' mental models and system regarding function & interaction	[9, 13, 16, 20, 21, 23]
	Flexibility	Can expand and revise content	[5, 9]
	Collaboration	Collaborative editing	[5, 9]
	Disambiguation	Making complex and heterogeneous resources work together	[23, 28] [13,14,15,16]
	Content management	Cost of money, time and labor; Functions of submitting content	[6, 34]
	Completeness	All of the dataset is available and accessible	[13,14,15, 19, 27, 34]
Technique	Ease of use	Low complexity and intuitive to use	[7, 19, 25]
	Efficiency	Useful and effective support of user goals	[7, 9, 20, 26]
	Proficiency	Required technical skill level(s) of users	[11, 13, 19, 26]
	Quality	Functionality of final system	[11, 23, 33]
	Interoperability	Can share/connect with other systems	[7, 13, 34]
	Assistance	Support of communities, resources and tool	[12, 13, 17]
	No code	Full comprehension of the programming code is not mandatory	[13]
Interface	Visualization	Dynamic and interactive visualization	[5, 9, 24]
	Language	Multi-language support	[28, 33]
	Responsiveness	Response speed of webpage	[7, 13]
	Search support	Varied and effective tools for search and browse	[6, 14, 15]
Storage	Compatibility	Compatibility with hardware	[26]
	Sustainability	Long term use and storage	[7, 34]
	Integrity	Keeps the dataset uncorrupted and unmodified	[7, 14]
	Safety	Privacy protection, preservation of data	[6, 21]
	Funding	Continuous financial support	[34]

Table 2. Liu et al. framework of influencing factors of practice barriers (Liu et al. 2021, 224), table 3., https://doi.org/10.1007/978-3-030-86324-1_25.

Digital Exhibitions & Collections (Multiple Object Level)

The evaluation of how Omeka handles multiple objects rests on the following areas of study: information visualization, close and distant reading/viewing, digital interfaces, and Emily Marsh's exhibit orientations. The information visualization discipline provides methodologies and practices to present interactive views of multiple objects and has been present in both digital humanities and cultural heritage projects. Distant reading/viewing is an approach to analyzing and researching objects at scale, while close reading/viewing research objects in detail individually. Both represent two general approaches to studying research objects, so I include their relevant practices in my evaluation.

Digital Objects (Single Object Level)

This evaluation is dedicated to understanding how Omeka handles single objects. I focus firstly on the complexities of humanities data and research objects as heterogenous and unstructured and how this may be structured or made explicit in the use of metadata. I specifically focus on Omeka's main descriptive metadata standard, Dublin Core, and its inherent data structures. I discuss how these affect the representations of digital objects and how users are affected when creating items within Omeka. I then consider how Omeka treats an object's materiality, which encompasses its perceptible characteristics and entire object lifecycle, where changes may occur.

Users

I determine user needs and how Omeka may fulfill them depending on the type of user (expert user or casual user). This gives insight into how the tool is interacted with and what the consequences are.

3.3. Evaluating Omeka Examples

I analyze practical examples of Omeka websites in two parts. First, I will give a detailed analysis of three selected case studies. Then, I discuss the insights gathered from all 31 examples included in the literature.

The first part is dedicated to the detailed analysis of the three case studies. I selected them based on criteria that websites had to be as recent as possible (except for

Marsh's first exhibition website, which represents a compare and contrast approach to compare her first to her most recent project) and be prominent projects cited by other Omeka-related literature. I also limited exhibitions to well-documented projects (the website should minimally have an About page) and those that made publications about their Omeka websites. The chosen project should still have a functioning live website, be of a different discipline, and be as diverse as possible. As my hypothesis focuses on the potential benefit for small to medium projects, the same project size criteria are applied to the detailed analysis selection.

All examples included in the bibliography represent either live Omeka websites I found or were surveyed through reviews of their project. They are not limited by discipline or date and were chosen to represent the diversity of Omeka projects. They can range from large-scale to small projects that were funded or had no funding available. They represent past and recent projects from the last four years. They are expert-led projects or represent pedagogical projects as student-created exhibits with guidance from university professors or instructors.

The purpose was to understand the most well-known or cited projects and see what an average scholarly Omeka website looks like. After my survey of 31 projects, I determined general similarities and insights they have in common. From selecting these general trends, I could then choose projects for detailed analysis that, on the one hand, are exemplary of Omeka projects and, on the other, represent the diverse project types that occur. This selection criteria resulted in the following chosen case studies:

Frost on Chickens and George Washington Carver (E. Marsh 2017; E. Marsh 2023)
Marsh's projects are well-documented cultural heritage projects that are still live, and she has written extensively about her use of Omeka since its beginning stages. As a librarian and information design expert from the National Agricultural Library in the United States, she created her first Omeka website, "Frost on Chickens," in 2015 with no funding. Since then, she has created multiple Omeka exhibition websites, and her case studies are one of the most cited Omeka projects. "George Washington Carver" is her most recent Omeka exhibition published in 2020.

Medieval London (Cuenca and Kowaleski 2018)

This case study represents a pedagogical Omeka project created through a Fordham University undergraduate DH history and archaeology course. Students were active contributors by adding items, metadata, and content to the exhibit under the guidance of their instructors. The Omeka project was part of the syllabus, preceded by contextual guidance on cultural objects and the use of metadata standards. Student contributions started with the first course and the creation of the website in 2015, and courses that followed have built upon it until 2020.

The following literature guides my analysis and assessment of the selected case studies. Table 3 shows the criteria I categorized and summarized from Niu's appendix questionnaire (Niu 2018, 177–179) to evaluate a museum's capability to provide integrated online access through a website (Ibid., 157). The criteria are adjusted to specifically assess online exhibitions/collections and assume a website's exhibition(s) provide primary access to an institution's objects.

Category	Criterium
Infrastructure	Number of staff members
	Budget / financial resources
Data Management	Online Catalog
	Online catalog has records/archives
	Online catalog linked with finding aids
Website	Finding aids for its records/archive collections (y/n)
	Contains or links to digital/digitized records/archives
Objects	Number of objects (physical and digital)
	Relationships between objects and records are explicitly described
	Objects are linked with digital/digitized records/archives
	Objects and records/archives are searchable through a common entry point
Exhibition(s)	Contains both museum objects and records/archives
Interface / Interactivity	Website allows browsing of theme-based digital collections that include both museum objects and records
	Crowdsourcing
	Users can create their own collections of objects and records
Data Model	Linked Data
	Linked data includes museum objects and records/archives
	Integrated online access

Table 3. My categorized criteria are based on Niu's integrated online access questionnaire (Niu 2018, 177–179), https://archivaria.ca/index.php/archivaria/article/view/13647.

I will also follow a list of summarized and selected evaluation criteria I collected from the following guidelines and evaluation criteria: Mattern's (2012) "Evaluating Multimodal Work, Revisited," "Instructions for Authors" *(n.d.)* from the *Reviews in Digital Humanities* journal, and the *Public Historian's* "Digital History Review

Guidelines” (n.d.) and “Exhibition and Museum Review Guidelines” (n.d.). This resulted in the following list of criteria:

- Description
- Purpose
- Assessment of the humanistic claims and evidence
- Process and methods
- Content
- Contributors
- Technology
- Funding and recognition
- Critiques
- Data quality and enrichment
- Accessibility and availability
- Reusability, interoperability, and linking
- User Engagement and interactivity
- Intended audience
- Innovation and novel contributions
- Use and implementation of Omeka as a tool
- Interface design and usability
- Transparency and documentation
- Degree of student involvement (for pedagogical projects)
- Sources and credits
- Critical reception and scholarly activities
- Sustainability and future plans

This list contains the unique evaluation points from each of the sources mentioned earlier that are relevant and applicable to assessing an online exhibition. They primarily represent guidelines for assessing scholarly digital media work in the digital humanities and a guideline for assessing digital history.

Lastly, to assess web accessibility (usability standards for disabled users), I utilize the “WebAIM WAVE” (web accessibility evaluation tool).[3] Browser-based accessibility tools allow users to detect web accessibility errors and issues within a webpage automatically. Countless tools can automatically evaluate web accessibility compliance, of which WAVE is one of the most known and used. It is important to note that testing and resolving errors with these tools does not ensure an accessible website, nor will it guarantee finding all possible issues. Instead, they are helpful tools to be used with knowledge of existing accessibility guidelines, where each error or issue they return should be checked for validity, and users should consider other issues they may miss. The WAVE tool offers a browser extension tool for users to activate on a page they wish to evaluate and a tool to directly enter a URL on the WAVE website to output an evaluation.

4. Findings

4.1. History & Description of Omeka

Omeka describes itself as “Open-source web publishing platforms for sharing digital collections and creating media-rich online exhibits.” (“Omeka” n.d.). Functionally, it is a free website-building tool that allows users to create online exhibitions through a front-end interface. It does not explicitly require coding or technical skills and is a content management system often compared to WordPress (Drucker and Svensson 2016, 9–10; Tracy 2016, 176). Omeka even formerly branded itself as the “WordPress for your exhibits and collections.” (Cohen 2008).[4] According to Omeka, they chose their name based on a general intent to provide users with means to create websites to share content: “‘Omeka’ is a Swahili word meaning to display or lay out wares; to speak out; to spread out; to unpack. The team chose this name because it signifies the practices that Omeka helps its users to do with digital content and through building digital projects for online communities.” (“Omeka Project” n.d.).[5]

[3] WAVE has a browser extension for accessibility checks and is a Utah State University-developed project from the Institute for Disability Research, Policy & Practice. More information on the tool can be found on the website: https://wave.webaim.org/.

[4] Dan Cohen made this remark in 2008 around the launch of Omeka here: https://dancohen.org/2008/02/20/introducing-omeka/. He was the director of the Roy Rosenzweig Center for History and New Media and is currently Vice Provost, Dean, and Professor at Northeastern University.

[5] https://omeka.org/about/project/.

They list the multiple benefits of using their tool as being quick, easy, and "cost-effective." Omeka further claims to be a "serious" web publishing tool "adhering to Dublin Core standards" while having been ". . . designed for scholars, museums, libraries, archives, and enthusiasts." ("Omeka Classic" n.d.).[6] Whether the claimed benefits and the quality of scholarly projects created with the tool can be realized in actual projects depends on the context and contributors of a project.

Regarding cost, at minimum, Omeka only requires hosting a website, and small projects that would like to test Omeka could take advantage of the free trial of the already-hosted Omeka.net ("Omeka.net" n.d.). The trial has no time limitation but instead limits storage capacity, the number of websites, available plugins, and the number of available website style templates (called "themes").[7] Like any project, the larger the endeavor, the higher the cost. However, Omeka can reduce any project's financial burden by allowing researchers to create websites instead of hiring dedicated staff.

From a website development perspective, Omeka, like other website-building tools, can theoretically accelerate the process and alleviate the effort of coding from scratch or implementing programming libraries with built-in templates. Thus, building an Omeka website's visual interface involves significantly less effort. Omeka shoulders the burden of creating websites that comply with the basic standards and best practices of publishing a website. Their selection of "themes"[8] and their visual elements work across devices and screen sizes, which users can select to create custom layouts. Further, Omeka strives to adhere to W3C and 508 web accessibility standards stated in their accessibility statements: "Accessibility (Omeka.net)" (n.d.), "Accessibility Statement (Omeka Classic User Manual)" (n.d.), "Accessibility Statement (Omeka S User Manual)" (n.d.), and exemplified in the results of their self-

[6] Omeka lists these benefits for Omeka Classic and emphasizes ease of use for both Omeka S (https://omeka.org/s/) and Omeka.net (https://www.omeka.net/). Omeka S is marketed as their Semantic Web and Linked Open Data solution. Omeka.net reiterates the same benefits of Omeka S and Omeka Classic but as an already-hosted solution.

[7] For more details on the Omeka.net price plans, features, and limitations, see "Omeka.org vs Omeka.net" (n.d.): https://docs.google.com/spreadsheets/u/0/d/1Rli96QJ3qR1tf8DHCSJ9RNwbBTyYdbjJSP48BRC08TU/pub?hl=en_US&hl=en_US&hl=en_US&output=html#).

[8] List of Omeka Classic themes: https://omeka.org/classic/themes/. List of Omeka S themes: https://omeka.org/s/themes/.

reported VPAT (Voluntary Product Accessibility Template) linked in their accessibility statements.[9] Omeka helps users overcome the website development learning curve by replacing it with a far less inclined curve of learning to navigate the interface of their content manager, saving time and effort. It arguably falls short of providing a marginally wider benefit in its content structuring capabilities from a data perspective. As a tool, it will not necessarily provide a more efficient or less time-intensive method to import digital objects and their metadata into its platform. Some productivity features exist, such as bulk uploading files and importing data from other platforms. However, generally, data must be prepared to be imported to some degree or will need to be manually checked upon import.

Regarding metadata, which I will discuss in detail as a subchapter in the Digital Objects section, Omeka supports Dublin Core by default. Omeka S users can choose between other ontologies and add custom vocabularies to describe objects ("Omeka S User Manual" n.d.). However, Omeka does not ensure the correct use of metadata standards. It solely provides data properties that users can fill with freely choosable values without any reviews or limitations. The ease of use may be desirable for beginners who are less experienced with metadata. However, the same benefit can also mislead them by assuming they correctly implement metadata standards without further information. Therefore, a project's quality, linkability, and interoperability are a creator's responsibility.

The Omeka project launched its first product in 2007, Omeka Classic, which allows users to publish a single website, and their in-browser solution, Omeka.net, followed in 2010 ("Omeka Project" n.d.). In 2012, Omeka started working on its third and, to this date, final platform, Omeka S[10] ("Omeka Project" n.d.), released in 2017, which requires an installation like Omeka Classic but allows managing multiple websites (Brennan 2017). Since 2019, Omeka updates on their News page have become less frequent. They had published two to five posts yearly compared to during and before 2018 when work on Omeka S was in full swing ("Omeka News" n.d.). Developing

[9] VPAT is an accessibility template provided by the United States government that assesses compliance with the 508 Standards for IT accessibility. For more details on the VPAT, see: https://www.section508.gov/sell/vpat/. For more information on the 508 Standards, see: https://www.access-board.gov/ict/.

[10] The "S" stands for Semantic and is mentioned here: https://omeka.org/s/modules/EasyInstall/.

new products or tools is not planned for the foreseeable future. Omeka seems to have settled for accommodating users willing to host their own websites, users who may pay for Omeka's hosting services, and those who are satisfied with a hosted web-only solution. Work on all existing Omeka platforms continues with releases and updates in 2023. Future work is listed as "future development priorities" for 2023/2024.[11] As a company, Omeka also offers the following priced services to support its products: training, courses, workshops, hosting plans, customer support plans, consultations, and custom website development ("Omeka Services" n.d.). Using Omeka Classic and Omeka S is entirely free, not considering server or web-hosting costs, and Omeka.net offers different pricing plans beyond the aforementioned free trial ("Omeka.net Pricing" n.d.). Omeka offers free support for users through their user manuals ("Help for Omeka.net" n.d.; "Omeka Classic User Manual" n.d.; "Omeka S User Manual" n.d.), developer documentation ("Omeka Classic Developer Documentation" n.d.; "Omeka S Developer Documentation" n.d.), forums frequented by users and Omeka staff ("Omeka Forum" n.d.), and through the option to contact them directly ("Omeka Contact" n.d.). It is difficult to assess precisely how well their free customer support helps users since project documentation and case studies typically do not report this information. Due to their active Omeka online community and countless Omeka resources,[12] Omeka might not see themselves as responsible for being a fully committed point of free customer support if contacted. If they were, this may contradict the value of their multiple paid services. Omeka's strength lies in the many resources they provide themselves and those provided by other community users. It is a well-known tool that comes to mind when scholars create an online exhibition. Its tool documentation and guides are mostly reliable. However, its guides and references for topics beyond Omeka, such as metadata standards and their guidelines, can sometimes be outdated, insufficient, and difficult to understand for non-experts (Maron and Feinberg 2018, 682–683). Thus, users who exclusively consult Omeka-provided information to create their website, e.g., metadata, risk misunderstandings and incorrect implementations. The

[11] See their releases pages on GitHub (https://github.com/omeka/Omeka/releases, https://github.com/omeka/omeka-s/releases), the Omeka.net News page (https://info.omeka.net/news/), and the developer documentation (https://omeka.org/s/docs/developer/devpriorities/ and https://omeka.readthedocs.io/en/latest/whatsnew/index.html).

[12] There are, for instance, Programming Historian tutorials; see Posner (2016), Posner and Brett (2016), and Reeve (2016).

recurrent theme for Omeka is that it provides the means to create exhibition websites, but the responsibility and quality lie entirely on the user's side.

Omeka is customizable to varying degrees. It has ready-to-use add-on software (called "plugins" in Omeka Classic and Omeka.net, and "modules" in Omeka S) for users to install, which range from adding visual elements such as image carousels to more complex add-ons that integrate image viewers or those that enable text analysis.[13] More technically advanced users can add custom code boxes to websites through the interface, integrate third-party add-ons, or develop their own. Third-party add-ons officially listed within Omeka must be submitted for review via a Google Form on their website.[14] Alternatively, many unofficial add-ons and "themes" can be found for installation on GitLab or GitHub. There is a relatively active community of add-on developers for Omeka, as they develop new add-ons and release new versions of existing add-ons to this day. Whether Omeka officially lists software by the community or not, their needs lead to the development of new unofficial add-ons, e.g., universities that customize their own Omeka project and publicize their solution. Unofficial software has the risk of potentially being unstable and can only be found by those who search for it online beyond the provided Omeka add-ons and know how to install it. On the other hand, Omeka does not release as many new features as often or as quickly as community developers, which also allows Omeka to partially rely on the potential that the community may develop new solutions and keep the platform alive without investing their resources. Other customization options include customizing "themes" and advanced website styling by adding custom CSS.

Concerning management and funding, Omeka was originally a project created under the Roy Rosenzweig Center for History and New Media. Since 2016, it has been independently managed as a not-for-profit company through Digital Scholar under fiscal stewardship. Omeka reasons that this institutional shift provides their team with financial independence and increased resources to dedicate themselves to working on all Omeka products. Since launching its first product, Omeka Classic, in 2007, Omeka has been a multi-institutional effort involving the University of Virginia

[13] All official plugins and modules are listed on the Omeka website: https://omeka.org/classic/plugins/, https://omeka.org/s/modules/.
[14] The Omeka plugin/module registration page: https://omeka.org/register/.

Libraries' Scholar Lab, Ideum, the University of Connecticut, and The Getty Foundation ("Omeka Project" n.d.). The project has received funding and support from the Institute of Museum and Library Services from 2007 to 2008, the Alfred P. Sloan Foundation, the Samuel H. Kress Foundation, the Library of Congress in 2010, the Andrew W. Mellon Foundation in 2012, and the National Endowment for the Humanities Office of Digital Humanities ("Omeka Project" n.d.). With the IMLS (the Institute of Museum and Library Services) Museums National Leadership Grant, Omeka collaborated with Ideum and the University of Connecticut to create the now-closed project, according to an Omeka forum post ("News about Omeka Everywhere" 2020), the "Omeka Everywhere" hardware tablet and mobile app for Android and iOS ("Omeka Goes Everywhere" n.d.). The same grant also funded the addition of Omeka Classic annotation and language analysis plugins.[15] The Getty Foundation funded Omeka Classic web template themes and plugins made explicitly for art history projects ("Omeka Project" n.d.).[16] Today, Omeka seems to consist of a small team of ten members listed on their website, fulfilling the roles of developers, UI/UX experts, an Omeka instructor, end-user support and testing, and COO. From 2007 until 2021, Omeka listed 16 former employees ("Omeka Staff" n.d.). Omeka has not announced any new grants for significant projects since, and their updates were far more frequent when they had new platforms or products in progress. Its past funding initiatives show that institutions with stakeholder interest in Omeka actively initiated new features and products. Omeka seems to be a more or less finished product portfolio. The team aims to make small improvements and maintain them in the future. Significant changes or additions currently seem unlikely unless they receive additional funding. Omeka no longer has the institutional support it once had, which opens up potential sustainability risks for Omeka websites. Omeka does not explicitly guarantee sustainability. However, their websites and the data within them may be exported by users in various formats, such as CSVs or PDFs. Omeka also

[15] Omeka states that language analysis plugins and the work on art historical additions are goals they have reached using their funding. However, the names of the components are only listed for the former (https://omeka.org/news/2012/09/05/what-comes-next/). I assume that they refer to these text analysis plugins: "Ngram," "Text Analysis," "Text Annotation," and "Exhibit Image Annotation" (https://omeka.org/news/2014/09/29/imls-funds-opening-omeka-for-close-and-distant-reading/).

[16] https://omeka.org/news/2017/05/04/omeka-is-for-art-historians/.Themes: "Big Picture," "The Daily," and "Center Row." Plugins: "VRA Core," and "Editorial."

recommends that users create backup SQL files of their databases.[17] Digital Scholar has other in-house projects, such as the well-known citation manager Zotero,[18] which may reassure users of their company's stability.

4.2. Evaluation: Omeka

4.2.1. Digital Exhibitions & Collections

4.2.1.1. Information Visualization

In this section, I will determine if Omeka supports the information visualization practice of "browsing" by presenting multiple objects as collections and exhibitions. Information visualization is: "The use of computer-supported, interactive, visual representations of abstract data to amplify cognition." (Card, Mackinlay, and Shneiderman 1999, 7). These visualizations serve a purpose where some understanding or insight is gained through visual form and a user's task to achieve it. Since humanities users and visitors of cultural heritage websites often do not have specific goals, I focus on "browsing," user tasks related to it, and the established tasks within information visualization applicable to cultural online exhibitions. The discipline offers approaches for digital cultural heritage collections to present material at a large scale and from a user-driven-goal perspective (Windhager et al. 2019).

Information visualization can help understand how to present objects to users in an interface. Traditionally, there is a purpose determined or a task that should be fulfilled within information studies - the information "seeking" aspect. Arguably, the most influential approach to defining this goal-driven visual exploration and navigation applicable to online digital collections is Shneiderman's "Visual Information Seeking Mantra." It states the purpose and order of tasks as "overview first, zoom and filter, then details-on-demand" (Shneiderman 1996, 2; Whitelaw 2015, 3):

> Overview: Gain an overview of the entire collection.
>
> Zoom: Zoom in on items of interest
>
> Filter: filter out uninteresting items.

[17] See the Omeka Classic manual on backups: https://omeka.org/classic/docs/Technical/Backing_up_an_Omeka_Database/. Bulk exporting is available as a module for Omeka S: https://github.com/Daniel-KM/Omeka-S-module-BulkExport.
[18] Digital Scholar lists their projects on their website: https://digitalscholar.org/.

Details-on-demand: Select an item or group and get details when needed.
Relate: View relationships among items.
History: Keep a history of actions to support undo, replay, and progressive refinement.
Extract: Allow extraction of sub-collections and of the query parameters. (Shneiderman 1996, 2)

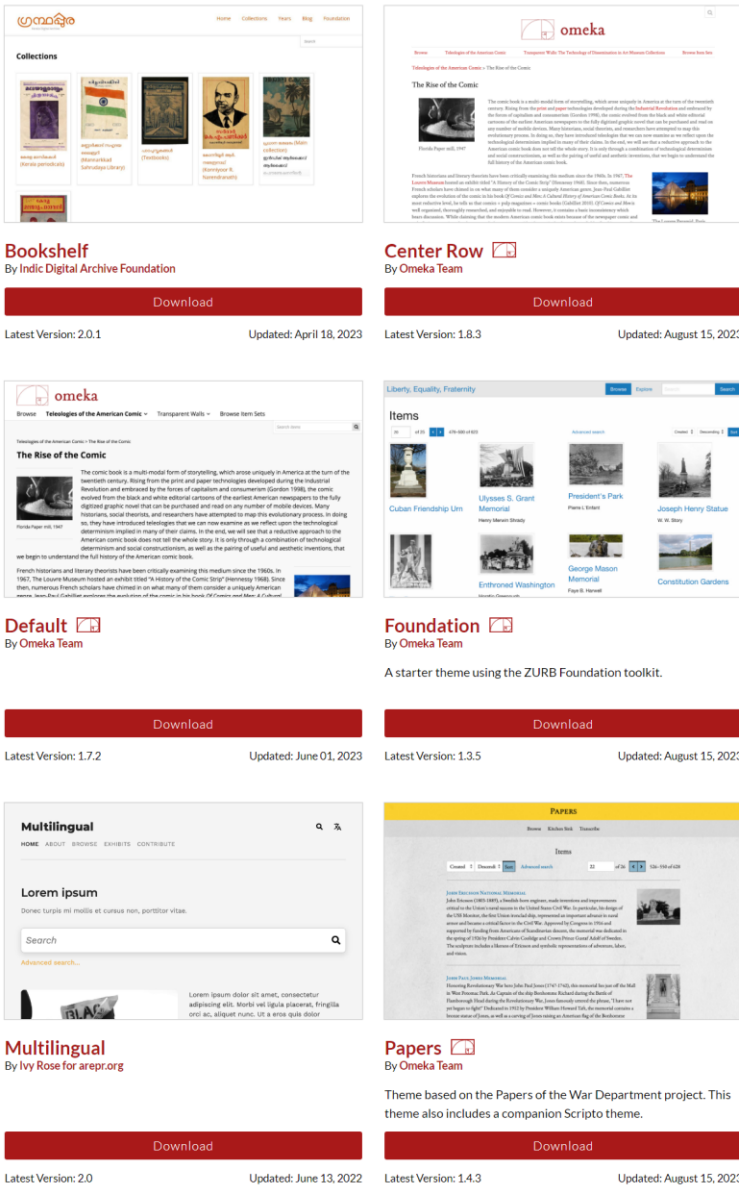

Figure 1. Truncated view of Omeka S themes, showing the similarities between layouts and examples of their available surrogate views (“Omeka S Themes” n.d.).

Omeka-provided themes support the most basic tasks for the creation of their websites. For instance, paginated grid overviews with thumbnails of multiple objects

are easily created and supported (see figure 1). From an overview, an item can be selected and viewed as a single object in detail.

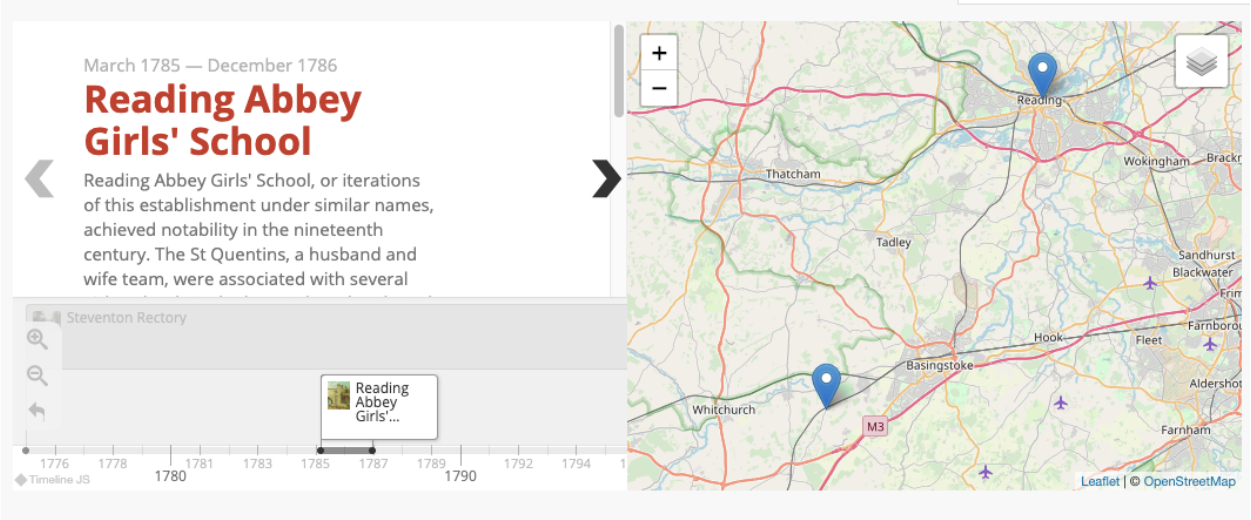

Figure 2. View of the “Mapping” modules map and timeline overview feature (“Omeka S User Manual” n.d.).

More advanced overviews, such as maps and timelines (see figure 2), available through add-ons, allow zooming on items of interest prior to selection. Omeka allows filtering through a search bar where a text query can be limited and specified. Relationships between items can be established through linkable tags and other text properties made browsable to users. Users cannot trace back their steps and view a history of their actions officially within Omeka. However, they can save searches and view their search history as a guest user through the third-party Omeka S module “Search History”[19] or within the history features of a web browser. Sub-collections can be extracted using the search functionality (returning item sub-subsets based on a query) and third-party add-ons. For instance, the Omeka S module “Selection”[20] allows registered site visitors to save and export item sets from an item’s page.

While Shneiderman’s tasks generally apply to exhibition websites and how users engage with digital interfaces overall, within the humanities and cultural data, users do not always have determined goals. Users or visitors rarely approach cultural institution websites with specific aims. However, they often face a search bar as the

[19] Available on GitLab: https://gitlab.com/Daniel-KM/Omeka-S-module-SearchHistory.
[20] Available on GitLab: https://gitlab.com/Daniel-KM/Omeka-s-module-Selection.

only means to explore a collection. To address this, Whitelaw proposes that interfaces should be “generous.” They should allow multiple interaction pathways and show multiple views of objects to reveal all a website has to offer to its users. As a user, I want to explore an online collection, and the interface should reflect the richness of its content (Whitelaw 2015, 1–2). Users typically quickly scan a space to orientate themselves, finding items of interest to view in detail. This form of exploration, “browsing,” is seen as a means to make information spaces enjoyable, enabling, for instance, “serendipitous”[21] spaces where users can be pleasantly surprised while exploring (Whitelaw 2015, 3). The notion of cultural collections as non-goal-oriented is further expanded in the concept of the “information flaneur,” which expresses users as free agents that casually engage with information spaces as “curious” and pleasure-seeking yet remaining “critical” and “reflective” (Dörk, Carpendale, and Williamson 2011, 1; Whitelaw 2015, 4–5).

In practical terms, browsing is made possible through “previews” and “overviews.” Greene et al. argue that for digital libraries and cultural institutions, the main way to present collections and inform users of all their data is through browsing these previews and overviews (Greene et al. 2000, 391; Ibid., 381). Through browsing, stand-in representations of objects, “surrogates,” can be embedded in a view of multiple objects, where users can quickly identify their object(s) of interest for further information extraction, which is an exceptionally crucial task when dealing with extensive collections (Ibid., 381). A preview represents and is derived from a single object versus an overview, which differs by representing multiple objects, i.e., collections. Both can take text or graphical forms and are “. . . guided by the view that information seeking is a dynamic and iterative decision-making process in which users engage to change their knowledge state.” (Marchionini 1995; Greene et al. 2000, 381). Generally, surrogates have characteristics of both previews and overviews, wherein the distinction is made depending on context (Greene et al. 2000, 381). Previews and overviews successfully fulfill their purpose when they convey the scope of objects to users to maximize their understanding and sense of orientation (Ibid., 385). For a preview to be “effective,” it should be able to provide users with enough information on its object at the right time and allow the user to carry out their

[21] For further information on the concept of “serendipity,” see Windhager et al. (2019).

intended task or fulfill their need. “Effective” overviews give users an impression of the scope of selected multiple objects, how objects are related, and which objects are outside the scope of the selected objects. To design effective previews and overviews, one must understand and determine “. . . (a) what information objects are available to users; (b) how information objects are related and displayed; (c) how users can manipulate information objects.” (Ibid., 382). They can fulfill the following roles: “. . . (a) aiding retrieval (i.e., used as the basis for indexes); (b) aiding users in quickly making relevance decisions; (c) reducing network data transfer (i.e., reducing time and resource needs) to make practical the examination of numerous resource-intensive primary objects; (d) supporting the user’s need to capture the gist of complex heterogeneous information; (e) providing indicators of scope, size, and structure of large information spaces; and (f) informing and enticing with representative samples, while helping users define productive queries.” Ibid., 384).

Omeka officially offers a basic browsing experience with a navigation bar with linked pages and a search bar with filter and sorting features resulting in list or grid overviews. Previews in such overviews are static images with text labels. Advanced browsing experiences can be integrated into Omeka through add-ons. The Omeka Team has developed modules for Omeka S such as “Data Visualization,”[22] “Faceted Browse,”[23] “IIIF Presentation,”[24] and “Item Carousel Block.”[25] The modules “Item Sets Tree”[26] and “Item Set Party”[27] allow item sets to be grouped and nested hierarchically as browsable page navigations. Third-party Omeka S modules allow additional browsing experiences. For example, “Item Set Calendar”[28] creates a calendar overview of items, and “Item Set Graph”[29] allows exhibition creators to create network visualization of items in item sets.

[22] User manual: https://omeka.org/s/docs/user-manual/modules/datavisualization/.
[23] User manual: https://omeka.org/s/docs/user-manual/modules/facetedbrowse/.
[24] User manual: https://omeka.org/s/docs/user-manual/modules/iiifpresentation/.
[25] User manual https://omeka.org/s/docs/user-manual/modules/itemcarouselblock/.
[26] Documentation: https://biblibre.github.io/omeka-s-module-ItemSetsTree/en/index.html.
[27] Documentation: https://biblibre.github.io/omeka-s-module-ItemSetParty/en/index.html.
[28] Available on GitHub: https://github.com/biblibre/omeka-s-module-ItemSetCalendar.
[29] Available on GitHub: https://github.com/sinanatra/ItemSetsGraph.

Activities

Salish Sea Studies offers engaged and experiential learning opportunities. The activities here have been designed by educators for use in a variety of classes. You are welcome to adopt and adapt these activities to your learning environment.

Three Highlighted Examples of Activities

Historical Marker

How do we connect stories of people to place? The objective of this three-part project is to make the connection between the forced removal of Bellingham's Punjabi community in 1907 to the history of Bellingham's contested waterfront by creating a historical marker for the site.

Embodied Mapping

To enhance students' spatial awareness and understanding of Salish Sea physical geographies, students each draw a Salish Sea place out of a hat and then have to talk amongst themselves to create a human map of the region.

SALI Gameboard

This (virtual) lab component for the Introduction to the Salish Sea course supports students' engagement in independent experiential learning using walks, reading, podcasts, recorded lectures, and tracing local ecology.

Browse Additional Activities

Environmentalism: Muir, Pinchot, COP 27

Read excerpts from John Muir, Gifford Pinchot and articles on the latest COP meetings. Discuss views, issues, feelings about them.

Temporal Coverage Present
Spatial Coverage Whatcom County experiences of nature, natural resources, climate change are included, in this broad approach
Subject Social Sciences
Creator Mary Haberman
Extent One hour

Archaeology Lesson Plan

The lesson introduces students to archaeology as a way of knowing the "deep history" of the Salish Sea and presents a brief review of the archaeology of the region. We also discuss the importance of this history to modern peoples today, including the necessity for archaeologists to collaborate with Indigenous

Subject Social Sciences
Temporal Coverage Since Time Immemorial
Extent Two hours
Creator Jennifer Zovar

Mapping the Archaeological Past of the Salish Sea (MAPSS)

The exercise is aimed to help students explain the basic chronology of culture history in the Salish Sea and identify important local archaeological sites and/or traditional cultural places on both sides of the international border.

Subject Social Sciences
Spatial Coverage Across the Salish Sea
Temporal Coverage Since Time Immemorial
Extent Two hours
Creator Jennifer Zovar

Figure 3. A typical Omeka overview ("The Salish Sea Curriculum Repository" n.d.).

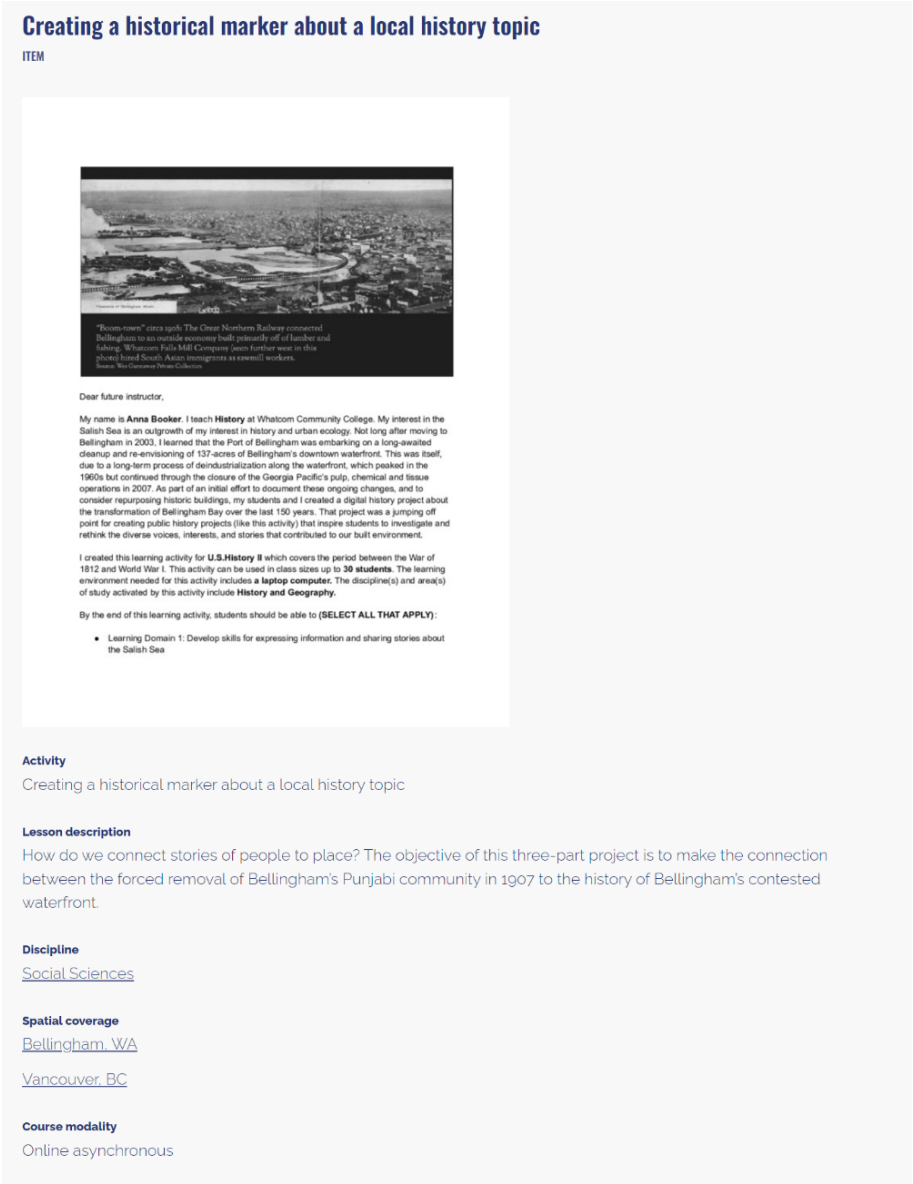

Figure 4. A typical Omeka view (truncated) of a single item (“The Salish Sea Curriculum Repository” n.d.).

Further, Omeka allows multiple objects to be shown, e.g., juxtaposed in an overview grid or as a vertical list. Previews within overview formations are typically image thumbnails with a text label (see figure 3). Objects and their previews can be viewed in detail as a single page upon interaction (see figure 4). Each created view of objects will result in a trade-off of some objects being visible and others not. Showing the multitude of a collection is done by offering multiple views or implementing strategies like layering and juxtaposing views to make multiple aspects of a collection visible (Whitelaw 2015, 12).

Official Omeka themes and basic functionalities offer limited browsing experiences, and Omeka add-ons (many from third parties) offer more expansive browsing through their integrations. It is beyond the scope of this thesis to delve into the details of each add-on. However, I will briefly discuss some notable examples (see the Appendix for my complete lists of categorized Omeka Classic and Omeka S add-ons).

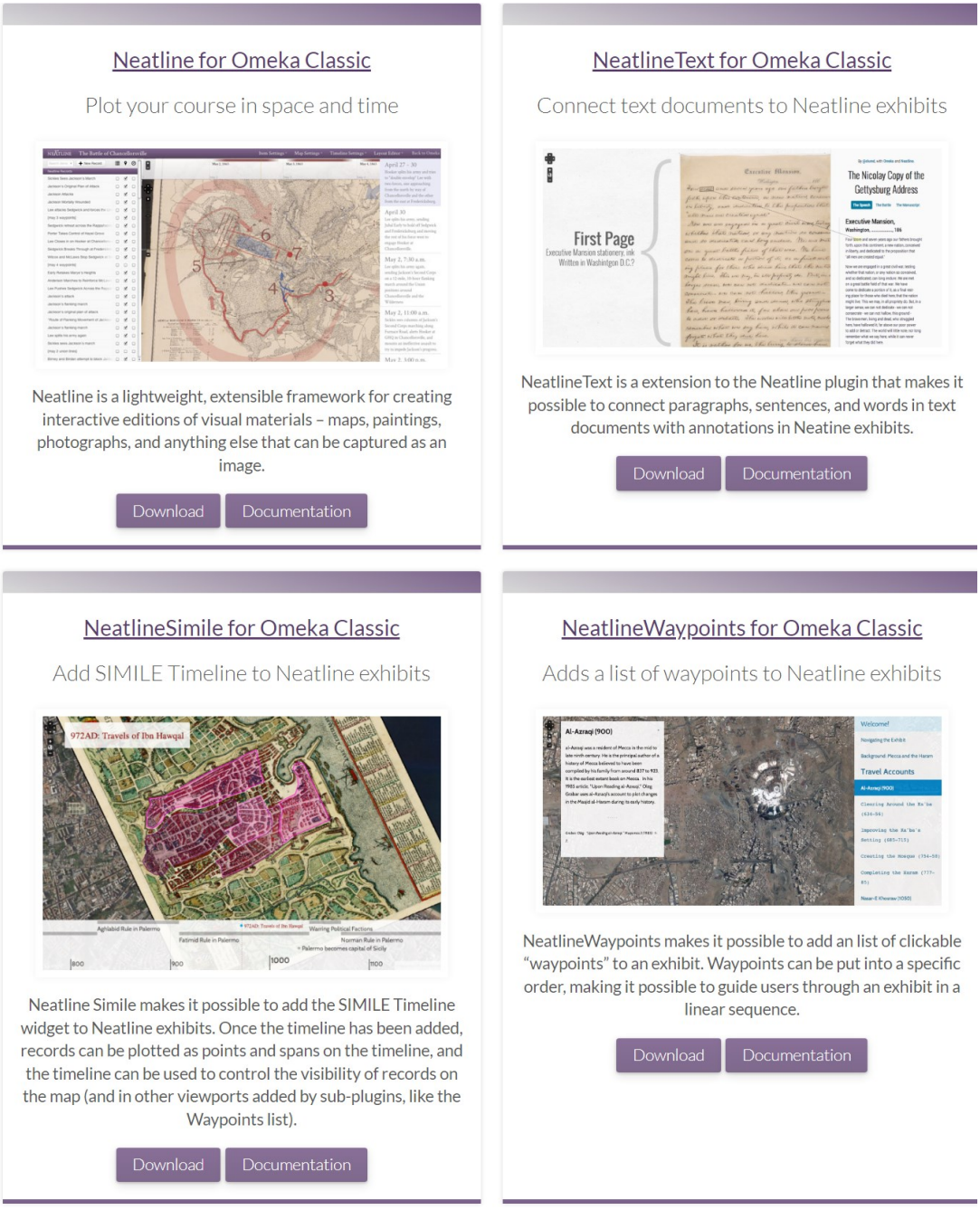

Figure 5. Neatline plugins with examples of their views ("Neatline" n.d.).

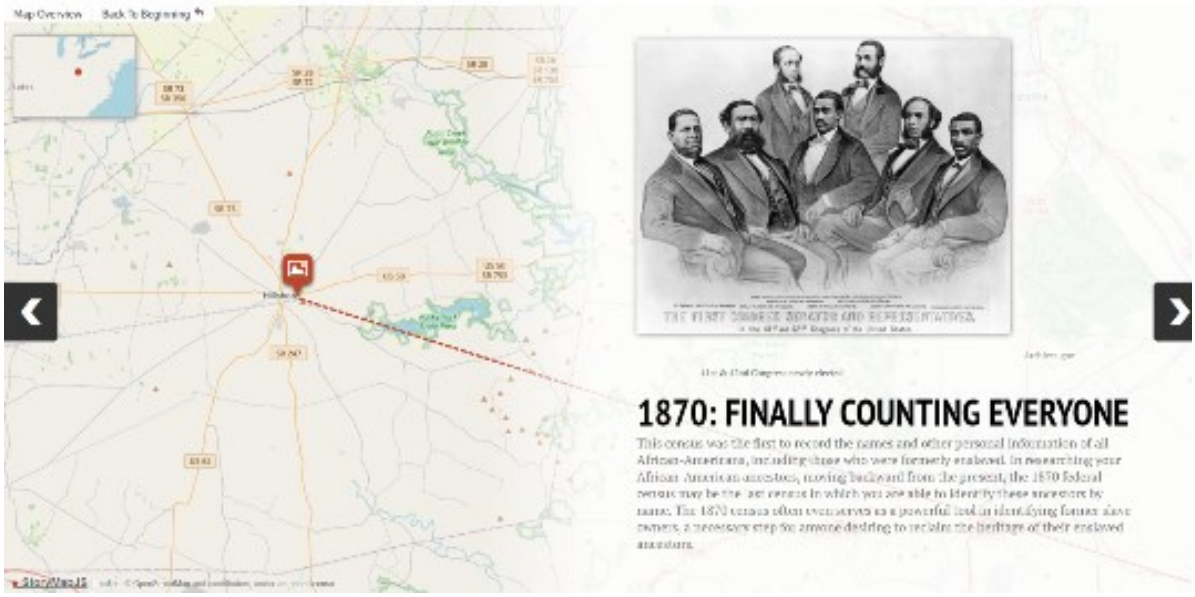

Figure 6. Example of a StoryMap (“StoryMap” n.d.).

Timeline and map-related add-ons, such as “Neatline,”[30] offer users interactive, spatial, and temporal views of material (see figure 5). Further, the “StoryMap”[31] add-on allows creators to arrange items to support a narrative exploration experience according to the geographic coordinates of items (see figure 6). These add-ons allow exhibition creators to create multimedia curatorial pathways for visitors to explore, integrating multiple interactive views of objects as collections. These geographical and temporal overviews allow users to explore a sub-set of an exhibition where its scale and scope can be communicated clearly to users. Other surrogate modes are available through Omeka’s various add-ons supporting the International Image Interoperability Framework.[32] The framework provides open standards for sharing online visual and audio data. It further provides APIs for accessing digital objects and their metadata and IIIF-compliant viewers, such as Mirador,[33] to visually present objects on the web.

Omeka has add-ons that integrate IIIF viewers, such as Mirador, allowing diverse views of items for visitors.

[30] For more information on Neatline, see its website: https://www.neatline.org/.
[31] For more information on StoryMap, see its website: https://storymap.knightlab.com/.
[32] For more information on the IIIF, see: https://iiif.io/.
[33] For more information on Mirador, see: https://projectmirador.org/.

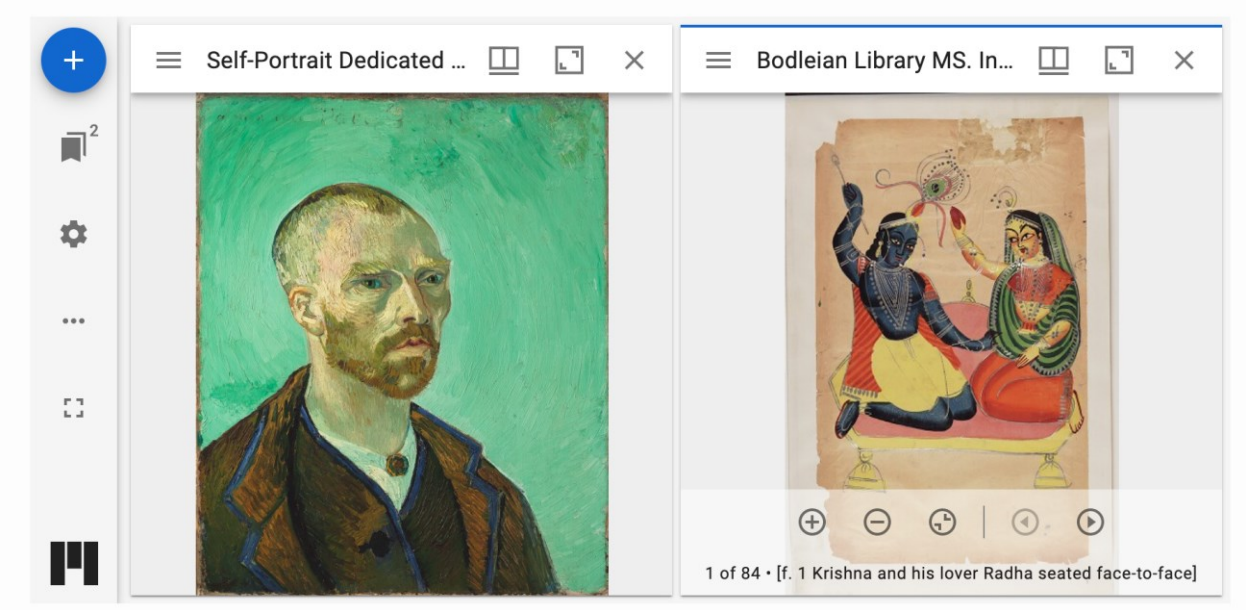

Figure 7. The IIIF Mirador Viewer (“IIIF Viewers” n.d.).

Through its multi-window view, Mirador lets users view multiple images simultaneously in separate windows, enabling comparison and analysis (see figure 7). Additionally, it supports zooming and panning so users can zoom in and out on objects of interest and pan across them to explore details. Mirador provides previews as thumbnails of images in a sidebar or panel, providing an overview of the available content and facilitating navigation. Like Omeka, Mirador also has its own image carousel feature, allowing users to scroll through images within a collection quickly. Items can also be viewed in detail in full-screen mode, enhancing a user’s potential for immersion. Images may also be compared side-by-side, where users can arrange juxtaposed views, facilitating selection, subsetting, and comparative analysis. These user tasks are further enabled by customizable layouts wherein multiple images can be arranged, allowing users to arrange windows and panels according to their preferences.

Moreover, Omeka add-ons can visualize items as network graphs. For instance, “AvantRelationships”[34] shows relationships between objects as a graph image (see figure 8).

[34] Available for Omeka Classic here: https://omeka.org/classic/plugins/AvantRelationships/.

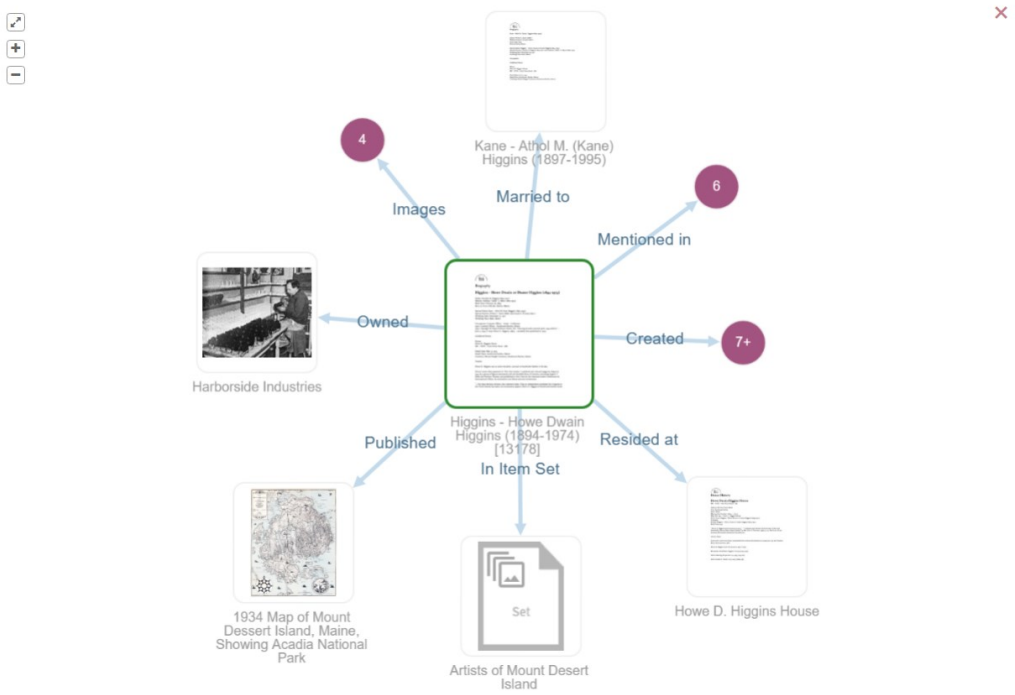

Figure 8. An example of a graph created by the “AvantRelationships” plugin, https://swhpl.digitalarchive.us/items/show/9165.

The graph is interactive and links to other items in the exhibition, enabling users to explore an Omeka site through item relationships. This allows exhibition explorations through overviews where items can be viewed at scale, and their connections can be conveyed to users. Lastly, other data visualization add-ons that create different types of graphs with a website’s items exist, as well as more complex integrations where more coding knowledge is necessary to create highly-customized graphs, such as through integrating the interactive graphs of the javascript programming library “D3.”[35]

In summary, Omeka supports “browsing” and multiple views through previews and overviews, mainly through the integration of add-ons. Exhibition creators can choose from countless item visualization and presentation integrations according to which views and insights they want to show visitors. Basic user tasks described by Shneiderman are broadly supported in Omeka’s core functionality. However, they most likely do not inspire a more complex browsing experience or the creation of generous interfaces. Thus, successfully creating a more interesting browsable

[35] For more information on D3, see: https://d3js.org/.

exhibition within Omeka requires expertise on the best way to implement surrogates, as outlined in this chapter, and which solutions Omeka can realize. An exhibition creator will need to research countless add-on integrations to determine whether they are feasible and desirable for the views of an exhibition for the information they want to convey with their material. The essential takeaways of information visualization that apply to cultural online exhibitions is that one should find out what users will want to do within the interface and prioritize the most critical tasks while allowing multiple pathways of exploration, interpretation, and the presentation of objects from a high-level perspective down to a single object detailed perspective. Implementing "generous" and browsable exhibitions in Omeka thus requires creators to research, consider, and test different visualization and browsing add-ons.

4.2.1.2. Close & Distant Reading/Viewing

One of the main purposes and uses of implementing digital tools is to conduct research at scale, which contributes to gaining new insights and facilitating analysis. This research approach is mainly associated with "distant reading" (for textual data) and "distant viewing" (for visual data), where a large number of items can be researched quantitatively. Its counterpart and traditional approach is called "close reading" or "viewing," where single items are sequentially researched in detail. As both these approaches are inherent to digital humanities and cultural collections, I will evaluate how Omeka can use them in practice.

The term "distant reading" is associated with Franco Moretti's work in literary studies (Moretti 2013, 57–58), where he compared plays by analyzing their relationships as networks (Ibid., 211–212). The phrase is mainly attributed to Moretti, but the concept derives from multiple genealogies and is rooted in different disciplines. Other authors who laid the "theoretical foundation" for distant reading were Raymond Williams's (1961) Marxist literary theory and Janice Radway's (1985) feminist social studies perspective. Both authors predominantly expressed the limitations of singular selective approaches to studying literary works, arguing that one cannot holistically study literary culture through traditional methods alone. Moretti's work became most influential in fueling discussions on distant reading, its future potentials, and expansions into conducting humanities research at a large scale (Underwood 2017, 2–4). For this thesis, I understand distant reading to be broadly a method of research

that exists as a counterpart to close reading. Close reading is where a single study object is researched in detail. This is often a time-consuming and manual task where one researcher deducts an analysis or interpretation. Distant reading, on the other hand, studies objects from a quantitative perspective, most often conducted through computational methods, wherein multiple objects are analyzed in comparison to one another based on the objects' selected characteristics. Its method can take form in various practical applications such as studying relationships between objects in network analysis, extracting topics from text data through text analysis, or simply collecting quantifiable data as matrices. Distant reading allows for automated work, gaining new insights and views on contextualizing objects. In other words, distant reading is research or inquiry at a large scale.

Both close and distant reading methods are valuable in their own right. However, distant reading is rooted in textual data, and studying visual data requires different methods. Analyzing visual objects at scale is referred to as distant viewing (Arnold and Tilton 2019, i3–i4) and is associated with the visual digital humanities (VDH)[36] (Münster and Terras 2020, 367). Visual data have a unique degree of complexity compared to textual data, as it is more difficult to translate into quantitative data. All information "contained" within an image cannot be captured digitally. Which descriptors are chosen to capture visual information, such as an image's subject or title, will always create a gap between the information described versus what is shown in an image. The meaning of an image cannot be split into its pixels, akin to text analysis methods that can gain insights through extracting words or phrases (Ibid., i4–i5). Further, digitalizing images involves some form of image compression wherein some technical properties may be lost or altered when an image is transmitted (Ibid., i6). In particular, this can be a problem for disciplines that require high-quality primary visual data, such as art history. Further, higher-quality images used for close readings of artworks can be difficult to integrate online as they require longer loading times and higher storage capacities. Distant viewing methods that can automatically extract meaningful insights from visual data can be more

[36] VDH is a sub-field within the digital humanities that studies visual data through various analytical methods such as "image analysis (e.g., the pattern analysis of large image collections), perception based techniques (e.g., the visuospatial analysis of architectural objects), spatial modeling (e.g., 3D reconstruction of historical architecture), and visualization (e.g., sketching for visuospatial reasoning)." (Münster and Terras, 367-368). For further information on VDH, see Münster and Terras (2020).

straightforward, such as by extracting color palettes of images, or more complex through object detection or facial recognition technology (Ibid., i6–i7). In practical VDH applications, distant viewing methods can, for instance, comparatively analyze the narratives of TV shows by graphing the on-screen appearance time of actors extracted through image recognition software. In Arnold and Tilton's study, this form of analysis deducts the impact of leading actresses on the narrative according to their screen time, which contributes to the study's inquiry into gender roles and the type of female roles presented in the chosen shows (Ibid., i8–i9). Another practical example is the application of network analysis wherein different photographers were charted based on the similarity of their works. As Arnold and Tilton show, one can generate a graph to visualize their degree of commonality and even create overviews of the photographs from similar photographers (Ibid., i9–i11).

It is possible to conduct some close and distant reading or viewing methods with Omeka, where either a researcher can analyze materials uploaded to Omeka through the admin interface or a website visitor may interact with an exhibition's front end. Omeka mainly allows close and distant reading through integrating Omeka Classic Plugins. Some text analysis plugins enable a distant reading analysis of text data generated by creators. Moreover, annotation plugins allow enriching objects with information as a form of close reading or viewing, which can be written by Omeka editors and (optional) collaborators.

Omeka allows forms of distant reading and analysis of text data derived from the text properties of objects through text analysis plugins. As the name says, the "Ngram Plugin"[37] generates n-grams, graphical and tabular representations of word or phrase occurrences in pre-defined corpora. Building upon this created corpora from "Ngram," the "Text Analysis" plugin[38] can generate a Watson Natural Language Understanding (NLU) Analysis and topic models through the MALLET Topic Model.

[37] For more information on the "Ngram" plugin, see the Omeka Classic User Manual: https://omeka.org/classic/docs/Plugins/Ngram/.
[38] For more information on the "Text Analysis" plugin, see the Omeka Classic User Manual: https://omeka.org/classic/docs/Plugins/TextAnalysis/.

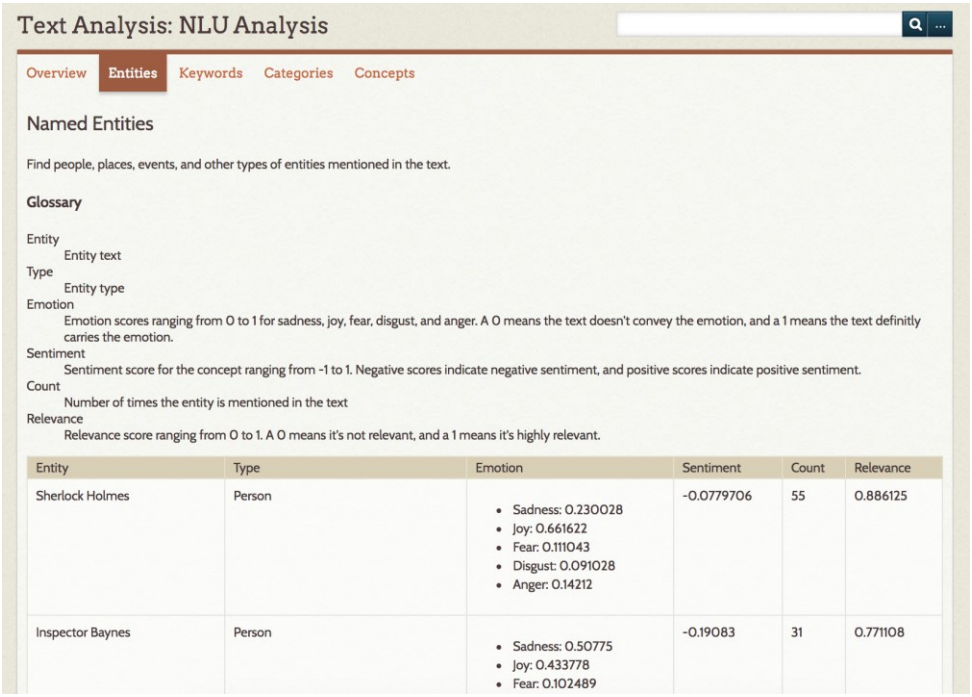

Figure 9. Example of the “Text Analysis” plugin output for entities (“Omeka Classic User Manual” n.d.).

Figure 10. Example of the Mallet Topic Model output from the “Text Analysis” plugin (“Omeka Classic User Manual” n.d.).

The NLU Analysis extracts an overview (summarizing the word count, unique words, character, count, text size, and file of the analyzed element), entities (with their type, emotion, sentiment, count, and relevancy score), keywords (with their associated emotions, sentiment and relevancy score), a list of NLU categories with their

confidence scores, and a list of concepts with their relevance (see figure 9). The MALLET analysis outputs the top ten occurring topics of the corpora (see figure 10). However, the results within the interface are only available and interactive for exhibition creators, and only the corpora may be shared publicly. The resulting analysis could be exported, e.g., through screenshots, and integrated into a publicly viewable site.[39] Thus, these functionalities can only potentially benefit researchers who have not already used other tools to conduct text analysis. Allowing exhibition visitors to conduct their own analysis or even allowing researchers to share interactive results within the exhibition would have been a desirable feature.

In contrast, there are annotation plugins that enable close readings or viewings through user interaction. Visitors can view and contribute annotations, enriching pages with additional information. For example, some annotation plugins use the "Hypothes.is"[40] annotation web service where registered users can highlight any text elements within a page, annotate the highlighted text, and add general annotations or notes.

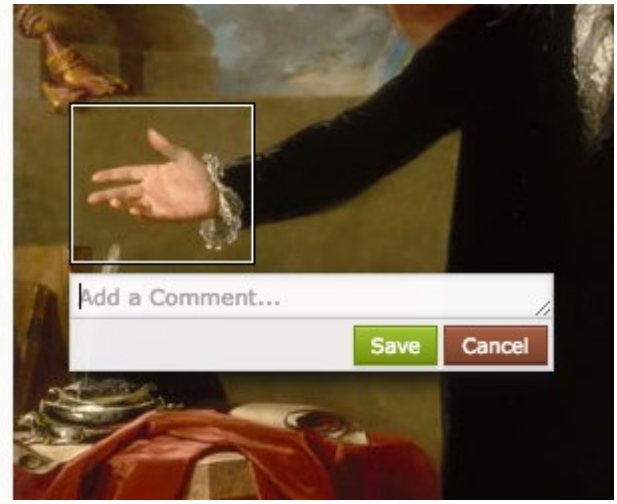

Figure 11. Creating annotation boxes with the "Exhibit Image Annotation" plugin ("Omeka Classic User Manual" n.d.).

[39] I concluded this since the user manual and interface do not seem to allow the analysis to be made public, and an article from a librarian user written in 2018 (https://dhmarx.commons.gc.cuny.edu/a-digital-collection/#comments) states this as a drawback of the "Text Analysis" plugin as well.
[40] For more information on how Hypothes.is annotations work, see: https://web.hypothes.is/help/annotation-basics/.

Further, website authors can annotate images through the “Exhibit Image Annotation”[41] plugin, where text annotations with rectangular outlines appear to visitors upon a mouse hover (see figure 11). Omeka S can inherently allow linked data to be connected to the Semantic Web (if valid and correct metadata is created on the creators’ side), which can be considered a form of distant reading and viewing. Objects and entities can thus be interrelated to others and can be explored through their established relations. Other unofficial text, image, and geographic annotation modules are available for Omeka S. The “Annotate”[42] module allows authors to create compliant W3C Web Annotations.[43] However, this integration’s learning curve is significantly steeper as it does not offer users an interface to create annotations, making coding skills and markup language knowledge mandatory. The “Cartography”[44] module also allows graphic annotations on images and maps, e.g., drawing points, lines, and shapes, through the W3C Web Annotation standard. Both modules support the Web Annotation ontology, while the graphic annotation module can be used through an interface.

IIIF viewers, such as Mirador, in both Omeka Classic and S, can present various images, audio, and video file formats while being IIIF-compliant. Mirador’s interface is presented on the public user side. It allows close viewings of images through detailed views on a single page, displaying metadata and integrating the IIIF standard. Users can zoom in on objects, view multiple versions of an image (selectable in succession), and add annotations to objects compliant with OpenAnnotation and W3C Web Annotation Standards (“Mirador” n.d.). Distant viewings are available through side-by-side or grid overviews of images. Users may also arrange an overview by selecting object image screen windows to juxtapose and compare, but the available screen space is limited. Other visualizations can be created with Omeka S with a third-party dedicated module and the official data visualization module, which allows any visualization library to create diagrams, such as D3, which can create network graphs. As discussed in the previous chapter on information

[41] For more information on the “Exhibit Image Annotation” plugin, see: https://omeka.org/classic/docs/Plugins/ExhibitImageAnnotation/#:~:text=To%20create%20an%20annotation%20on,you%20to%20seen%20entire%20paragraphs.
[42] GitLab link: https://gitlab.com/Daniel-KM/Omeka-S-module-Annotate.
[43] For more information on the W3C Web Annotation, see: https://www.w3.org/annotation/.
[44] GitLab link: https://gitlab.com/Daniel-KM/Omeka-S-module-Cartography.

visualization, Omeka can offer various other overviews and previews of items, mainly through add-ons. These surrogate-type views allow distant and close viewing of exhibition objects created by exhibition creators or through flexible, interactive, user-determined views.

Overall, the potential for close and distant viewing of content in Omeka lies primarily in the capabilities of module or plugin integrations. Objects can be juxtaposed for the distant viewing of visual data, and views of multiple objects may be created through third-party overviews such as timelines, maps, and data visualization charts (discussed as overviews in the previous “Information Visualization” chapter). Many more complex views beyond, for instance, grid arrangements, are unavailable for official out-of-the-box Omeka solutions. This results in less interactive and engaging exhibitions from a website visitor’s perspective and lowers its informative and educational potential since new information or insights cannot be extracted. Closely viewing or reading any object is mainly enabled by the single detailed view of an object built into Omeka, where all its metadata can be presented. Other third-party integrations like Mirador may also allow further interactions with objects. Omeka offers text analysis add-ons, allowing distant reading for creators registering accounts with additional external services. These generated results cannot be readily shared with website visitors, making these features only beneficial for expert users who wish to analyze their already created object collections within Omeka rather than use another tool and re-upload their data. Any object may also be annotated, which enables close readings or viewings of objects.

4.2.1.3. Interface

Cultural organizations, particularly museums, have shifted towards engaging and addressing audiences and implementing ICT technology while focusing on digital users (Portalés et al. 2018, 1–2). Additionally, digital technology has become so pervasive in society that cultural institutions must pay attention to the digital representations of their collections if they claim to fulfill their intentions of serving the many publics. These factors bring the importance of user experience and societal outreach to the forefront of cultural organizations’ aims, which makes the digital interface and its interactivity vital for achieving them for online and digital exhibitions. The interface determines interactivity or “. . . the programming that structures the

viewer's experience." (Rockwell and Mactavish 2004, 110). It is the leading site where an end-user will interact with an online exhibition, and there are various methods of increasing their engagement. For the DH and VDH, existing interfaces, software, and tools are often integrated into projects to research and present humanities data. The interface and its design are essential to a DH project (Kirschenbaum 2004, 525). In this section, I consider Omeka a software tool that provides an interface for exhibition creators to make an online exhibition for end-users to interact with as visitors.

Depending on the context and goals of a humanities project, digital tools can be beneficial and productive. However, it is essential to note that any software implementation has baked-in, unconscious default decisions in its code that constrain and determine the resulting output (Drucker 2013b, 9). Drucker emphasizes that tools as simple as PowerPoint or synonymous with publishing web data such as Content Management Systems, Omeka included, have certain constraints determining how data can be researched, input, structured, and presented as an output (Drucker and Svensson 2016, 1–2; Ibid., 5). For instance, Omeka allows Semantic Web integrations only in their Omeka S product, and across all products, the available add-ons vary greatly. Further, the concepts for interface design have often not been created for the digital humanities but for other purposes or disciplines, such as human-computer interaction and (visual) information studies or commercially driven uses and goals (Drucker 2013b, 13–14). Therefore, to justly handle digital humanities data, the discipline needs to develop its own interfaces with its own theory and critical self-reflection to evaluate tools (Drucker 2016, 238–239; Drucker and Svensson 2016, 2–3). Furthermore, an interface carries subjectivity from a cultural perspective, where it will never be neutral and instead carries and represents an ideological view. Thus, interface critique is a necessary practice that must consider the visible and non-visible aspects of a tool's interface (Berry and Fagerjord 2017, 169–170; Ibid., 172; Ibid., 175). Ideally, all digital humanities projects could use a fitting tool, template, or process developed specifically for their needs. The current reality is, however, that the development of digital humanities tools cannot catch up to the amount of data and research. Moreover, the financial, infrastructural, and time resources needed to make this possible would most likely exceed available budgets. Approaches to combating these problems may be learned from software

development, digital design disciplines, and human-computer interaction as they adopt an iterative practice when working on projects. The digital humanities may benefit from an agile approach to developing tools and projects, where ideas can be tested and explored through, e.g., prototyping and usability testing. Omeka, for instance, offers a sandbox environment with a demo exhibition websites with pre-filled content (users may also add their own) to explore Omeka S.[45] Such flexible and adaptive approaches for digital projects can help assess which tools are feasible for a project versus where an individual solution needs to be found.

When assessing an interface, Shedroff's continuum of interactivity offers a model to understand what types of interactions users can experience by level of engagement. He understands interactivity to lie on a spectrum of more passive interactions, such as, in the case of online exhibitions, reading an article within a collection, to more active interactions, such as commenting or annotating a page. There are no good or bad interactions; this model comes from the field of (information) interaction design and attempts to classify which interactions can require more active participation from a user (Shedroff 2014). Omeka provides two main sites for user interaction: the public website and the admin interface (see figure 12).

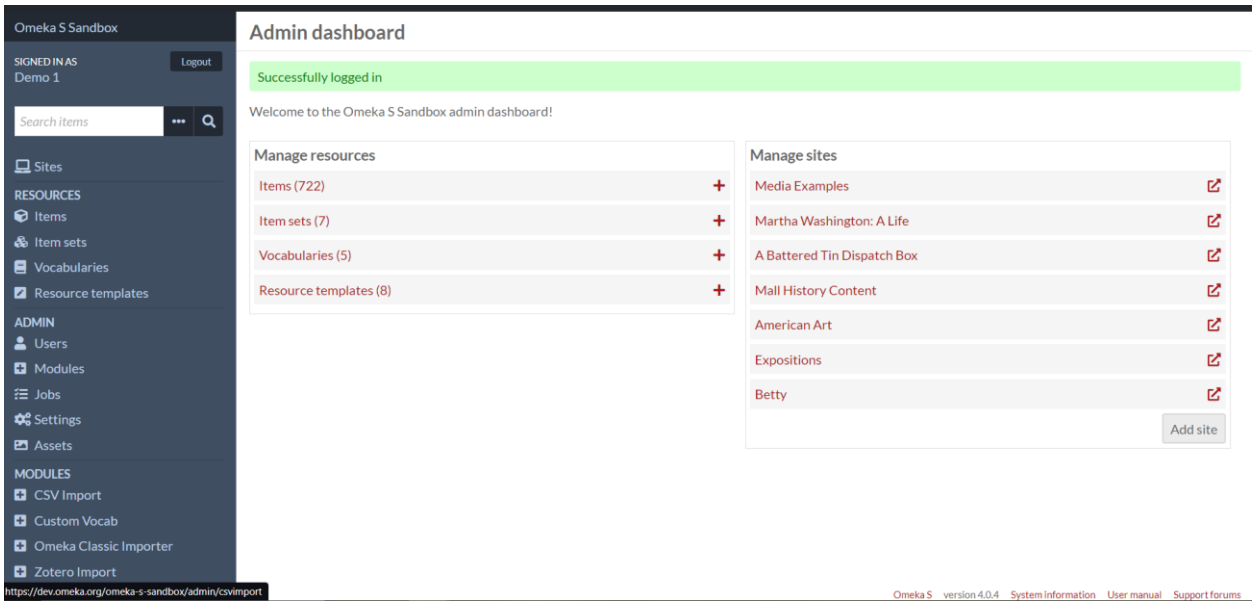

Figure 12. A view of the Omeka S admin interface from the Sandbox ("Admin Dashboard: Omeka S Sandbox" n.d.).

[45] The Omeka S sandbox login information is listed here: https://omeka.org/s/download/#sandbox.

The admin interface gives exhibition creator users a no- to low-code interface to build and edit their website. Activities related to building an exhibition are inherently active tasks that require a high level of engagement. Users may also add functionalities by installing official add-ons that extend Omeka's features beyond its basic capabilities. Notably, visual digital collections require basic interactivity, e.g., through IIIF Mirador (Emanuel, Morse, and Hollis 2016, 2–4), which Omeka can integrate through its add-ons. IIIF also represents one possible solution for collections of multiple institutions that want to display their items together and make them minimally interactive for an end-user. Thus, resources across collections and cultural institutions can be explored and interacted with within one interface.

Visitors engage with an Omeka website like any other standard website on the internet, where their level of engagement is mainly on the passive side of the spectrum. Interactive page elements make higher engagement degrees possible through surrogates and Omeka's capability to embed any media type in a page. Without third-party integrations or custom solutions, Omeka constrains users from navigating the features provided in the interface to create their exhibition. Public users or site visitors only interact with the interface of the published exhibition website and the content made public by exhibition creators.

Omeka makes active audience participation and engagement possible through its collaboration and crowdsourcing features, primarily in its modules and plugins. Within the context of Omeka, I define crowdsourcing as any submission a visitor or guest user may make for an exhibition. For example, they may submit a new item to be reviewed by an admin and added to the site. Users can make notes for themselves and share them with others through annotation add-ons. These work for text elements on a page as well as image elements. Comments can be enabled for Omeka, where comment sections can be added to a page. Crowdsourcing options are also available through add-ons. Users without Omeka accounts may contribute to the exhibition website by submitting material for authorized users to review and add to the site. For collaboration and crowdsourcing as an interactive user engagement

activity, Omeka allows additional features through unofficial and official add-ons. Some modules allow registered users with an assigned guest role to add new items to an exhibition and edit the metadata of an existing item. Crowdsourced edits submitted by guests may then be approved and publicized by admin users. Creators may also define which items or item sets to add a public or private comment section. Essentially, the same features are also available in Omeka Classic plugins with an additional “Participate”[46] plugin, allowing users to send comments and files directly to administrators. Additional plugins allow the integration of “Disqus”[47] and “IntenseDebate,”[48] which are comment system tools that allow community moderation and user management. Thus, Omeka Classic provides extensive abilities to moderate and manage the discourse their website visitors contribute. In practice, few Omeka websites implement these community discourse features, or once added, they remain unused with, e.g., empty comment sections, despite the many features that exist to support them. Omeka and its community may have seen its potential for engaging users in discourse and crowdsourcing early on and invested in these functionalities. However, due to Omeka websites tending to be less engaging and user-oriented (as I will discuss in the following Orientations chapter), a visitor will likely not feel compelled to contribute and instead interact with a website more passively for object identification and exhibition exploration tasks.

Overall, Omeka’s interface constraints are firstly determined by which product an administrative user chooses to create a website, i.e., Omeka S has different features than Omeka Classic. Secondly, Omeka has limited official features for both visitors and website creators. These capabilities can be extended to add more interactive elements through add-ons. More complex overviews may be embedded into exhibitions, and collaborative, crowdsourcing, and community-centered interactivity is possible within Omeka. Thus, determining which user interactions a project may allow within Omeka can be challenging for exhibition creators. Beyond researching Omeka’s core functionalities, authors must familiarize themselves with the available and currently functional add-ons. Whether Omeka approximates an exhibition’s

[46] GitHub link: https://github.com/Limonadeandcoscop/Participate.
[47] More information on Disqus can be found on its website: https://disqus.com/.
[48] More information on IntenseDebate can be found on its website: https://www.intensedebate.com/.

needs will need to be assessed by an exhibition creator for their material, project goals, and intended end-users.

4.2.1.4. Orientations

Emily Marsh, a digital librarian and interaction design expert from the National Agricultural Library in the United States, has extensively documented her use of Omeka for her digital exhibition projects since she created her first in 2015. She explains her typology, where exhibits may assume three main orientations: information-oriented, object-oriented, and user-oriented (E. Marsh 2017; E. Marsh 2023, 38–39). I explain which type of exhibitions Omeka is more likely to support and how elements of each orientation type can be found in Omeka projects.

In her review of Omeka, Marsh explains where it can be placed along a model she has developed, which draws from the Object and Information Display continuum (Verhaar and Meeter 1989) and a Smithsonian Institution Offices for Policy and Analysis study on museum and exhibition mission statements (Smithsonian Institution Office of Policy and Analysis 2002). Marsh's first version of her orientation typology describes exhibits as object-oriented, where displaying the objects rather than their related information is the main goal and priority, or information-oriented, which aims to convey the information surrounding objects through analyses and narratives (E. Marsh 2017, 362–363). The goals of the object-oriented exhibit are the identification and display of objects, while the goals of the information-oriented exhibit are to add to object-oriented exhibition goals by engaging audiences, facilitating the interpretation of objects, and educating audiences (see figure 13).

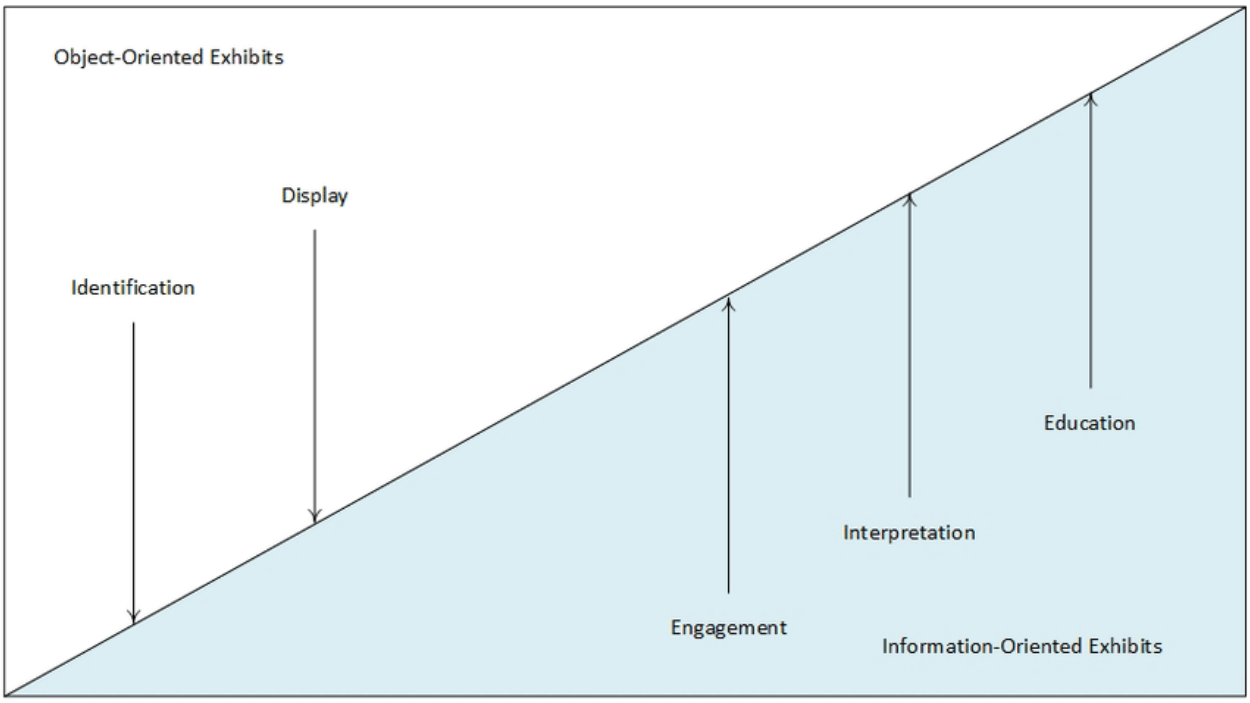

Figure 13. Marsh's Exhibit Orientation and Goal Display (E. Marsh 2017, 363), figure 1.

Exhibits can have qualities of both orientations, and Omeka can enable the goals of both orientations. Omeka supports the object orientation type by allowing objects to be identified and displayed (Ibid., 365–368). Marsh defines the goals as ". . . object identification determine what is displayed for a given item, item display features determine how an item is shown to the user." (Ibid., 367). Omeka enables object identification by its metadata standard integration of the exhibition creator's chosen vocabulary, but most commonly through its support of Dublin Core standards. All Dublin Core elements can be added as information to an object and viewable in full in a single-page detailed view of an object. Further, Omeka S allows objects to be linked to the Semantic Web as Linked Open Data, making objects identifiable through ontologies and relations to other objects across the web. Object identification is also possible through Omeka's overview and preview capabilities since these represent various views of objects, which lead to the full view of an object upon user interaction. These customizable views of exhibits simultaneously allow different arrangements of object displays. This is possible through Omeka's core functionalities, which enable multimedia layouts of different information juxtaposed on a page and surrogate view integrations through add-ons.

Omeka supports the information-oriented goals of engagement, interpretation, and education (Ibid., 368–374). Marsh discusses the interactive elements in Omeka pages and how they engage users. Omeka has essential interactive page elements such as sliders, image carousels, and lightboxes. Its most prominent interactive feature is the ability to embed any media in a page and juxtapose multiple views of it. Add-ons extend the capability by allowing other software, such as Mirador or Hypothes.is, to be embedded so that their interactive elements and solutions can be reused within Omeka. Ultimately, this limits Omeka's engagement elements by its "soft" and "hard" constraints (Ramsay 2016, 452–453) as a digital tool. For instance, which content an exhibition creator adds and which add-ons they may choose to represent it with are "soft" constraints that determine how visitors engage with a website. Omeka allows flexibility and choices within its system, where the creator's input limits the "soft" constraints. In contrast, when building a website and using a website-building tool, a creator is limited by "hard" constraints, with no options to choose from. Omeka's internal database structure, the software it is compatible with, and the technical conditions under which a website must be published are all "hard" constraints. Further, on the visitor's side, other constraints are made in which browser, device, or screen size are chosen to determine their experience. They cannot be negotiated or changed by an exhibition creator. Marsh defines the goal of interpretation as "It allows objects to be illustrated within a larger context that explains their meaning and provides added value that would not be available through simple identification or display alone." (E. Marsh 2017, 371). Interpretation is possible in Omeka through enriching information about objects and making it apparent to users or, in other words, contextualization (Ibid., 371–372). Objects, their related information, and other objects can be juxtaposed within Omeka, and multiple interpretations and object views can be displayed. Finally, Marsh emphasizes that Omeka enables educational goals through the information and narratives exhibition creators provide. For example, timelines can be embedded within Omeka to highlight and narrate significant events from a temporal successive perspective (Ibid., 373–374). Thus, implementing an exhibit's educational aspects is an active creator's responsibility and requires intent. Users must contextualize and enrich the items they upload beyond adding metadata. Adding additional information and using narrative views are features Omeka can enable, but they do not automatically facilitate it.

In her recent work, *Creating Digital Exhibits for Cultural Institutions: A Guide*, Marsh revisits her typology of exhibit orientations and adds a third type, the user-oriented exhibit, to her discussion. The overarching goal of these exhibitions is to focus on the end-user of an exhibit, how its content should be communicated to them, how content is to be understood, and how this should be achieved in practice. In other words, the aim is for a user to connect with exhibition objects. Marsh defines a user-oriented exhibit's four functions as "engagement," "interpretation," "education," and "experience" (E. Marsh 2023, 38–39). The last attribute differentiates it from the other orientations, where the goal is to create a highly psychologically impactful experience for a user that is ". . . personal, authentic, and memorable." (Ibid., 39). She further states that the exhibition creator must at least be able to acquire deep domain knowledge of the exhibition's objects and their contextual place in scholarship and know how to design and build exhibits effectively to represent this knowledge, as well as have knowledge of users and how they would like to interact with this content (Ibid., 39). Features of user-oriented exhibitions can be integrated within Omeka, but these adaptations require additional effort (Ibid., 139). As discussed, many add-ons and themes can create more engaging views and include more interactive elements than the standard Omeka platforms offer. However, many users who choose a website theme as a template for their exhibition interface will find that the choice is limited to layouts with similar website and page structures, including similar page elements. A typical Omeka website will, for instance, start with a homepage with some text description, a navigational menu at the top with items that link to each collection in the exhibition, and collections are shown as list or grid layouts with item thumbnails and clicking a thumbnail opens a detailed single page view of an object. In contrast, the open-source web-based publishing software Scalar[49] does not include themes or add-ons but instead allows users to create more varied and flexible designs. When creating Scalar websites, there is a higher emphasis on user engagement and immersion (Ibid., 139–140). Creating more complex user experiences within Omeka will require more complicated solutions than the standard product offers and, in turn, requires its website creators to acquire additional

[49] For more information on Scalar, see its website: https://scalar.usc.edu.

technical knowledge to integrate or build unique solutions that stray beyond the administrative low-code interface of Omeka.

Overall, Omeka can create more information-oriented exhibits or more object-oriented ones. The resulting exhibit depends on the data and objects chosen by the authors and the page views or layouts they choose to implement. However, Omeka's basic functionalities and features are mainly situated toward object-oriented exhibits due to its focus on layouts that prioritize views to display exhibition objects and its identification of objects through metadata integration.

More engaging, user-oriented exhibits can be challenging to create with Omeka as custom integrations or solutions will be necessary to stray from the typical Omeka exhibition template. As a tool and website publishing platform, Omeka prioritizes limiting endless flexibility in features to provide users with core functionalities that are easier to use and adapt within their administrative interfaces. Thus, creators are likelier to use default choices and templates rather than expend effort finding and implementing individualized customizations. Consequently, the diversity and engagement level of experiences website visitors will encounter when interacting with an Omeka website will likely be low.

4.2.2. Digital Objects

In this section, I focus on the content of an exhibition on a single object level. By understanding its characteristics and functions, I evaluate to which extent Omeka can support representing and presenting a digital cultural object.

4.2.2.1. Complexity

Humanities data, cultural data, and any analog information captured digitally are complex since they require representing heterogeneous and unstructured data. Capturing an object's information in full is impossible since one chooses to record different types of information as data, e.g., creation date or author, while excluding others. When data is recorded, it represents a snapshot or model of selected information during a point in time, which can change in the future, such as ownership or the location of an item. Moreover, some information is challenging to record or

cannot be captured digitally at all, such as affective and sensory information an object may impart, like touch or smell. Additionally, describing born-digital objects selectively and statically cannot capture their dynamic nature, where, for example, online social media threads can continue with new comments or may be deleted. In this section, I will discuss the complex nature of humanities data, how this unstructured data is structured and handled, and how Omeka treats this kind of data from digital object creation to maintenance.

Generally, the digital humanities uncover and handle complexities. DH deals with humanities research objects, which are often heterogeneous and unstructured. Different types of objects and information can range in their forms, such as books, museum catalogs, climate change models, films, and geographical maps. The conditions surrounding this captured information may also be subject to additional complexities, where data cannot be treated as neutral. For instance, literary studies may handle written works of a biographical nature by contemporary authors that disclose personal information about still living people, bringing up privacy and data protection issues. In these instances, where the digital humanities handle such sensitive data, there is a point of tension between the aim of openly publishing research and treating data ethically.

While defining and discussing what data is within the digital humanities, Nurmikko-Fuller explains its complexity and the multitude of forms it may take. She explains how humanities data can be varied and may be ". . . structured, semi-structured, and even unstructured . . ." and sourced from (and represented as) databases, narratives, and interpretations (Nurmikko-Fuller 2023, 43). Data from the humanities and digital humanities can be unstructured, qualitative, quantitative, digital, and analog (Ibid., 43). Its diversity, however, constitutes specific characteristics that evade standardization, which can make working with them challenging. Humanities data has defining characteristics of being ". . . ambiguous, messy, incomplete, and unstructured. The fifth element is one of (un)reproducibility." (Ibid., 45). Humanities data can be ambiguous since it contains specific information as a snapshot while excluding other information. It can be messy as it is unstructured, making it often difficult to translate to the required unambiguous digital world of machine-readability (Berry and Fagerjord 2017, 89). It is incomplete by nature as it reflects the current

state of knowledge or interpretation as scholarship consistently expands, and it is unstructured as it is not tabular or self-categorized, leaving whatever information is to be extracted from it up to the extractor. Lastly, it cannot be reproduced because the data interpreted from the source is an interpretation from the abstract notion of its creator (Nurmikko-Fuller 2023, 45–50). In other words, all primary humanities data have a common degree of undefinability and are the results of interpretation.

When data is to be created from a source, multiple considerations and decisions must be made on a technical level, starting with what data will be recorded and what tasks are to be done with this data (Pitti 2004, 475). From then on, determining which data types and formats one works with leads to the choice of its representation. When data is most appropriately represented in a database, it can be classified as more "data-centric." If its information may be better represented within a markup language, it is "document-centric" (Ibid.). Some examples of data-centric information are forms, medical records, student records, or census data (Ibid., 475–476). Such data is suitable for databases where data is to be collected, classified, compared, and evaluated, documenting and linking information to one another (Ibid., 477). Some "document-centric" data examples are "textbooks, novels, collections of poetry, newspapers, journals, and journal articles." They are more unstructured forms of information that are suitable to be described with markup languages that can encode, categorize, and extract data within them (Ibid., 477–478). It is also important to note that there is no clear-cut distinction between the two information types. Information can often have characteristics of both. Thus, defining which type of data one works with and which method to use determines the trade-offs one makes in modeling the most important data to capture (Ibid., 478–479).

Particularly within the broad and interdisciplinary field of digital humanities, researchers' methods and objects of study are incredibly diverse (Münster and Terras 2020, 367). Within DH, there has traditionally been also a higher emphasis on text-based data (Champion 2017, i25–26). In contrast, visually-driven data has been less of a focus, with the needs of researchers who handle this type of data also less researched (Kamposiori 2020, 7). Art historians represent a field that has been and still is hesitant to adopt digital methods while also struggling to access physical and

digital resources on their material (Ibid., 8). Visual data can be created for various purposes and used in different fields:

- as facsimile - which can serve to preserve the analog original, for remote access to a digital copy of primary material, or as a model to study an object of research through computational methods.
- as Maps, e.g., through GIS (Geographic information systems), which are visualized databases.
- as 3D and CAD (computer-assisted design) models of objects for representation and research.
- as AR (Augmented Reality) and VR (Virtual Reality) simulations that immerse and place users into, e.g., reconstructed historical sites.
- through network analysis, which is a field that studies the relationships of entities by visually representing and calculating them in graphs.
- through cultural analytics, which aims to study culture through computational methods such as data mining, data visualization, and visual analytics applied to cultural data and humanities data.
- through linked data in the Semantic Web, where data is encoded and made meaningful to be made linkable to other data and thus interoperable. (Berry and Fagerjord 2017, 101–109)

In the case of data-driven and digital projects, ideally, many follow the aim of open scholarship, where the goal is to share work openly with other scholars and the general public to access free of cost (“Defining Open Science & Scholarship” 2021). This no-cost accessibility with varying degrees of permitted use is often referred to as “open,” where open source refers to code, open access to research, and open data to information (Nurmikko-Fuller 2023, 50). The general idea of open-source software (published under various licenses) is that code can be reused and edited as long as the result is open and published openly like its source (Ibid., 51). Open access refers to any outputs of research which can be of two different standards of accessibility: green, where authors may provide free access to often early versions of a final work (and due to copyright restrictions, not all work may be published as green open access) or gold where the author must pay for their work to be freely openly accessible (Ibid., 52). Standards for open sharing exist that propose benchmarks that apply to most digital projects. They provide guidelines but highly depend on whether

they are relevant and achievable according to the specific limitations of a project. Well-known are, for instance, the FAIR ("findable, accessible, interoperable, and reusable") data principles, and for indigenous data, there are the CARE principles ("collective benefit, authority to control, responsibility, and ethics") ("FAIR and CARE Principles" n.d.). Further, the FIVE Star Standard of Linked Open Data specification considers projects open by varying levels. It suggests how data quality can be improved to encourage open and interoperable (reusable) data (Nurmikko-Fuller 2023, 53). This "openness" in data is also an aim for cultural heritage institutions, GLAMs, and the digital humanities that deal mainly with visual data, e.g., digital art history. However, it is difficult to achieve, with many of them opting out of open policies due to the costs of image rights or copyright restrictions and, in some cases, of a personal nature where, e.g., information of living families or relatives are recorded (Ibid., 56–57). Thus, due to the variety and complexity of humanities data, each instance requires specific considerations.

The next part of this section will consider how Omeka handles complexities. In Omeka, the standard process for inputting items of already structured data typically involves uploading single or multiple items, either one by one or through batch uploads. Adding metadata to items can be done simultaneously for multiple items via pre-filled fields. Additionally, derivative media can be created from an uploaded object through add-ons. Converting unstructured into structured data is possible for specific data types and formats within Omeka. For example, OCR (optical character recognition) modules and plugins extract textual data from PDFs, converting them into XML or TIFF files. Regarding supporting the two main information types, Omeka leans toward being data-centered as it stores objects in databases through MySQL, but it also supports embedding document-centric representations. For instance, add-ons allow markup files and objects to be added to exhibitions, and some allow these to be rendered on a page, e.g., XML Viewer.[50]

In Omeka, digital objects are described, and information is encoded through metadata. I will discuss metadata and Omeka's default standard, Dublin Core, in the

[50] For information on the different file types, see the manuals and help section of Omeka's products: https://omeka.org/classic/docs/Content/Files/, https://omeka.org/s/docs/user-manual/content/media/#media-file-types, and https://info.omeka.net/build-a-website/media-files/.

next chapter on metadata. However, it is essential to know that Omeka does not enforce or ensure the standard or quality of metadata. Adding metadata values is entirely up to the exhibition creator. Additionally, most basic digital media file types are compatible with Omeka and can be embedded within an exhibition. Omeka Classic can also modify (e.g., convert, compress, watermark, or rename) uploaded files through the “File Modify” plugin[51] before saving them and creating metadata for them. Interrelations between data are possible through links, either local relations within an exhibition or through implementing Linked Open Data in Omeka S instances.

Regarding the various uses of visual objects and data, Omeka can be used as a platform to represent and publish views of object facsimiles, and multiple views of objects can be presented, for example, as maps and networks (as discussed in the Digital Exhibitions chapter). More innovative technologies like AR, VR, and even 3D modeling could theoretically be integrated as a custom solution but are not currently available through add-ons. Further, some large-scale analytical insight can be derived from content within Omeka, but this is limited to a few add-ons like the previously mentioned text analysis plugins, which researchers will likely see as only marginally beneficial to their work. Omeka, as a tool, focuses more on presenting research than conducting it, which applies to researchers and website visitors. As stated, Omeka S provides a Semantic Web integration through Linked Open Data.

Lastly, regarding maintenance and sustainability, Omeka has no dedicated guide but recommends various methods of exporting data and encourages users to create backups of their websites regularly. Additionally, Omeka does not have an inherent version history functionality, and some editorial actions cannot be undone or redone. Export functionalities are, for instance, the fact that Omeka Classic databases can be exported, as outlined in the manual.[52] Omeka.net supports exports as CSV with

[51] See the plugin’s GitHub: https://github.com/Daniel-KM/Omeka-plugin-FileModify.
[52] See the “Backing up an Omeka Classic Database” section in the Omeka Classic manual: https://omeka.org/classic/docs/Technical/Backing_up_an_Omeka_Database/.

Python,[53] and the Omeka S “Export”[54] and “Bulk Export”[55] modules can export items to CSV files. However, besides a website’s content and exhibition structure, Omeka does not have an inbuilt solution for exporting its visual structure, a vital part of digital preservation (Warwick 2020, 946). Thus, for example, exporting its HTML and CSS code would require a third-party or custom solution. There is also an add-on dedicated to setting an Omeka website in maintenance mode in case a project is no longer supported and operations have ceased, where it is still live but running with minimal functionalities. Furthermore, migrations between Omeka products are supported but depend on where the source exhibition is located and where the desired new location is supposed to be. No out-of-the-box solution allows migrations between Omeka platforms in all directions and works for all products, but users can utilize different add-ons and methods. Within Omeka Classic, items and exhibit instances with the “Exhibit Builder” plugin installed via an API importer plugin[56] can be transferred. Items can be migrated between Omeka S instances through the “Omeka S Item Importer” module,[57] and moving between servers[58] is possible by moving all files and content. Omeka Classic instances can also be migrated to Omeka S through the “Omeka Classic Importer” module,[59] which automates item transfers, but exhibits must be transferred manually. However, any content created with or related to a plugin cannot be transferred.[60] Moreover, moving in the opposite direction from Omeka S to Classic is not possible through an add-on.[61] Migrating

[53] See the Export section of the Omeka.net Help section that links to a Python script: https://info.omeka.net/manage-an-account/export/#:~:text=Thanks%20to%20Omeka's%20API%20capabilities,for%20the%20API%20Import%20plugin.

[54] See the Omeka S documentation for more information: https://omeka.org/s/modules/Export/.

[55] See the Omeka S documentation for more information: https://omeka.org/s/modules/BulkExport/.

[56] Omeka Classic provides information on server migration here: https://omeka.org/classic/docs/Technical/Moving_to_Another_Server/. They answer the question of moving exhibits via “Omeka API Import” and “Exhibit Builder” in a forum discussion: https://forum.omeka.org/t/moving-omeka-to-a-new-installation-on-a-new-server/1631.

[57] See the Omeka S manual for more information: https://omeka.org/s/docs/user-manual/modules/ositemimporter/.

[58] Moving between servers on Omeka S was answered in a forum post here: https://forum.omeka.org/t/the-hosting-decision-can-omeka-s-be-transferred-between-hosts/13846.

[59] See the Omeka Classic manual for more information: https://omeka.org/s/docs/user-manual/modules/omekaCimporter/.

[60] This was stated in this FAQ forum post: https://forum.omeka.org/t/omeka-frequently-asked-questions/6777.

[61] This is stated in the previous FAQ forum post and on the Omeka GitHub here: https://github.com/GCDigitalFellows/omeka/blob/v2.0-smorello-edits/sections/whichomeka.md.

Omeka.net to Classic is possible through its API capabilities.[62] Vice-versa is presumably possible, as well as transferring Omeka S, due to its similar API functionalities, to Omeka.net. However, it is most likely a far more tedious process.[63] In general, Omeka makes migration easier through add-ons. It also offers a more technically challenging method of using APIs and API add-ons or requires more in-depth technical skills to transfer databases.

4.2.2.2. Metadata: DC in Focus

This section will focus on Omeka's metadata capabilities to represent objects through its default and dominant metadata standard, Dublin Core. I describe how using DC determines object representation, how Omeka integrates DC, and how Omeka projects result from these consequences in practice.

The choice of metadata and a metadata standard determine the representation of digital objects. Metadata is often described as "data about data." (Berry and Fagerjord 2017, 88; Gartner 2016, 2). When we create metadata, we select certain information about something to describe it (Gartner 2016, 3–4). One may, for example, choose to describe a painting by defining characteristics such as creator, title, and date. This exemplifies the use of descriptive metadata,[64] which aims to identify and locate an item to which it refers (Ibid., 6–7). The selection of descriptive metadata is twofold: where one first chooses which data categories shall be captured and which values will be filled into these categories. Both determine how a digital object is represented, where metadata creation is always a choice of which information to include and which to exclude (Ibid., 4).

Understanding and sharing resources is difficult if the chosen metadata categories, values, and structures are unique. Thus, metadata standards, also known as

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[62] See the Export section of the Omeka.net Help section: https://info.omeka.net/manage-an-account/export/#:~:text=Thanks%20to%20Omeka's%20API%20capabilities,for%20the%20API%20Import%20plugin. For an example of how this migration can be done practically, see this tutorial with Reclaim Hosting: https://support.reclaimhosting.com/hc/en-us/articles/1500005620541-Migrating-from-Omeka-net-to-Omeka-on-Reclaim-Hosting#prepare-new-install-for-import.

[63] The description of a library project migrating Omeka Classic to Omeka.net outlines their difficulties from 2017 to 2018: https://battlehall.lib.utexas.edu/2018/02/22/on-omeka/.

[64] For information on metadata types, see the NISO (National Information Standards Organization) Primer in Riley (2017) and Gartner (2016).

ontologies, provide vocabularies of selected and defined categories (metadata elements). An ontology provides a set of metadata elements, the rules for using these, and the meaning and purpose of these elements (Ibid., 53). When data categories and formats are defined, data is interoperable, where data may be connected and found through their metadata (Ibid., 55–56). For example, defining a painting's creator can lead to data on their other works or allow searching of works by the "creator" category. The standardized use of structured metadata can connect data within a project or website and be interpretable across the web (Berners-Lee, Hendler, and Lassila 2001; Nurmikko-Fuller 2023, 54–55).

The metadata standard, Dublin Core, was created to describe the diversity of different data across the web. Instead of attempting to capture all possible different categories of objects, they opted for simplicity in providing a set of 15 basic elements ("DCMI Metadata Terms" n.d.): title, creator, subject, description, date, type, format, identifier, source, language, relation, coverage, rights, contributor, and publisher. These basic elements are known as "Simple Dublin Core." Their strength is that they may be applied to virtually any physical or digital object, they are limited to 15, all are optional where none are required, and most can appear self-explanatory. Simple Dublin Core, thus, seems to be a beginner's metadata, with a relatively low learning curve of how to add metadata to objects. Even in its simplicity, some issues can exist in interpreting elements. Boundaries between elements may appear fuzzy. For example, the difference between "creator" and "contributor" elements may not be immediately apparent. The first element refers to who is primarily responsible for making the content, e.g., the author of a book, and the latter lists any entity who made secondary contributions to its content, e.g., the translator of a book (Gartner 2016, 33–34). Moreover, the guidelines for a value's format must be considered when creating metadata. For instance, "date" elements are recommended to be of an ISO standard, and a "relation" element should ideally be a Uniform Resource Identifier, which uniquely identifies a resource ("DCMI Metadata Terms" n.d.). However, deciding which elements are appropriate for which objects and which values they should have can make the most straightforward use of Dublin Core still challenging. DC can be extended to "Qualified Dublin Core" to allow more specificity in creating metadata, where one can add more granularity to its elements. One can, for instance, define a creator more closely as an author by adding a period and the

qualifier after that as “creator.author.” This allows DC to be extensible and refinable, where any qualifier can be added to a chosen element. For consistency’s sake, the DC recommends certain shared qualifiers to increase reusability. However, any qualifiers chosen will still make DC machine-readable since any system that recognizes DC can still read and identify the element preceding the qualifier (Gartner 2016, 34–35). DC can thus be as minimal and generic or as extensive and specific as one chooses. The trade-off between broad and specific DC will determine the degree of interoperability versus the level of highly domain-specific representations of objects.

Using DC and any metadata standard in Omeka is flexible and customizable, mirroring the modularity of DC itself. Omeka allows creators to choose a vocabulary or create a custom ontology through a module[65] where one can define item classes (types of resources) and properties (elements). It does not restrict the choice of metadata elements combining ontologies or the values of elements in any way. For instance, in Omeka S, users can add Dublin Core elements and properties in other ontologies, and seemingly infinite metadata elements can be added to an item. There is no restriction on what the form (e.g., image or text) or format (e.g., dates in ISO standard or “YYYYMMDD”) a value can be or how many values an element may have. Omeka allows exhibition creators the freedom to be as specific as they like and to divert from standards to be as precise as possible in their metadata. The same flexibility benefit is also a drawback, where Omeka does not ensure valid metadata. By providing a no-code interface to add and remove any metadata easily, Omeka offers ease of use in metadata creation but does not contribute to or influence its quality in any form. Their manuals and resources generally describe and recommend basic Dublin Core practices. However, these are not specific enough to clarify any potential confusion in understanding the use of DC and may partially contribute to its misunderstanding. For instance, the Omeka Classic User Manual (“Omeka Classic User Manual” n.d.) links outdated descriptions of DC’s basic metadata elements from 2005,[66] and a North Carolina Digital Heritage Center resource[67] exemplifies their integration of DC, which contradicts DC standards. The NCDHC page provides

[65] Omeka S “Custom Ontology” module: https://omeka.org/s/modules/CustomOntology/.
[66] https://www.dublincore.org/specifications/dublin-core/usageguide/elements/.
[67] https://www.digitalnc.org/resources/contributing/metadata-guidelines/.

examples of metadata violating the 1:1 principle,[68] which mandates that distinct resources must have distinct descriptions. One metadata description may, therefore, not refer to more than one resource. The NCDHC provides examples that include both a “filename” element and the physical dimensions of an object, thus referring to two different surrogates of an item in the description of one resource (Maron and Feinberg 2018, 681–683). Thus, Omeka does not necessarily make adding metadata easier, and creators must still confront the same considerations of correctly integrating DC with or without Omeka’s interface.

Omeka, on the other hand, has hard constraints in its data structure, and further constraints on adding metadata to items can be implemented by Omeka creators. Foremost Omeka exhibitions are structured as databases with descriptive metadata for each object added. Objects are structured as classes with properties. Furthermore, Omeka S allows Linked Open Vocabularies as preloaded solutions that users can choose from, and users may also upload others as long as they are based in RDF (Resource Description Framework).[69] In being built on the RDF format, Omeka S allows relationships and connections between metadata elements to be defined as machine-readable and Semantic Web compatible.[70] Moreover, to encourage consistent metadata use, Omeka creators can install official Omeka-provided modules: The “Custom Vocab”[71] module allows custom-controlled vocabularies where element values are limited to given choices. The “Value Suggest” module[72] adds an auto-complete feature to enter metadata for chosen elements. Further, resource templates can be created with pre-defined properties and a class to add to items.

When Omeka projects integrate Dublin Core, the flexibility in adding metadata opens up the possibility of errors. Maron and Feinberg identified errors in Omeka websites that range from duplicate values for elements to misunderstanding elements, e.g.,

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[68] https://www.dublincore.org/resources/glossary/one-to-one_principle/.

[69] An Omeka moderator on a forum post states this here: https://forum.omeka.org/t/omeka-s-vocabulary-import-problem/14350.

[70] For more information on the information structures of relational databases, RDF, the Semantic Web, and linked data, see Nurmikko-Fuller (2023), the W3C Recommendation (https://www.w3.org/TR/rdf11-concepts/), and Berners-Lee, Hendler, and Lassila (2001).

[71] Omeka S “Custom Vocab” module: https://omeka.org/s/modules/CustomVocab/.

[72] Omeka S “Value Suggest” module: https://omeka.org/s/docs/user-manual/modules/valuesuggest/.

adding “relation” element values to a “source” element or violating the 1:1 principle in which it is unclear whether an element refers to which specific surrogate of an object (Maron and Feinberg 2018, 681–86).

In my own survey, I have found that these errors in the examples by Maron and Feinberg still persist and that typical DC metadata errors I found are either 1:1 errors relating to physical versus digital resources or misusing DC elements. For instance, a University of Memphis student-created history project, “Making an Impact: The Lives of Tennessee Women,” conflates a digitally published and physically published resource. The “creator” element of the item, “The Story of Charl O. Williams,”[73] states both the article’s author and the physical newspaper’s original publisher. At the same time, the DC description refers to the digitized resource in “JSTOR.” Furthermore, its “date” element refers to the time of the article’s original publication in 1922, while conflictingly, the “publisher” is not the original publisher of the article, “The New York Evening Post,” but the digital publisher “JSTOR.” The DH project “My Nola, My Story” provides metadata for a video[74] where the “type” element states the video editing tool it was assumably used to render it, “Premier Pro,” instead of correctly simply listing it as a “video” type. The record restates its file type as “video” in an “original format” property. Furthermore, the file format should be listed as a DC “format” element instead of a “compression” property. The “Civil War & Reconstruction Governors of Mississippi” project[75] describes an item’s “format” element as a digital reproduction.[76] Still, it simultaneously lists the dimensions and number of pages of the physical resource to which it refers. This metadata element confuses by referring to a digital and a physical resource in one record. The “Archival Gossip: A Scholarly Take on Nineteenth Century Tattletales” culture and literature project shows the metadata of a location, “New York, United States,” and its longitude and latitude geocode, but the reason and relation are not immediately interpretable from the item.[77] It is unclear whether the location refers to its original publication in New York, where the physical item is, or where the item’s scan is located. Further, the record describes a scanned and digitized article in the online archive “EBSCO.” At the same time, the location of

[73] https://umhist4851.omeka.net/items/show/120.
[74] https://xulamasscomm.omeka.net/items/show/204.
[75] Reviewed by Blickhan (2022).
[76] https://cwrgm.org/item/mdah_779-962-15-12.
[77] https://www.archivalgossip.com/collection/items/show/631.

the resource seems to be a physical place, where the purpose of the location metadata and what it describes is unclear. Lastly, I found metadata issues in some projects that do not communicate their use of a metadata standard explicitly or implicitly through the declaration of DC elements in their source code. For example, the project “Lynching in Texas” by Sam Houston State University seems to lack a metadata standard and also has media without any metadata in their exhibition. It shows an excerpt of a newspaper article as images that open up in a slideshow[78] with captions but no descriptions when an image is viewed by itself. Another instance of unclear metadata is the “Kent State Shooting: Digital Archive” library project from Kent State University. The exhibition chooses to display the resource title as a heading, but its metadata record lists no title element. This may have caused items to be difficult to find when using their search bar unless the full name of an item[79] (i.e., “Segal Sculpture: Correspondence About Boston Magazine ‘Turkey of the Year Award’”) is queried. If I omitted any word in the title, my query returned pages of irrelevant items that did not contain the keywords I searched for or the item.

4.2.2.3. Materiality

In this section, I discuss whether Omeka can address object materiality and understand how the material qualities of a physical or born-digital object can be represented through their digital surrogates and within the context of an exhibition.

Objects convey visible and non-visible information. As a viewer of a physical object, one can understand its physical properties through, for example, its texture, shape, size, and color. An object also carries information that is not directly perceivable, such as its cultural context and non-visible structures, e.g., chemical composition. Further, objects can create affective experiences for a viewer, having emotional and sensory effects. An object may also be subject to change over time and space, as physical material may erode or as an object‘s provenance changes. Similarly, when objects are born digital, they have characteristics of digital materiality that are highly prone to change. A born-digital object can have visible properties such as color made

[78] The images within the context of the exhibition: https://www.lynchingintexas.org/items/show/13?tour=3&index=4. The view when an image is in single-view: https://www.lynchingintexas.org/files/show/373.

[79] https://omeka.library.kent.edu/special-collections/items/show/3303.

visible by its non-visible structure, e.g., pixels and file format. Digital objects and art, especially those born and published on the web, are highly dynamic as their materiality undergoes constant changes by being (Shep 2016, 322–326; Cook 2007, 121; Ibid., 126), e.g., compressed, shared, or through collaboration. An online video can, for example, receive comments, be shared and linked to, and be deleted, downloaded, copied, or re-uploaded. Whether objects are digital or physical, an exhibition aims to share selected objects and convey their information and context to communicate a narrative.

Within online exhibitions, the objects displayed are digital, representing surrogates of their original and often physical counterparts. Digital surrogates do not replace physical qualities or experiences but are a selection of object properties. They represent choices where information about an object was captured to convey information within a narrative. Digitization may cause a reduction of information on an object level (Geismar 2018, 97–99). Still, new information can be conveyed through a surrogate's contextual placement and new forms of analysis (Ibid., 79; Cameron 2007, 56; Ibid., 66–68). An exhibition can, for instance, juxtapose and compare objects through collages and slide shows, showing objects together that their physical locations would otherwise constrain. Digital surrogates can enable close viewing that would not be possible in a physical viewing by, e.g., macroscopic and microscopic zooming, infrared, and x-ray imaging. Thus, digital surrogates offer new opportunities to convey object information beyond the recreation of a physical counterpart.

Omeka allows the creation of digital surrogates that can be used flexibly within an exhibition. Omeka surrogates convey object properties through listing metadata, which provides viewers with details of an object that are listed and read rather than experienced. A visitor can perceive the materiality of an object in Omeka through surrogate views, where visual and multimedia views make materiality experiential. Visitors can visually and audibly perceive object properties through images, audio, and video media that can be distantly or closely read/viewed depending on the choice of media format and views integrated by the exhibition creator. Moreover, Omeka has no specific features to handle born-digital objects. Instead, they can be

presented in Omeka by linking and embedding them in a page or statically adding them as items with metadata.

Omeka democratizes the creation of exhibitions, lowering the barrier of entry to share experiences and cultural narratives through explicit knowledge dissemination and implicit affective exhibitions. In narrative exhibitions, objects can be affective, which may evoke emotions and provide sensory experiences (Witcomb 2007, 36). For example, the Harvard University Omeka exhibit “Eileen Southern and the Music of Black Americans”[80] is centered around the life and legacy of the scholar Eileen Southern, whose work inspired the academic subfield of Black music studies and was the first African American woman tenured in Harvard’s Faculty of Arts and Sciences. The exhibition places biographical material and events from Southern’s life in the context of significant events in United States racial history as an interactive timeline, where the severity and reality of historical racial segregation and war are shown to have been a part of Southern’s life. It also narrates her correspondence as a scholar through a navigable map tracing her letters, making her significance as a vital part of her social network visible, more immersive, and explorable. Further, the exhibition contains audio-visual material, such as oral history video interviews with those who knew Southern or scholars influenced by her. Thus, the exhibition makes the Harvard archival material of Southern available and communicates her perspective as she faced racial and gender discrimination, highlighting the community and history of the marginalized field of African American music.

Overall, Omeka websites, as digital representations, cannot replicate physical objects and their experienced materiality. However, online exhibitions through tools like Omeka can provide digital surrogates to convey an object’s visual and audible properties. Omeka exhibitions offer the potential to contextualize and narrate objects from various often marginalized perspectives to create affective experiences.

4.2.3. Recommendations: Online Exhibition Content

I conclude sections 4.2.1 and 4.2.2. on online exhibition content by summarizing best practices and recommendations on handling, representing, and presenting digital

[80] The project website: https://eileensouthern.omeka.fas.harvard.edu/.

objects in an exhibition (E. Marsh 2023 is an in-depth practical guide to creating online exhibitions focusing on Omeka).

Every exhibition creator should minimally:

- gain domain knowledge and understanding of the material and its context in scholarship.
- understand which digital forms the material can be structured in or the form in which it has already been structured.
- define research questions or project goals the exhibition intends to address.
- explore solutions (data structures or even tools) where the project's goals of presenting knowledge and representing knowledge intersect.
- define what knowledge the exhibit should convey and map out its informational structure.
- create metadata and ensure the validity of descriptive metadata, ideally consulting or involving a metadata expert such as a librarian. An exhibition creator should invest effort and resources into understanding the chosen scheme and vocabulary.
- determine the orientation or general type of exhibit it will be while considering the website visitor user.
- from defined data structures, project goals, and user research, evaluate different interface solutions.
- choose an interface solution by considering where human effort should be invested, weighing the overall constraints, benefits, and drawbacks in the decision, e.g., investing in creating a custom Omeka S solution with new interactive page elements but utilizing its responsive page structure that fits all screen sizes. Choosing whether an existing or a custom solution is needed for a project or a hybrid mix is more suited.
- create a data management, exhibition maintenance, and sustainability plan to define what happens to the website once the project is completed, as well as ensure its data is preservable and usable in the future.

4.2.4. Users

This section first explains the context of user-centered projects and why they are relevant for DH and online cultural heritage exhibitions to understand the profile of

Omeka users. I will then clarify the relevant user needs, examine how these are handled in Omeka, and look at other user-related aspects that must be considered when designing digital interfaces.

4.2.4.1. Casual End-Users

There is a significant tension between creating an educational and analysis-facilitating exhibition and the aim for an exhibition website to be approachable and engaging. Discussions surrounding creating interfaces for casual users seem to undervalue the importance of familiarity by which many online users often subconsciously operate. Unlike expert users, casual users are not researchers or domain experts, often finding meaning through exploration and browsing and not driven by a specific goal (Windhager et al. 2019, 2315; Whitelaw 2015, 1–2). Within DH, the casual user is usually not a focus in documented project user studies and literature on the users of digital interfaces. Therefore, this section will draw from the research on exhibition users and mainly on user-centered design resources dedicated to achieving usability in digital and online interfaces to understand a casual end-user of an online exhibition.

When defining how users will interact with an online exhibition and its intended audience, a project must consider its user's goals and possible behaviors. Determining the needs and behaviors of casual users within the context of GLAM institutions derives from the studies of physical visitor experiences. Antoniou, Lepouras, and Vassilakis (2013) categorize user roles, user types, and main user needs based on an educational theory perspective. Relevant and applicable to the experience of online exhibitions are the findings that visitors may expect three different outcomes that motivate their visit: (1) they expect to learn, (2) they expect to socialize, and (3) they expect to be entertained (Antoniou, Lepouras, and Vassilakis 2013, 160–161). Examples of implementing those three expectations in Omeka could be (1) curator-written articles on topics that link from objects or collections, (2) allowing user discussions through comment sections or community discourse add-ons and starting a conversation by prompting users with a question, and (3) including interactive narrative add-ons that engage users in a topic like a timeline or a map. While I have not observed the first two within Omeka websites, the third is included in

many Omeka projects with date-related or geographic metadata.[81] Further, creating digital interfaces creates specific usability needs and the potential for social engagement. As discussed in the "Information Visualization" chapter, most users will likely want to carry out basic tasks defined in Schneiderman's Visual Information Seeking Mantra and task taxonomy (Shneiderman 1996, 1–2). Casual users often do not explicitly have goals in mind when they approach museum websites and online collections (Whitelaw 2015, 1–2). Thus, enabling browsing and increasing the potential points of serendipitous interaction can create engaging digital environments (McCay-Peet and Toms 2011, 1). Attractive and desirable browsing formats de-emphasize the search bar as a main exploration element and instead aim for generous interfaces that present multiple views of objects that may dynamically change according to user interaction (Whitelaw 2015, 4–5). Principally, designing for casual users means prioritizing engagement while balancing the second goal of conveying knowledge to a degree a project aims to and integrating common user tasks and usability.

As discussed, DH and GLAM user considerations often draw on human-computer interaction and information visualization. However, it is also possible to learn from the (albeit commercialized and profit-driven) digital design disciplines since they offer valuable insights into casual users and the usability of digital interfaces. Krug's widely influential work on usability, *Don't Make Me Think*, defines guiding principles and best practices for handling casual users. His main argument is that interfaces should be designed to decrease the time users need to understand using them while increasing self-evident interactions (Krug 2014, 11–15). Any choices a user makes or interactions a user carries out should be minimal, unambiguous, and have a low cognitive load (Ibid., 41–43). Users will think considerably less or not at all about the tasks they carry out on a website. They will most likely choose an option that satisfies them in the moment instead of researching or informing themselves of the optimal choice. Users learn by using, often learning through trial by fire, reaching for instructions as a last resort. Thus, to avoid users giving up on a digital tool or leaving a website, they should be able to carry out their desired tasks without or with minimal

[81] See, for example: https://caninuit.omeka.net/exhibits/show/timelines, https://plainsmovement.com/neatline/show/interactive-map-and-timeline, and https://georgeeliotarchive.org/maps.

help (Ibid., 50–51). Consistency, besides brevity and clarity, is vital to visually accommodate a casual user (Ibid., 32–35). Within digital interfaces and especially on the web, it is crucial to adhere to existing conventions that users know and only break with them if a new solution improves the convention or has a minimal learning curve (Ibid., 31–32). Other practical aids are ensuring visual hierarchy on a web page and eliminating any clutter or unnecessary elements (Ibid., 33–39). While general website design recommendations exist, their success will depend on the specific site and its users. Krug emphasizes that there is no average user because we cannot design a website for anyone and everyone. Designed solutions are specific to unique users and unique websites. Moreover, usability testing is the only way to understand and verify solutions (Ibid., 107–109). Krug's main recommendation for user research is to test often and regularly, as early into a project as possible, and argues that testing one user at the beginning of a project is better than testing multiple at the end (Ibid., 113–116; Ibid., 118–119). Ideally, tests should reflect the context in which a website will be used, e.g., test on a tablet device if the website is meant to be primarily used on it. Krug crucially emphasizes that even conducting one test will always be more valuable than conducting none at all. Testing works and will show how to improve a website (Ibid., 113-114). The final aspect of testing for usability on the web lies in web accessibility. While accessibility can and should be planned into a website, ensuring accessibility standards are adhered to is mainly confirmed through testing (Ibid., 177-178). Overall, Krug provides a resource and practical guide to creating more intuitive websites. Exhibition creators can use it as a field guide and checklist while designing and planning and during the testing and building phases of an Omeka exhibition project. Many principles and suggestions are goal-driven and assume users make snap decisions within seconds (Ibid., 88-91). Any application of design recommendations, thus, should be considered according to the knowledge of the creators, as well as the communication and user goals of an exhibition.

The guidelines in Nielsen's heuristics and the concept of Gibson's affordances are two other significantly impactful best practices for designing digital interfaces and tools. Gibson states that the potential uses of an object depend on its properties and the capabilities of a user and their environment. Thus, effectively designed objects can be used intuitively, and their use is implicitly understood (Berry and Fagerjord 2017, 127; Gibson 2014). Don Norman builds upon this concept by arguing that

affordances should be present in designed objects through perceivable cues. He adds the “perceived affordance,” which considers a user’s subjective interpretation and expectations of an object (Norman 2013, 34–36). In practice and within the context of Omeka, affordances can be implemented by designing an interface that takes advantage of user familiarity and consistency and reduces cognitive load. I see these principles as further specified and expanded on for the design of user interfaces in Nielsen’s 10 Heuristics (Nielsen 2020), providing best practices for digital interfaces:

1. Visibility of system status
2. Match between system and the real world
3. User control and freedom
4. Consistency and standards
5. Error prevention
6. Recognition rather than recall
7. Flexibility and efficiency of use
8. Aesthetic and minimalist design
9. Help users recognize, diagnose, and recover from errors
10. Help and documentation (Ibid.)

Omeka does not explicitly mention design best practices, such as the heuristics, but supports some basics when creating a website for casual users. This is evident through a default Omeka website feature that makes a system status visible, for example, highlighting where users are within a website in navigational menu items. Systems and the real world are matched as, for instance, items are described in terminology understandable to a broad audience. Further, Omeka templates use familiar terminology such as “Home” or “Search.” Basics of consistency and standards are integrated throughout Omeka templates. For example, graphical conventions such as a magnifying glass symbolizing a search button are clear. Some error prevention basics can be supported, e.g., creators can provide helpful constraints for casual users by marking submission form fields as required. Recognition rather than recall basics can be supported, e.g., breadcrumbs (clickable links of the series of pages navigated) can be displayed for nested pages. Regarding flexibility and efficiency, Omeka has advanced search and filter options that users can choose to access instead of using a simple search. Omeka themes are generally

minimalist and provide bare bones for creators to design. Casual users rarely find clutter and unnecessary visual elements on an Omeka website. Omeka websites display error pages, but customizing a page would require coding. Instead, casual users can be helped by providing support documentation or links to resources to solve any possible errors known to appear on a given website. Regarding help and documentation, casual users can be accommodated by providing project documentation on an About page, which can contain additional instructions on using and navigating the website. However, this is up to the creator, and Omeka does not require this feature in a website.

One issue Omeka has that contradicts a heuristic is that user control and freedom are limited for visitors since returning to a past state can be difficult. Visitors are limited in the choices for navigation, where most templates do not show exit options and instead rely on the browser's back button. This makes many Omeka websites frustrating for users who want to return to a previously viewed page or retrace any previously viewed pages in the history of a navigated path.

Overall, it is helpful to think of casual users, even within the context of academic projects, through the lens of commercially oriented goals, which have been a subject for user-oriented design disciplines. It is important to remember that designing for enhanced ease of use and casual users can increase engagement within an online exhibition by reducing cognitive burdens and increasing intuitive use. Omeka adheres to many website standards that users will already be familiar with, which may allow exhibition creators to finetune and adapt these functionalities rather than spending far more resources on implementing them from scratch. If digital humanities projects and online exhibitions want to consider users, implementing usability and user testing to some degree is necessary, even if Omeka or other tools do not require them to publish a project.

4.2.4.2. Experts & Researchers

For this group of users, I consider those within the humanities and (visual) digital humanities. VDH researchers primarily work with visual objects, and the field encompasses art and architectural history studies, museology, archaeology, and cultural heritage (Münster and Terras 2020, 366–367). To understand their needs

and behaviors and how the relevant Omeka functionalities can or cannot fulfill them, I discuss insights from research on expert users and tool development studies for DH.

Humanities researchers have shown different user needs when interacting with information to those in the sciences and social sciences. A framework of basic user activities and tasks a humanities researcher will conduct, created by Unsworth in the early 2000s, still rings true today. Unsworth observed basic scholarly tasks regarding how tools should be designed and which tasks they allow users to carry out. He calls these tasks “scholarly primitives” (Unsworth 2000): discover, annotate, compare, refer, sample, illustrate, and represent. They convey similar goals to many information visualization tasks, particularly Schneiderman’s information-seeking tasks. The scholarly primitives discern that users conduct tasks that allow browsing and exploration to find objects of interest. Any tool created to facilitate these activities allows them to gain new insights through analytical tasks, which may include detailed research on objects or overview comparisons of multiple objects. The resulting work should be visible and conveyed (Ibid.). While Omeka is not an analytical or research tool, it allows some text analysis functions. However, as discussed, it may not be suitable for researchers who already use other text analysis tools or require functionalities beyond those of Omeka add-ons. In more recent work, Warwick (2012) further determines the behaviors and needs of humanities researchers. According to Warwick, they specifically avoid searching through keywords and instead browse to select the most relevant information for them. Humanities researchers also do not always aim to answer a research question in its entirety but consult information to revise and reinterpret sources (Ibid., 2–3). Thus, if an Omeka exhibition were to allow exploration of research material for experts, browsable views are required where relevant objects can be queried.

Further, humanities researchers will approach and use digital tools under certain conditions. They face the problem that tools are mainly designed for users not from the humanities (Ibid., 2–3). Warwick states: “If digital resources are created by academic or technical experts and user testing is not carried out, the assumption tends to be made that the users of the resource will be just like the creators.” (Ibid., 9). This can lead to creators assuming that their users will possess the same knowledge and will be familiar with the same functionalities or interface conventions

as them. These assumptions can lead to practical problems such as interfaces that are difficult to navigate, workflows tailored to the creator's specific preferences like using specific keyboard shortcuts, unclear naming conventions, and a lack of accessibility features for disabled users. Furthermore, there are various reasons why researchers abandon a tool or decide not to use it. Scholars are often more critical than casual users when it comes to the use of a new digital tool. They will likely abandon it if it cannot prove its usefulness to them. Researchers are far less likely to tolerate frustrations that ensue due to usability problems when using software than, in comparison, when using physical resources. It is also possible for users to estimate and have an overview of how extensive the physical resources they are consulting are, while they have difficulties estimating the size of digital ones and the effort needed to look through them (Ibid., 6–7). Interestingly, the low degree of tolerance does not correlate with a less digitally-versed generation. Students considered digital natives can just as quickly give up on a tool if they find they are not progressing. Once researchers have determined that a chosen digital tool is valuable and productive to their work, they will persevere and are more likely to learn new skills to overcome a steep learning curve (Ibid., 7–8).

Omeka provides some more documentation about its usefulness in projects by showcasing featured exhibition examples on their websites so potential exhibition creators can understand a typical final output. However, the complexity of creating an exhibition is under-emphasized, emphasizing ease of use, so users might be surprised to discover the actual amount of effort needed when using the tool for their material. While this thesis discusses casual users and expert users as two different categories, it is essential to note that many researchers also display behavior observed in casual users. Notably, less technically skilled or knowledgeable scholars attempting to use a tool will encounter the same difficulties as a casual user with little domain knowledge. User-centered design practices are clearly necessary and relevant for DH developers if they want their tools to be widely used. Users who do not trust a tool or see a clear benefit will simply not use and abandon it. It can be incredibly challenging for the creators of digital tools to convince researchers who are set on traditional physical research methods, which they clearly know and find value. Tools will not be used if they have no significant advantage over a physical or manual approach.

Since people develop and use tools within DH, user-centered design and usability are primary concerns. Due to the diversity of domains and varying skills of researchers within DH, designing tools is challenging. However, the problems that scholars encounter while using tools are often general usability problems that apply to most digital interfaces. Thus, increasing the adoption and use of DH tools requires assuming a more generalized approach toward user-centered design to focus on common user needs instead of targeting every specialized need of a diverse group (Thoden et al. 2017, 4–5). Usable and valuable tools for digital humanists combine domain-specific and general usability needs.

Bulatovic et al. (2016) and Thoden et al. (2017) show that most user needs and usability problems are not DH-specific when considering DH users. Users of DH tools face general interface problems that a broad audience would as well. They identified six main usability problems, which are covered by the usability principles covered in the previous section on casual users: ". . . a) ambiguous and inconsistent vocabulary, b) disregard of graphical conventions, c) intransparency of the system status, d) missing documentation, e) missing strategies to avoid mistakes, f) disregard of convention for workflows, e.g. search." (Thoden et al. 2017, 4).[82] As mentioned, Omeka's product terminology is mainly consistent but lacks clarity when addressing other topics, such as metadata standards, leading to confusion among inexperienced users. Omeka admin interfaces largely adhere to graphical conventions where, for example, a gear icon indicates settings, and most questions regarding the use of their products are answered in their manuals. Additionally, the system status is communicated to users. For instance, progress status is shown per item when uploading a CSV file of items to a collection. Omeka's extensive resources and documentation are available to users. However, this vast information is both a benefit and a drawback. To familiarize themselves with the tool, users must sift through both Omeka-provided resources and resources created by the online community. Avoiding mistakes has a high cost for users. Some edits and changes made through the admin interface can be difficult to undo since no official versioning functionality is integrated across Omeka products, which should be a conventional workflow feature.

[82] Bulatovic et al. reiterate and slightly paraphrase these same problems (Bulatovic et al. 2016, 341).

To elaborate on the usability of the admin interface, Omeka supports some basic usability needs as a tool for creators through their compliance with some of Nielsen's (2020) heuristics. System status are visible; e.g., creators can see the status of an upload. For instance, the system and the real world match through descriptions in the manual and descriptions linked to external resources. However, how Omeka terminology describes certain concepts can sometimes be unclear to users, such as with their guides regarding Dublin Core. Some user control and freedom are lacking for creators in some respects since there are no global undo or redo functionalities or a core versioning feature, and some jobs done with add-ons cannot be undone at all; however, canceling in-progress edits is possible. The basics of consistency and standards are integrated since, for example, the terms used across Omeka platforms are consistent, except that add-ons for Omeka Classic are called plugins, and Omeka S refers to them as modules. Documentation and manuals are available, but some Omeka Classic resources are outdated. Omeka.net and Omeka Classic have the same interface, differing from Omeka S, where its navigational structure is somewhat confusing since, e.g., plugins are scattered throughout other admin functionalities and are not grouped together like in Omeka S. Error prevention basics are supported like in the display of error codes, but some functionalities are still desirable such as an auto-save function. Recognition rather than recall basics are supported, such as a menu that is always accessible and visible throughout the interface. Omeka is mostly flexible and efficient to use, e.g., the ability to add custom code elements to a page, but crucially, Omeka does not seem to have keyboard shortcuts that are useful for multiple edits. Omeka interfaces integrate aesthetic and minimalist design since their design choices have shifted towards a flat and minimal interface, decreasing clutter and unnecessary visual elements. Regarding errors, Omeka will display generic error messages. However, to display the details of the error, it needs to be configured by changing a line of code in a file. Help and documentation are provided through searchable user manuals with articles and guides on its functionalities. The documentation lacks more specifically adequate help provided in context, e.g., links to manual sections from the dashboard or more tooltips for terminology upon hovering terminology unique to Omeka.

Omeka mainly provides a “neutral” ground of an interface with default settings and templates that are generally usable across domains. Thus, it does not address or solve domain-specific problems or provide a theoretical framework or reflection on its tool. Many visual digital humanities researchers are self-taught and acquire technical skills when necessary for a project or solution to a problem. In contrast, others received a formal education or gained project experience to acquire their skills (Münster and Terras 2020, 373). Most of their challenges are related to data access, sustainability, and lack of clarity on legal issues and licenses. For them, tools should not just be developed, but a theoretical framework should be created, including analysis and criticism (Ibid., 379–80). Some practical research approaches they conduct are data analysis, such as pattern extraction, spatial modeling, crowdsourcing, and data visualizations. As an umbrella field, the research methods are quite diverse, and projects often involve cross-disciplinary teams and mixed methods (Ibid., 374–76). As discussed, Omeka add-ons allow advanced features that may apply to visual digital humanists, such as data visualizations and crowdsourcing. Further, Omeka’s core functionality as a CMS allows exhibition creators to manage materials in a database through a no-code interface. Omeka’s open source and open access policies can benefit other projects and researchers by encouraging the sharing of material. Additionally, VDH researchers still have problems accessing high-quality image material (Kamposiori 2020, 8–10). Any visual images without open licenses or permissions to share are unsuitable for the platform, and Omeka cannot aid in increasing access to licensed materials, which could become a place of conflict for material with copyright restrictions. Moreover, if we consider researchers to be exhibition visitors, it is clear that these users also need usable and accessible interfaces where browsing, serendipity, and user-centered design are implemented (Ibid., 9).

Art historians have specific needs that directly relate to the visual nature of the material they work with, which Omeka does not fulfill. Digital images are only useful if available in a minimum required image quality, and scholars working with visual media face the challenges of managing usage rights and copyright (Ibid., 8–10). Omeka may provide the necessary metadata and, when implemented, the complex views of objects. However, slower loading times for images on the web can be a barrier for researchers who want to use and publish higher-resolution images. Users

report slow loading times, especially when using external viewers such as Mirador, noting that larger file sizes impact loading times.[83] As mentioned, Omeka exhibitions are typically created with open licenses or through permission to reuse material, and they cannot provide increased access to copyrighted material. Further, in art history, there has been a historical reluctance to adopt new digital tools and methods (Zorich 2013; Drucker 2013a). Particularly, there have been significant concerns about technical limitations and costs and the lack of a clear benefit to adopting digital practices (Greenhalgh 2004, 33; Ibid., 36–37). Thus, since Omeka does not offer specific art historical analysis tools or a theoretical framework, there are barriers to its adoption in art historical projects.

Historian users who mainly do not use digital methods for their research will likely find issues in using Omeka as well. A study by Gibbs and Owens, which conducted surveys on existing tool use and panel discussions on seven selected digital tools, revealed insights on historian users who mostly use search functionalities rather than other digital research methods. They preferred tools that streamline existing practices and provide intuitive access to resources. Despite data quality concerns, it was found that they prefer quantity over quality in their research tools, often resorting to simple searches instead of specialized historical analysis tools. Well-received tools offer quick and easy data visualization capabilities, allowing users to seamlessly work with their own datasets (Gibbs and Owens 2012, 2–3). Thus, users who might be used to using a single tool for visualizing data could find the process in Omeka more complicated. In Omeka, different graphs and views might require the integration of different add-ons or an externally sourced solution. Further, the study also shows a reluctance to adopt and continue to use a tool, which often comes from a steep learning curve and the complexity of using a tool (Ibid., 5; Ibid., 7–8). Thus, for a tool to succeed, its learning curve relating to its intended audience must appear surmountable to capitalize on a researcher's initial enthusiasm and optimism in trying new tools and software. Tools must also provide clear guidance and documentation to preserve and encourage user motivation (Ibid., 8–9). While providing manuals and

[83] Examples of Omeka users complaining about slow loading times: https://forum.omeka.org/t/universal-viewer-is-very-slow-to-load/15939, https://forum.omeka.org/t/image-loading-painfully-slow-in-universal-viewer-even-with-openzoom-layers-enabled-how-to-fix/14118, and https://forum.omeka.org/t/accessing-big-images-through-iiif-manifests-is-extremely-slow/17175/10.

documentation is Omeka's strength, the sheer number of resources available, while helpful, may appear difficult to surmount for users. Overall, digital humanities tools can increase their adoption through improved interfaces, more easily understandable documentation, and by setting clear expectations (Ibid., 8).

Overall, one way for improvements to be made to Omeka as a tool for researchers would be through conducting user research. Especially for experts and DH users, studying them in the context of their day-to-day and work activities is ideal instead of in an isolated lab environment (Warwick 2012, 4). The choice and use of a tool will always depend on the project context. There will never be a best tool or universal standard that makes one tool better than another. Often, the best tools are those users are willing to use or invest time in learning. Such tools might not be the most optimal at doing the job, but their value lies in their reusability. In other words, familiar tools and tools users learn make them reusable (Nurmikko-Fuller 2023, 90–91). Omeka can be a reusable tool if a creator plans to continue creating websites with it or intends to create descriptive metadata for future projects. Despite the problems and constraints Omeka has, I propose that online exhibition creators and projects still consider Omeka as it has a lower learning curve than other similar scholarly web-publishing tools such as Scalar and Drupal.[84] Further, it is a tool still updated by its staff and kept alive by its community. These two factors make Omeka an especially attractive choice for projects that want to communicate marginalized or less funded topics, are from undergraduate students that want to publish exhibitions on their specific interests, and are for university courses that aim to teach how to publish an online exhibition. Additionally, ease of use often conceals complexity. Tools that seem the easiest to use and those that promise simplicity will de-emphasize the effort needed to customize or learn a tool. Thus, for digital projects, the choice of tool comes down to where and when human effort should be implemented rather than what tool is the best (Ibid., 99–100). Additionally, projects should determine the clear benefit of a general tool versus where a domain-specific tool would be more beneficial regarding resources.

[84] For more information on Drupal, see its website: https://www.drupal.org/.

4.2.5. Recommendations: DH Exhibitions for Users

This section concludes with a summary of some general best practices and recommendations for creating digital exhibitions. These are by no means meant to be comprehensive but instead deliberately more simplistic and broad to emphasize that any degree of user consideration benefits any digital project with an end-user in mind, regardless of which methodology or digital design sub-discipline an exhibition creator may choose to research and apply.

Therefore, every exhibition should minimally aim to:

- identify, define, and understand the user or user groups that use the finished project.
- map and integrate user behavior into the information structure of a website, i.e., consider how a user might expect and want to explore digital objects and their data.
- create not just one but multiple feasible solutions based on where user behavior and the exhibition's goals intersect.
- test proposed solutions, ideally as early as possible and throughout the entire project, and make adjustments or changes accordingly.
- when testing and prototyping, start with low-fidelity representations of a solution to quickly understand its benefits and trade-offs without investing too many resources (i.e., time, effort, people), and as solutions become more defined, increase the fidelity of tests for each significant change in the process (e.g., paper prototypes -> wireframes -> mock-up -> interactive prototype).
- for basic usability tasks and best practices for user experiences on the web, do not reinvent the wheel (unless the new solution is a significant improvement with a surmountable learning curve). Comprehensive yet often brief and practical usability recommendations, e.g., Nielsen's heuristics and W3C accessibility standards, will most likely already have a standard solution that works for users and is one they are familiar with, e.g., a button should show visual changes when clicked, and a website should be able to be navigated with a keyboard.
- conduct some form of user testing to confirm if a solution works for the intended audience and is specific to their needs.

4.2.6. Conclusion: Omeka Evaluation Framework Results

The main topics of the frameworks have been discussed in the previous sections of the evaluation. Here, I reflect on and summarize them according to the evaluation criteria and findings of the chapter evaluating Omeka through the referenced frameworks:

Category	Criterium	Level of support
User Tasks & Actions	Searching	Yes
	Navigation	Yes
	Learnability	Depends on the implementation
	Customization	Depends on the implementation
	User workload	Depends on the implementation and is low for visitors
	Flexibility	Depends on the implementation
	User control	Low unless customized
Interface	Consistency	Yes
	Design	Depends on the implementation
	Presentation	Depends on the implementation
	Visibility of system status	Yes
	Match between system and the real world	Basic
	User support	Yes
	Guidance	Minimal
Usability	Interaction	Minimal
	User experience	Low
	Language	Yes
	Accessibility	Basic
	Ease of use	Depends on the implementation, user skillset, and user knowledge
	Feedback	Yes
	Compatibility	Yes

	Error management (recovery)	Low

Table 4. My summarized results are noted in the “Level of support” column according to the Hariri and Norouzi digital library interface criteria (Hariri and Norouzi 2011, 716), table v., https://doi.org/10.1108/02640471111177116.

Omeka supports basic user tasks for exhibition visitors, where the effect of the exhibition on the visitor depends on the creator’s implementation. The workload to create an exhibition depends on the creator’s project, resources, and skill set. Omeka has different permission levels and user roles for admin collaborators. The amount of flexibility guest users and visitors have also depends on the settings given to a site. Omeka supports basic interface best practices, e.g., error codes, buttons that react when clicked, documentation, and help resources. While countless helpful resources are available to exhibition creators, Omeka’s guidance on some best practices and standards is minimal and often misguided, e.g., metadata. Further, any design and presentation choices are up to the exhibition creators. At the same time, Omeka’s official themes offer only basic solutions that often do not allow multiple views and have lower levels of interactivity for visitors. User experiences are minimally customizable without add-on integrations, whereas more complex exhibitions require custom-coded solutions or add-ons. Omeka supports multiple languages,[85] basic web accessibility practices, and Omeka products are mostly cross-compatible (i.e., data can be transferred across Omeka Classic, Omeka S, and Omeka.net). Meanwhile, there is no core version history or undo/redo functionality, making edits and significant changes on an Omeka instance difficult for exhibition creators to manage. How “easy” it is for a creator to use depends entirely on their familiarity with Omeka, skill set, and knowledge. Omeka makes publishing a responsive and accessible website easy, which allows less complex exhibitions to be done without coding by simply choosing templates.

[85] See Omeka’s documentation across products: https://omeka.org/classic/docs/Installation/Configuring_Language/, https://omeka.org/s/docs/developer/miscellaneous/internationalization/, https://omeka.readthedocs.io/en/latest/Tutorials/i18n.html, and https://info.omeka.net/build-a-website/manage-plugins/locale/.

Aspect	Influencing factors	Meaning	Sources	Level of support
Content	Matching ability	Match between users' mental models and system regarding function & interaction	[9, 13, 16, 20, 21, 23]	Basic
	Flexibility	Can expand and revise content	[5, 9]	Yes
	Collaboration	Collaborative editing	[5, 9]	Yes
	Disambiguation	Making complex and heterogeneous resources work together	[23, 28] [13,14,15,16]	Depends on the implementation
	Content management	Cost of money, time and labor; Functions of submitting content	[6, 34]	Depends on the implementation
	Completeness	All of the dataset is available and accessible	[13,14,15, 19, 27, 34]	Yes
Technique	Ease of use	Low complexity and intuitive to use	[7, 19, 25]	Depends on the implementation
	Efficiency	Useful and effective support of user goals	[7, 9, 20, 26]	Basic and depends on the implementation
	Proficiency	Required technical skill level(s) of users	[11, 13, 19, 26]	Medium learning curve, depending on the user
	Quality	Functionality of final system	[11, 23, 33]	Yes
	Interoperability	Can share/connect with other systems	[7, 13, 34]	Yes
	Assistance	Support of communities, resources and tool	[12, 13, 17]	Yes
	No code	Full comprehension of the programming code is not mandatory	[13]	Yes
Interface	Visualization	Dynamic and interactive visualization	[5, 9, 24]	Basic
	Language	Multi-language support	[28, 33]	Yes
	Responsiveness	Response speed of webpage	[7, 13]	Yes
	Search support	Varied and effective tools for search and browse	[6, 14, 15]	Yes

Storage	Compatibility	Compatibility with hardware	[26]	Yes
	Sustainability	Long term use and storage	[7, 34]	Basic
	Integrity	Keeps the dataset uncorrupted and unmodified	[7, 14]	Troubleshooting available
	Safety	Privacy protection, preservation of data	[6, 21]	Partially outsourced and unclear
	Funding	Continuous financial support	[34]	Currently stable

Table 5. My summarized results are noted in the “Level of support” column according to the Liu et al. common DH tool problems (Liu et al. 2021, 224), table 3., https://doi.org/10.1007/978-3-030-86324-1_25.

The second framework raises additional criteria on which I will elaborate. Omeka allows multiple users to work in its CMS and administrative interface, where different levels of access and editing rights may be given according to a defined role per user. Omeka can contain various multimedia items, and any object’s metadata can be configured according to a chosen vocabulary. The interoperability and linkability of items depend on how a user integrates metadata and designs a website. The resources necessary to do so will also depend on the unique constraints of a project, its materials, and its size. Generally, smaller exhibitions will require less time and labor, and projects with more resources and heavily involved experts will experience more efficiently progressing projects. Omeka is an open-source tool, and its exhibitions are intended to follow suit, making their data freely available. At a minimum, exhibition creators must familiarize themselves with metadata standards and the Omeka administrative interface. Suppose creators choose to customize their websites by adding more functionalities and creating websites for medium to large collections. In that case, they will need to understand the available add-ons and how to integrate them and set up a database with a hosted server solution. However, Omeka’s strengths are its no-code admin interface and its integration of various external services and tools. Moreover, it has an active community, which provides helpful resources and develops unofficial add-ons. Notably, community developers have created many interactive visualization and item-view add-ons. Omeka exhibitions can be created through a web interface or as locally installed software if

one has the appropriate system requirements. Omeka has some basic sustainability features, such as data exports, and Digital Scholar seems financially independent, no longer depending on periodic institutional support with an expanded portfolio beyond Omeka. Omeka provides basic privacy policies[86] by explicitly stating that they do not sell or transfer user data to third parties or reiterating that they are a non-profit organization. They handle sensitive and private data of their users, such as financial data, the security of which is up to their third-party billing service. Their web hosting and servers are also sourced from a third party. Omeka provides help in their forums through documentation and manuals and by contacting them.

4.3. Evaluation: Omeka Examples

This section answers the question of what the results are in practice. The first part is dedicated to the detailed analysis of the three case studies of Omeka websites. The second part includes and discusses common observations from all Omeka examples included in the bibliography.

I surveyed 31 Omeka projects through their own project publications or reviews, and I have chosen three examples to discuss in detail. While they are not all-encompassing representations of the entire set of projects, they were chosen due to my selection criteria. There lies diversity in Omeka projects in terms of discipline and size. Projects can be from disciplines such as history, libraries, literature, and archaeology. Omeka websites can range from being created by a single user to being created by multi-institutional teams over many years to create a custom solution. Based on my criteria, I chose these case studies to represent early Omeka websites and more recent ones from the past six to four years that are still live. They also each represent a discipline and type of project for which Omeka websites are often created, two library projects created by a researcher, and a history archaeology course website created by students. Further, they are representative because they can be considered small to medium-sized projects with well under 1000 objects and little to no funding, like many Omeka projects.

[86] See the following privacy policies: https://omeka.org/os-privacy-policy/, and https://info.omeka.net/signup/privacy-policy/, and https://forum.omeka.org/privacy.

4.3.1. Marsh's Frost on Chickens & George Washington Carver

This case study analysis and review will cover the first Omeka website Emily Marsh published in 2015, "Frost on Chickens," as well as her most recent exhibition from 2020, "George Washington Carver." Both exhibits are a part of the United States government's National Agricultural Library's (NAL) digital exhibits, where Marsh works as a librarian.[87] By contrasting and comparing the exemplary Omeka exhibits of an experienced Omeka user over time, I aim to understand how its capabilities translate into practice and how this has changed over time. Furthermore, these case studies represent small projects created by a single exhibit creator who does not have prior domain knowledge or expertise and who built the projects with little to no funding. They also represent cultural heritage digital library exhibitions, older and more recent Omeka exhibitions, one of the most well-documented and cited Omeka projects, and projects that are still live.

[87] For more information on Emily Marsh and her work, see her website: https://emily-marsh.com/.

4.3.1. Frost on Chickens

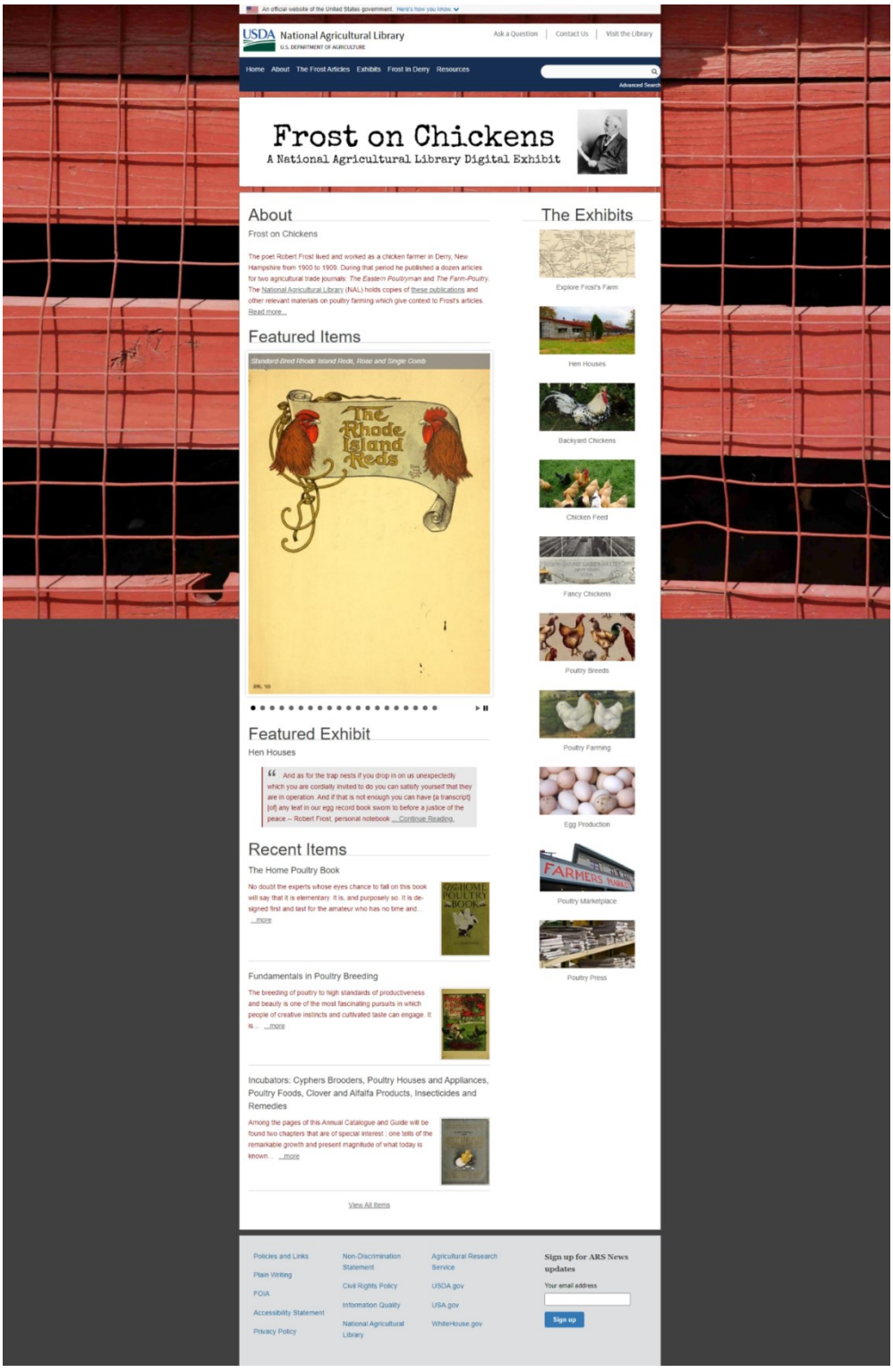

Figure 14. The homepage of "Frost on Chickens," https://www.nal.usda.gov/exhibits/ipd/frostonchickens/.

“Frost on Chickens”[88] is a collection of nine exhibitions showcasing the published works and related material of the author Robert Frost during his time working as a poultry farmer from 1900 to 1909 in Derry, New Hampshire. It gathers Frost’s 12 articles published in poultry trade journals and relevant material on various topics of poultry farming of the time. The exhibition material consists of over 200 full-text digital books, reports, and images from the late 1800s and 1900s and over 100 full-text articles and reports on the work of the U.S. Department of Agriculture’s Agricultural Research Service. The project started when a patron of the NAL inquired about Frost’s poultry trade journal articles. Since the material was out of copyright, Marsh was approached to digitize the articles and create an Omeka digital exhibit for them (E. Marsh 2023, 5). Frost on Chickens contributes to the Robert Frost scholarship by placing his texts on rural life and poultry farming within the context of his other literary work and early life, as well as the state of American agriculture of the time. Marsh qualitatively analyzed and researched the source material to identify its core themes and goals (Ibid., 20–21). The exhibit aimed to be informative, convey the context and significance of the material to casual visitors without prior knowledge of Frost and relate Frost’s work to the landscape of early twentieth-century American agriculture. Its content is structured in ten exhibits, one of which, Explore Frost’s Farm, gives an overview of Frost’s life in Derry.

The nine others follow the subjects in Frost’s stories: Hen Houses, Backyard Chickens, Chicken Feed, Fancy Chickens, Poultry Breeds, Poultry Farming, Egg Production, the Poultry Marketplace, and the Poultry Press. The website’s home page features an About page, which previews the first paragraph of that page, all ten exhibits as thumbnail image previews with titles stacked in a vertical sidebar, an image slideshow of featured items, a text preview of a featured exhibit, and a section for recent items added to the website with the option to view all 294 items. Each page element is interactive and used to navigate to its dedicated page. The horizontal navigation bar at the top of the screen with a search bar below allows visitors to access the following pages: Home, About, The Frost Articles, Exhibits, Frost in Derry, and Resources. The Frost Articles page is dedicated to the 12 Frost articles, provides a brief description of the exhibition, and previews images of the two journals (“The

[88] The “Frost on Chickens” website: https://www.nal.usda.gov/exhibits/ipd/frostonchickens/.

Eastern Poultry Man” and “Farm-Poultry”). The Frost Articles page links to another where all 12 of Frost’s articles are shown in a list overview, each with a preview image, preview text, and tags as links. Another navigation bar at the top leads to a section with browsable tags as a clickable word cloud and a search form with various filters in single-select dropdown menus or text fields. The Exhibits page has the same layout, albeit without preview images for each exhibit listed, and there is no search section at the top of the page.

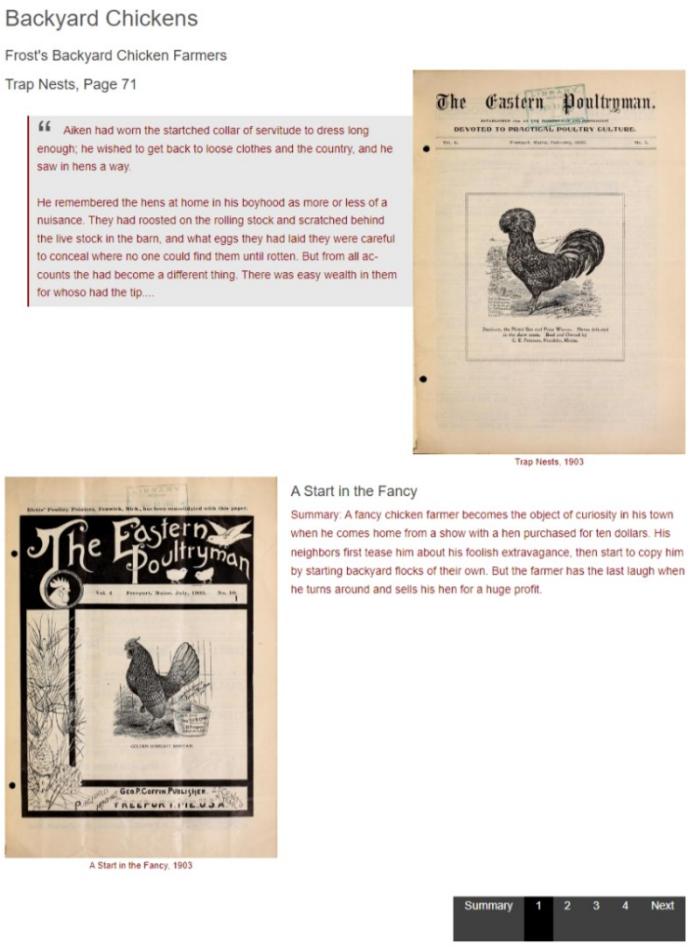

Figure 15. Screenshot of an exhibit’s view (here is the Backyard Chickens exhibit), https://www.nal.usda.gov/exhibits/ipd/frostonchickens/exhibits/show/backyardchickens/backyardchickenfarmers.

Each exhibit starts with a brief description and is structured as a series of numbered pages. Each page is written as an article on a topic, integrating images and quotes (see figure 15). Clicking an image leads to the single-page view of an item with its complete Dublin Core metadata record, browsable tags that link to select elements

within the website, and an external link to the source of an item, which for journal articles links to the full edition of the digitized journal. The Frost in Derry exhibition follows the same structure. Finally, the Resources page lists all primary and secondary resources, states the license and reuse rights, credits Marsh as the creator, and provides a link to contact the NAL for questions. All material on the website is either in the public domain or has no known copyright, and recent work is used with permission. For example, an image of the Frost Farm Museum is licensed using various Creative Commons licenses. The project made a noticeable contribution to the Frost scholarship by digitizing Frost's journal articles and creating a digital exhibition to share and contextualize Frost's articles. Further, Marsh presented the work in a session organized by the Robert Frost Society at the Modern Language Association conference in 2016 (Ibid., 100).

4.3.2. George Washington Carver

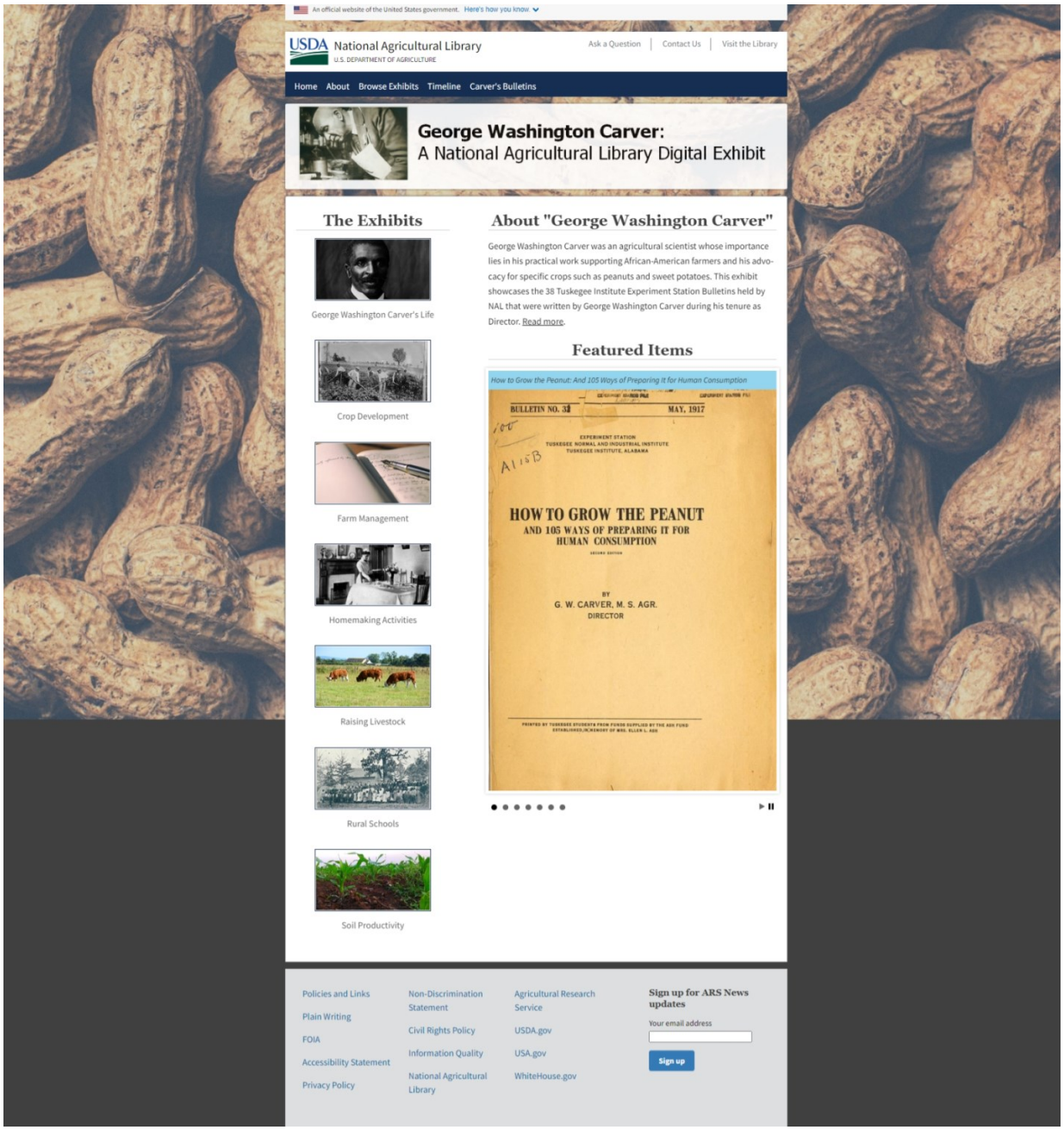

Figure 16. The homepage of “George Washington Carver,” https://www.nal.usda.gov/exhibits/ipd/carver/.

Marsh’s most recent NAL exhibition website displays 38 bulletins from the Tuskegee Institute Experiment Station, written by George Washington Carver, a prominent Black American historical figure representing a success story from being born as a slave to becoming a famous agricultural scientist. He advocated cultivating certain crops to support African Americans, particularly farmers, through education. He

sought to improve their economic and societal standing by acquiring skills and knowledge rather than political agitation. His acceptance and rise to fame through White Americans shaped his legacy. White America heralded him as a symbolic figure of improving racial relations and progress despite Carver's lack of explicit involvement in racial politics (Britannica 2024). The GWC exhibition[89] includes selected historical United States Department of Agriculture (USDA) publications relevant to the Bulletins (E. Marsh 2023, 61). Each of the seven exhibitions is dedicated to a topic: Crop Development, Farm Management, Homemaking Activities, Raising Livestock, Rural Schools, Soil Productivity, and the overview exhibition entitled Carver's Bulletins. The aim was to provide informative exhibitions that convey historical significance while contextualizing the source material and relevant additional material, such as the photographs by Frances Benjamin Johnston, which the Library of Congress has digitized. Johnston took pictures of the student body and faculty where Carver worked (formerly Tuskegee Institute and now Tuskegee University) and documented Carver and his students at the time when he published the bulletins (Ibid., 105; Ibid., 107). Marsh notes how she faced the challenges of dealing with sensitive topics, such as racial discrimination and power relations, while creating the exhibition. She had to consider issues relating to Carver's legacy, such as his "significance as a scientist," the racial discrimination he and his supporters faced, and how his legacy might have been elevated to being a "safe" and "comfortable" figure by a White society aiming to cover up their racist history. These issues led Marsh to question what contributions this exhibition would make by either demonstrating "racial diversity" and "equality" or adding to the misleading narrative of Carver as an "unthreatening symbol of black agriculture" (Ibid., 107).

This exhibition website's layout is almost identical to Marsh's Frost on Chickens exhibition. The home page provides a text preview of the About page, shows all seven exhibits in a vertical sidebar row with preview images, and includes an image slideshow of featured items. The top horizontal navigation bar consists of the following pages: Home, About, Browse Exhibits, Timeline, and Carver's Bulletins. Noticeably, the GWC has no search bar below the navigation bar, so items cannot be queried using their metadata. This makes navigating the website difficult for users

[89] The George Washington Carver exhibition website: https://www.nal.usda.gov/exhibits/ipd/carver/.

who want to access specific items. The About page describes the exhibition website, outlining the different topics per exhibit and linking them to each one. The page integrates an image item and quote, credits Marsh as the creator, and provides the NAL contact link for questions. It clarifies that all material is either in the public domain or not under copyright. The Browse Exhibits page shows image previews for each exhibition with expansive quotes compared to the “Frost on Chickens” page, which provides a simple text list. Further, GWC links have been made explicit for the exhibition titles as they are underlined as another entry point to an exhibition’s pages. An exhibition follows the same structure Marsh used previously, with a series of pages that can be navigated from a numbered page menu at the bottom of a page. However, the Tags and Search navigational sections are not displayed, and there is no dedicated link to browse all items.

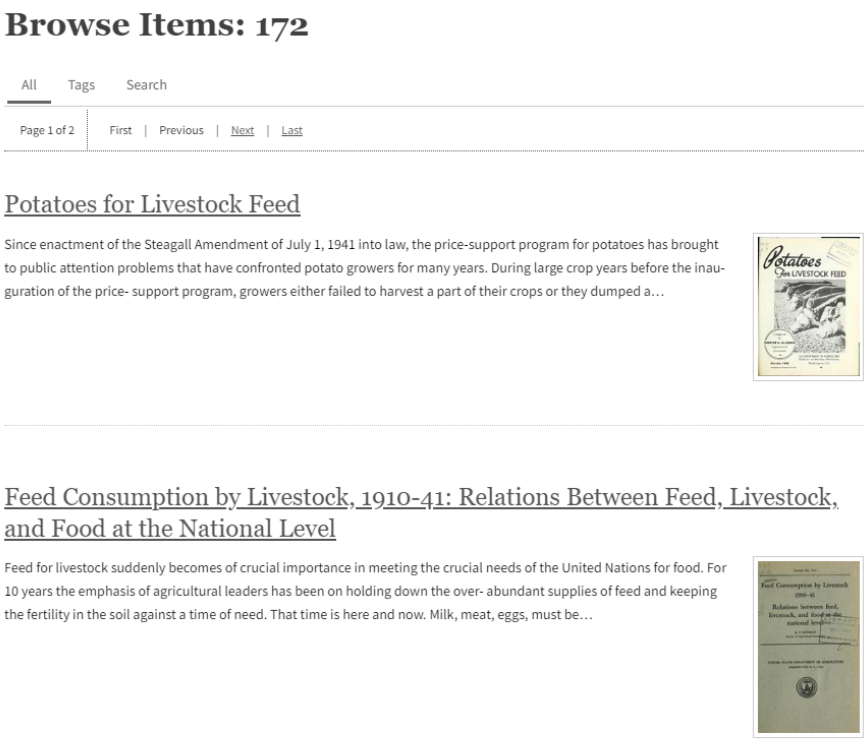

Figure 17. The view of all items in the website (truncated), https://www.nal.usda.gov/exhibits/ipd/carver/items/browse.

To access the browsable list of all items, a visitor must click on an internal Omeka item such as the image preview of a Carver Bulletin (i.e., an image that does not link to an external location), click on a tag such as a link from the “subject” metadata

element that leads to a list of items with that tag, click on another navigation item to switch views (either “Tags” or “Search”), and then finally click on “All” to view the list of all items on the website. Accessing a list of all items reveals 172 items on the exhibition website (see figure 17). Still, since the search field has no metadata filter, users cannot see that Dublin Core is the ontology being used or its listed metadata elements without inspecting the webpage’s HTML code. This information might not be necessary for casual users or users visiting the site for browsing purposes. However, expert users who want to find and reuse this data would benefit from knowing which categories and structures metadata has. Single-item views are the same as the Frost website. The Timeline page should display a timeline of select items, but currently, it does not work. It shows an empty page with the heading “Timeline.”

4.3.3. Compare & Contrast

Despite being created five years apart, both the information structure and item presentation for both websites are almost identical. While they feature About pages, the project documentation is relatively brief, but more details about the process of creating the projects can be found in Marsh’s project publications (E. Marsh 2017; E. Marsh 2023). Further information explaining how the material was handled as data for modeling, the digitization process, and any other software that was used besides Omeka would have been desirable. There could be multiple reasons for the lack of technical documentation, such as lack of resources or time. However, based on the information provided by the project and Marsh, it is impossible to pinpoint a definitive reason. Understandably, the Frost exhibition has no linked data integration, as it was published before Omeka S was launched. However, GWC and the Frost website link to external resources and use linkable tags for users to explore item categories. Regarding integrated online access, between the item’s records and their digital surrogates in the exhibition website, it seems unclear when items are a part of the Omeka GWC exhibit or are shown and referenced as an external resource, for example, the Library of Congress. Furthermore, the referenced NAL records link to their information in the Internet Archive website, not a NAL catalog. The Internet Archive data, further, links to the Biodiversity Heritage Library (BHL) and is not a NAL record. I cannot determine why this is the case from the project’s information. However, it might be because the NAL joined the BHL consortium and shares its

collections.[90] Both the Internet Archive and BHL data still credit the NAL as a contributor, rights holder, or source. Thus, while all sources and relations between items are linked, it can be confusing for users to determine their locations and distinguish between item sources. There is no single entry point for users to explore the records and Omeka items; however, all Omeka items are linked to their available records and sources.

Both Frost on Chickens and GWC have characteristics of the information-oriented and object-oriented exhibits discussed in the Orientations section - with less emphasis on user interaction. They use the same page elements to create primarily static previews and overviews through image thumbnails and paginated lists. Both are more focused on close readings and provide interesting overviews via the narrative pathways of the topic exhibitions. GWC should have had a more interactive timeline overview, but it is inaccessible. The ability to select, save, and compare items on one screen in the exhibitions would have allowed users to gain a deeper insight into object relations. I found myself flipping back and forth between items to see how they compared and were connected. The exhibitions were created under the constraints of Omeka's core functionalities and did not seem to integrate unofficial add-ons. No crowdsourcing or active community functionalities were incorporated into either website, yet they were small projects and did not state that audience engagement was a goal. Both websites' design and user experience are very similar. They provide resources where the intended audience, a casual user with no prior subject knowledge, can become informed on, identify, and interpret exhibition objects through their display, contextualization, enrichment through additional information, and relevant material.

There are minor usability concerns, and the sites may not be very engaging to users as they have no "generous" interfaces. However, they both use interactive elements such as the homepage slideshows and multimedia embeddings of images and quotes. Further, the narrated curated pathways structure of the exhibitions is appropriate for casual users. The search functionality lists some descriptive

[90] An announcement of the NAL joining the Biodiversity Heritage Library consortium: https://blog.biodiversitylibrary.org/2017/09/biodiversity-heritage-library-adds-the-national-agricultural-library-as-a-new-member.html.

categories, even though no items are available; for example, the Frost website's "Search by Type" category has no items in the "Moving Image" category. Some pages show a tags section, such as the Frost website's Exhibits overview page, even if no tags are available. Finally, most pages show no navigational history; there are no breadcrumbs, so if users want to navigate back to previous pages they viewed that are not listed in the main navigation menu, they either must use their browser's back button to exit or continue exploring items through links.

Regarding accessibility and availability, both websites are mostly web-accessible, meaning people with disabilities can use them but could provide more data availability. The GWC website, for instance, has no resources page where all material is listed, unlike Frost on Chickens. With no search bar or easy access to view all items, it is difficult for GWC users to assess the scope of its content. Further, reusability could be enhanced for both exhibition websites by adding download and export options for metadata and tabular data formats such as CSVs for researchers. The websites comply with most basic web accessibility needs, such as adequate color contrast, text size, and keyboard navigability.

The WebAIM WAVE (web accessibility evaluation tool) further detected a few accessibility concerns for users navigating the websites with screen readers. Some text that describes images (known as alternative text) would be identical to its title attribute, making it redundant for visitors using screen readers. Some pages skip heading levels, which can be confusing when the structure is read aloud, e.g., heading three is followed by heading five, not four. There are also some empty text elements throughout the site where no text is shown, but the code indicates it should be present. Further, the GWC website often does not tag the first list element as a list item. Lastly, neither project has explicitly stated its sustainability or future plans, but I assume they will likely remain stable as they are under national funding.

4.3.2. Medieval London

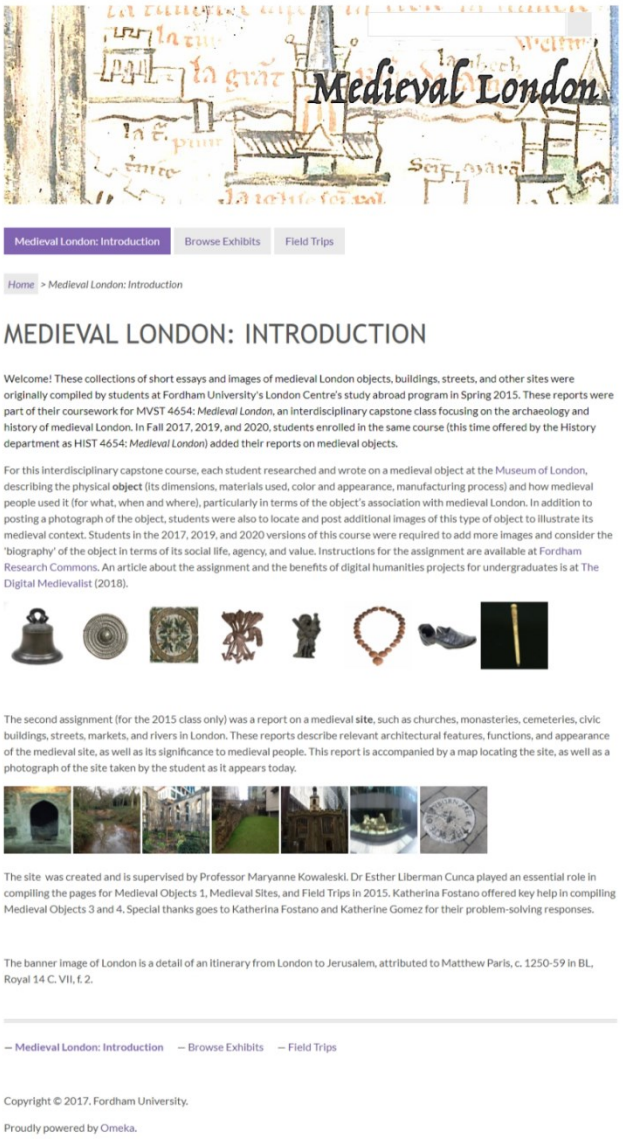

Figure 18. The homepage of "Medieval London," https://medievallondon.ace.fordham.edu/.

The third case study results from a history and archaeology course on medieval London taught at Fordham University by Maryanne Kowaleski and Esther Liberman Cuenca. The course was first taught in 2015, then in 2017, 2019, and 2020, where each iteration integrated its work into the original Omeka website[91] (Cuenca and Kowaleski n.d.). The aim was for students to actively contribute to and understand the source material by creating digital exhibitions. Further, they would collaborate on

[91] The "Medieval London" Omeka website link: https://medievallondon.ace.fordham.edu/medievallondon.

a digital humanities project, giving them hands-on experience in an interdisciplinary project and putting methodology into practice. Cuenca and Kowaleski combined offline field trips with online research activities and assignments (Cuenca and Kowaleski 2018, 2). The course included lectures, field trips, and guided tours.

Students were given two assignments that allowed them to experience the material culture of a medieval city and introduce them to using DH tools by creating work that would be embedded into Omeka as exhibits: an Object Report and a Site Report. For the Object Report, students were tasked with selecting a physical medieval-period object from a list compiled by the instructors sourced from the collection at the Museum of London. They were instructed to research and write a report, including images and adding item metadata. The objective was for students to understand the object's use and materiality in a historical context, and reflect on digitally capturing and historically contextualizing an object (Ibid., 3–4).

The Site Report (only included in the 2015 course with the London Centre's study abroad program) had students choose a site (medieval buildings, streets, landscapes, and rivers) in London from another list compiled by the instructors and write a report with ". . . focus on the preservation, evolution, and impact of a London site, . . ." (Ibid., 5). Reports had to contain an image of the site in its current state resulting from the student visiting it in person during the course's program in London and a map of its location. Furthermore, the course had a dedicated focus on teaching students the use of valid metadata standards through its integration of nine Dublin Core elements (title, subject, description, source, publisher, date, contributor, rights, and type) where the "subject" field options were limited categories created by the instructors (Ibid., 6).

The website follows a simple Omeka website layout utilizing the Minimalist theme.[92] The homepage displays a search bar at the top and horizontal page navigation below, listing the home page and introduction page Medieval London: Introduction, Browse Exhibits, and Field Trips. Below the navigation, the website's introduction page outlines the course project, its history, and its process, and it adds some small

[92] Omeka Minimalist theme: https://omeka.org/classic/themes/minimalist/.

square images of objects and sites arranged in a row. The bottom of the page links the navigation pages again and states that the website's copyright holder is Fordham University. Five exhibitions (stored in Omeka as collections) can be browsed as a list with each item stating its title, a short description, an image preview of an item in the exhibition, and its applicable tags.

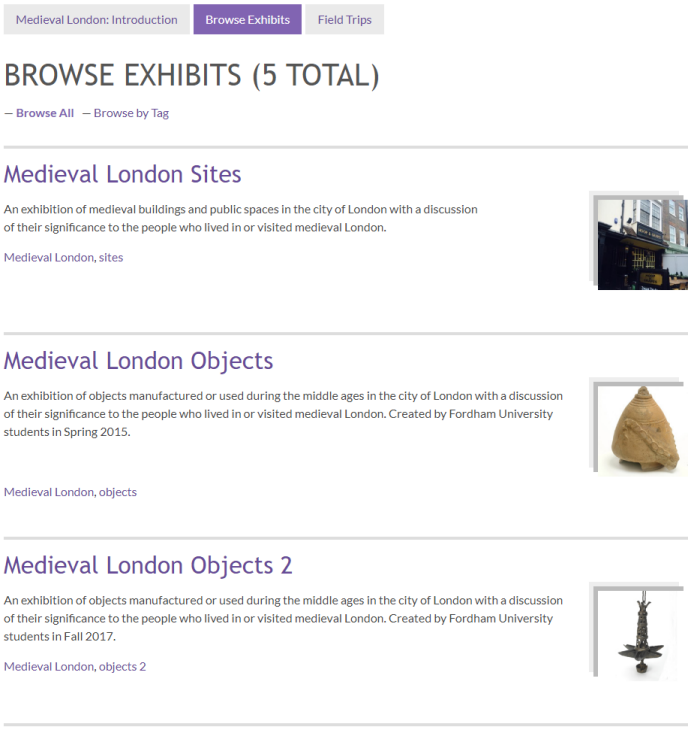

Figure 19. A screenshot of a truncated view of the Browse Exhibits page, https://medievallondon.ace.fordham.edu/exhibits.

However, as shown in figure 19, each tag is either unique to the exhibition (for example, the exhibition Medieval London Objects 2 has the tag "objects 2") or is present in all exhibitions (such as the tag "Medieval London"). Thus, these tags currently make browsing the exhibitions by the "Browse by Tag" section redundant in the exhibition browsing navigation. An exhibition's page repeats its introduction, adds the course name as a credit, and lists all objects or sites as linked text elements stacked in a right sidebar. Following a link leads to an Object or Site Report structured as text articles crediting the student who wrote it. Other objects or sites can be browsed by a grid arrangement of object or site titles as buttons, and the next object or site can be navigated by clicking its linked title with an arrow at the bottom of the page. Reports are enriched through relevant image previews of items that lead

to their full detailed view with metadata upon interaction. These single views contain the item's DC metadata, link to internal or external resources, and may provide browsable linked tags. Other items related to the object or site are previewed as list items with titles, images, and descriptions. Opening the "View all items" link leads to another list overview with item previews where users can sort items by title, creator, and the date an item was added. The list overview also displays more options where users can browse by a word cloud of tags or use a search form with filters to query the items. The Field Trips page provides a brief text introduction and lists all trips as bullet point list links. A field trip is a collection item that lists its metadata, links to any resources, and shows related items in the same layout as the object and site exhibitions. The same structure applies to the "View all items" overview and the detailed single-page view of an item. The website uses this structure to organize each field trip topic as a collection, where each collection item is a field trip with images.

The project is still live, and the documentation is available online as a *Digital Medievalist* journal article (Ibid.). Further, the article and the course syllabus are linked on the home page in the project introduction. Students were encouraged to engage with the material in multiple ways and create multimedia interdisciplinary exhibits by contributing and focusing on their items while also considering the historical context and context within the exhibitions. Students were deeply involved, and their research, texts, additional material, and metadata shaped the exhibition's content. Instructors provided guidance for choosing items and emphasized the importance of metadata standards. Students could contribute to the scholarship by enriching and contextualizing existing digital material on medieval London while reflecting on the history and contemporary significance of the objects and sites. Sources and credits are added to all material, either as links or names. Each student is credited as a contributor for the text they wrote and any item to which they added metadata. The exhibition instructors are credited on the homepage and throughout the Field Trips pages. Special thanks are extended in the project introduction to a digital scholarship curator from Fordham University's art history department and to another student.

Concerning data and linkability, data availability is provided for each item, where users may choose an output format to view and download. The reuse restrictions are clear for externally sourced items; each informs users of their license. The rights for items created for the course website can be unclear. For instance, images taken by students list their names in the rights. The assumption is, however, that all such material is under copyright and not reusable or not openly reusable without permission by a rights holder or Fordham University. All external resources are linked, and most that are displayed are, naturally, under various licenses that allow sharing. Furthermore, relationships between physical objects, records, and items are made explicit. Dedicated metadata has been added to all items, and links make relations. While the instructors and the course intently focused on conveying the standardized use of metadata to students, some uses seem questionable. DC elements are also used to describe field trips, which is most likely done to structure the events according to Omeka themes meant for exhibition objects and collections. Nevertheless, as they are entered as DC elements, some, thus, technically violate the 1:1 rule where, for instance, the Canterbury Field Trip[93] date element lists the date of the field trip, the date of the cathedral, and the date of Canterbury as a place. Some metadata created by students show inconsistencies, where some empty elements are displayed, and date formats are inconsistent.

While intended as a learning process and pedagogical exercise, the exhibition does not consider users per se but is oriented towards being informative and focusing on objects. Items can be identified by their metadata, displayed in collections, and enriched and contextualized by the student reports. The students, as creators, could understand, interpret, and engage with the material throughout the course. In this respect, the student creators were the intended users, making the confusing categorization of collections versus exhibitions not a major issue. For example, exhibitions are called “exhibitions” and “collections” interchangeably on different pages. Further, if the website were meant to be shared with non-experts beyond the course, some interface adjustments would be beneficial. When exhibitions are listed with an image preview of an item, clicking it should lead to the item, not the exhibition.

[93] https://medievallondon.ace.fordham.edu/collections/show/84.

MEDIEVAL LONDON OBJECTS:

Alembic | Anchor | Baselard | Battle-Axe | Carved Shield of the Arms of England and France | Cauldron | Chain Mail | Chalice | Chrismatory | Church Bell | Coin: Penny | Comb | Cooking Pot | Crucible | Disc Brooch | Drinking Horn | Flesh Hook | Floor Tile | Game Piece | Grave Slab | Headdress Frame | Ice Skates | Knife | Livery Badge | Mace | Money Box | Pilgrim Badge | Pipkin | Rosary | Scabbard | Seax | Shoe | Spectacles | Stained Glass Window | Stylus | Sword | Urinal

MACE

The mace, which gets its name from the Middle French *masse d'armes* and the Latin *mateola*, originally referred to an agricultural implement. The mace is a type of blunt weapon that was popular for close combat, especially during the medieval period. It is a weapon of a relatively simple design and evolved from the club, which is considered to be the simplest, and perhaps even the first form, of weaponry. The mace, however, differs from the club in that, rather than being merely a large stick with which to strike an opponent, it is a large stick with an even heavier material attached to the top, thus allowing the wielder more striking power. These heads are usually crafted from stone or some form of metal, such as copper, bronze, iron, or steel, and can contain protrusions in order to allow the mace to penetrate heavier armor. The frequent use of the mace led to the creation of more protective forms of armor towards the end of the Middle Ages.

This particular mace, on display in the Museum of London, seems to be typical of those used for purposes of combat. Although the handle is a replica, the head of the mace was crafted from iron, sometime in the 1400s. The weapon is 550 mm in length and 105 mm in width, and was capable of delivering a debilitating strike to an opponent. As one can see, it sports multiple flanges, thus allowing the bearer to pierce heavy armor. It was likely unearthed in the Greater London area.

It is unclear when, exactly, the mace came into existence as a weapon distinct from its predecessor, the club, though we do know it has been in existence for a very long time. Another exhibit within the Museum of London shows a stone mace head from c. 2,900 – 2,100 B.C.E., which suggests that the weapon is of great antiquity. The mace was used as a weapon during the Norman Invasion of 1066. In the Bayeux Tapestry, Odo, the Bishop of Bayeux and half-brother to William the Conqueror, is depicted riding into battle wielding a mace. Although one may not necessarily think of a Bishop as taking on a combative role, the blunt force of the mace would not shed blood (only internal bleeding), and as a result provided a loophole in which religious men could still fight. Maces were used throughout the Middle Ages, as they were one of the more effective weapons for close quarters combat with a heavily armored opponent. Much like swords, axes, and other medieval weaponry, the advent of gunpowder took the acts of bludgeoning or slicing a foe out of style, though the mace was able to evolve as a weapon with the advent of gunpowder. In the armory in the Tower of London, there is a combination mace and wheel lock pistol, which, in a way, is similar to a bayonet on a rifle in that it would allow an individual to both shoot and bludgeon an opponent to death. Death, however, was not the only purpose of a mace, as they could also be used as a physical manifestation of authority. Ceremonial maces can, and were used by, certain officers in legislative bodies as symbols of their power and status.

- Jackson Welch

This is a depiction of Odo, Bishop of Bayeux, wielding a mace during the Battle of Hastings in 1066. From the Bayeux Tapestry.

This is a combination firearm and mace from the 1560s.

← Livery Badge

Money Box →

Mace

Fig 20. An example of an Item Report where a static text element with the label "Mace" at the bottom of the page is styled like the interactive buttons at the top, https://medievallondon.ace.fordham.edu/exhibits/show/medieval-london-objects/mace.

The Object and Site Reports repeat the title below the content at the bottom of the page in the style of an interactive button (see figure 20), but this is, in fact, a static text element, so simply changing it to a text without a background frame and color would solve this. Moreover, the search functionalities show usability problems that result from Omeka's functionalities that could be improved rather than the creator's implementation. The simple search function, accessible through the top search bar, should allow all DC elements to be queried since, for instance, it does not include values for "type" and "physical dimensions." The advanced search (search with filters) tag browsing word cloud is not scalable for many tags, and as mentioned in Marsh's examples, it also shows item filters that do not apply to any items. However, to work around this Omeka functionality, it appears there are only custom solutions to limit search filters to the characteristics of items.[94]

Finally, while this project serves as the output of practical pedagogical exercises and represents a learning process for students, I will still briefly touch on the accessibility aspects. There are some minor accessibility issues I found with the WAVE WebAIM tool, such as missing alternative text for images, title text elements often being the same as the alternative text, making them redundant for screen reader users, and occasionally skipping heading levels. These are all common problems that were also present on Marsh's websites. These are likely the results of Omeka providing page elements for users to structure but not advising or checking their correct use, as with metadata. Their themes and templates consider concerns such as contrast and text size, but the quality of any customizations or added content (e.g., adding alternative text) is up to the user.

4.3.3. Insights from Omeka Examples

This section gives an overview of the insights gained from all 31 examples and reviews of Omeka projects I surveyed, which shows the features and practical applications Omeka projects tend to have when surveying many projects at a larger scale.

[94] The irrelevant search options problem has been described and discussed in a forum post here: https://forum.omeka.org/t/hide-useless-fields-in-advanced-search/6367/16.

Firstly, the nature of an Omeka website is highly dependent on the size of a project and its degree of customizability. If projects stay within default themes and core functionalities, the resulting exhibitions will have the same structure and layout. Smaller projects tend to use an existing Omeka theme with minor adjustments, which is why most Omeka websites look similar. When some funding is available, projects may opt for an Omeka.net plan to host their website directly with Omeka (e.g., Rankin 2020; Rath 2016) since this is often still more cost-effective than employing a custom-developed solution. Larger projects that span multiple years will typically have been provided some funding. Usually, they may invest in staff, planning their project, and customizing their Omeka project beyond default functionalities and themes. For instance, the Salish Sea Curriculum Repository is an example of a grant-funded multi-year project. The project focuses on the Salish Sea region spanning the United States and Canada and was started by Whatcom Community College (WCC) and Western Washington University (WWU) in 2020. The website displays a collection of open educational resources (teaching material) and an index of related external resources. This project involved three phases of iterative development and design (Ingram-Monteiro and McKernan 2022, 11). Larger projects will also often be naturally driven by larger institutions such as the Metropolitan New York Library Council (Kucsma, Reiss, and Sidman 2010). Additional financial or technology support usually has practical results which can be seen on the website, such as the creation of custom themes (e.g., Boronat 2022; Gareis 2023), emphasis on user experience principles and interface design in a project (e.g., Ingram-Monteiro and McKernan 2022, 1; Ibid., 8; Kucsma, Reiss, and Sidman 2010; Langer 2020).

Omeka can be especially useful for smaller projects that want to free themselves from institutional constraints, where, for example, one expert or librarian can create and manage a project by themselves (e.g., E. Marsh's "Frost on Chickens" published in 2015; Ingram-Monteiro and McKernan 2022, 3; Rankin 2020, 135). Omeka can potentially bypass funding and institutional support issues and enables projects that can be made with minimal costs; for example, Rath paid around 180 USD[95] for their

[95] This does not include the future annual hosting fee, which was 99 USD for their silver plan at the time but is priced at 75 USD today (05.04.2024) according to the current Omeka.net pricing plan: https://www.omeka.net/signup.

entire Omeka.net project (Rath 2016, 164). Additionally, Omeka's partially limited but free options can be useful for instructors teaching courses on metadata, digital exhibitions, and digital humanities projects. Student-driven projects might not create the most well-designed websites (A. C. Marsh 2013, 280), but the aims and results are more dedicated to the experience and learning process of the students rather than the result.

Further, many Omeka websites are library projects (e.g., E. Marsh 2023, 68; Rath 2016) and pedagogical projects (e.g., Cuenca and Kowaleski 2018; Eisel 2023; Gay 2019; Ingram-Monteiro and McKernan 2022; McGrath 2020). Other research areas and disciplines where Omeka websites are used include, for example, digital editions (Goldman 2020; Whitson 2020), history (McGrath 2020; Lozano 2020) and archaeology (Cuenca and Kowaleski 2018), and art history (Zammataro 2018). Across various projects, website creators integrate widely used add-ons such as maps and timelines (Gauthereau 2020; Juzinskas 2023; Lawrence and Arora 2021), and Omeka's use in a technology stack can vary. Instead of only being used as a complete standalone tool to publish a website, Omeka is often combined with other software tools or used in parts. Omeka can be a backend CMS or repository for a project (Losh 2022; Behr 2022; DuVernay and Williams 2023). It is also frequently used with other tools such as Scalar (Hicks-Alcaraz 2020), WordPress (Droge 2021; Mann 2021; Chambliss 2022; Behr 2022; DuVernay and Williams 2023), and Drupal (Antell et al. 2017, 3). Other times, it becomes a website front-end interface solution (Knoth 2022).

A problem Omeka may have is sustainability. Smaller cultural heritage institutions and projects that struggle with digital preservation (Däßler and Preuß 2020, 109–110) may not find their sustainability concerns alleviated using Omeka. Cultural institutions that digitize their material need to establish a long-term strategy to sustain the availability and access to their data. This requires a technical infrastructure with sustainable metadata formats and structures. Instead, projects aiming for long-term sustainability may transfer their Omeka websites to static HTML websites (Takahata 2023). Omeka can reduce costs by allowing creators to build a website for free, increasing the likelihood of sustaining a project. However, the future of Omeka is not explicitly clear, and its hosting services rely on third parties, over which Omeka has

no influence. In my survey of 31 Omeka projects, I observed that most do not explicitly provide information on their sustainability practice or such plans for the future. When sustainability is mentioned, projects state that transferring their project away from Omeka will aid their sustainability efforts. Thus, Omeka might not be a long-term sustainable option for projects that would instead use a solution that explicitly promotes and allows them to plan for a sustainable project.

Finally, some projects show technical struggles and concerns regarding using Omeka. As mentioned, Omeka products, except for Omeka.net, require basic technical knowledge to run a website on a server and know how to install and set up its backend database - Gay (2019) describes the assistance required and the learning process needed. This is likely to be the highest technical hurdle users of Omeka Classic and Omeka S must overcome. However, when a project has limited access to developers or technical representatives, Omeka is typically chosen as a low learning curve tool, especially if the project team consists of undergraduates or students (Whitson 2020). Further, Omeka requires users to have metadata knowledge to implement valid descriptive metadata correctly since Omeka itself does not ensure its quality. Understanding Dublin Core will be a prerequisite, as most projects use the default DC ontology. Omeka, further, does not make data entry and adding items as simple as it might initially seem to a user since, for instance, importing items via CSV has no filing indicators in Omeka.net. This means that a user cannot set a number of characters to be ignored in the title of an item, which, when items are sorted alphabetically, will falsely sort items by articles such as “a/an” or “the” (e.g., *The Canadian Journal of Native Studies* would be sorted by “the” instead of the “c” in “Canadian”). Some elements, like links and special characters, must be reformatted and adjusted to be imported without errors (Rankin 2020, 140). The metadata learning curve of using Omeka can be especially challenging for students in pedagogical Omeka projects (Eisel 2023, 159). Students who are introduced to metadata for the first time through a course may struggle to grasp the topic, and figuring out how to use Omeka is an additional learning curve. Further, instructors may often spend much time at the beginning of a course identifying their students’ varying skill and knowledge levels to see where they need to fill in the gaps. Thus, students require guidance on creating metadata and how metadata creation works within Omeka. Exhibition creators often criticize the time it takes to understand

how to use Omeka and its constraints. There is also a need for clearer explanations and documentation for processes such as setting up and understanding user roles, adding items, and file size limitations (Rath 2016, 165–66). Thus, ideally, Omeka project teams should involve metadata experts such as librarians with digital object knowledge, and projects with some funding might invest in a developer or technical consultant to build their technical solution.

5. Conclusion

5.1. Summary

In conclusion, this thesis examined Omeka, a long-standing platform for digital exhibitions and collections. Its development and product scope has primarily been completed, with only minor updates planned for the future. However, its users and active community contributors keep adding to and updating already existing features.

1. What is Omeka?

This study has gained insights into Omeka and how it is used in practice to publish online exhibitions. I have extensively documented the history of its creation, capabilities, and limitations, effectively answering my first research question. Omeka is, first and foremost, a content management system and database. It allows metadata integrations and no- to low-code website design. It provides core features, settings, and templates to publish online exhibitions. Its features can be extended and customized by installing additional software or developing customized solutions.

2. Which DH projects is Omeka suited for?

This research has shown that Omeka is suitable for exhibition projects that depend firstly on the capabilities of the creator. If the creator implements it correctly, Omeka can publish scholarly exhibitions with valid metadata. The quality of an Omeka website will be determined by its creators' knowledge and skills regarding metadata, using Omeka as a tool, customizations, and technical implementations.

On a multiple object level, Omeka provides different overviews and previews for the presentation of objects, making it most suited for exhibitions focusing on presenting objects or those emphasizing educational goals rather than interactivity. Omeka can

support most basic information visualization user tasks defined by Shneiderman and create simple object surrogates through previews and overviews. However, higher customizability and add-on integrations are needed to create more generous interfaces that allow more advanced browsing experiences with multiple interactive views. Furthermore, Omeka supports close reading/viewing practices, whereas interesting distant methods mainly require add-on installations. Add-ons offer more interactive and complex surrogate views that may enable browsing and distant reading/viewing. Omeka has many add-ons related to close reading/viewing methods that allow annotations, community discourse, and crowdsourcing. As an exhibition creator, any representations and presentations of objects are constrained by the administrative interface functionalities and Omeka's technical limitations. Omeka offers flexibility in a project's choice of add-ons, external compatible software, and creators' capabilities to custom code additional solutions. Moreover, Omeka leans towards object orientation, where object identification, display, and interpretation are the main functionalities encouraged when uploading items. To embed goals of more information-oriented or user-oriented exhibitions, creators must actively dedicate an intent towards creating narratives, enriching and contextualizing objects, providing overviews, enabling browsing, and explicitly communicating information. The platform's default interfaces may limit visitor engagement, whereas the admin interface limits creators, and those who want to shape visitor experiences actively must resort to customization. To actively engage visitors, creators can use crowdsourcing and community discourse features.

Moreover, I discussed the treatment of individual objects by first explaining and expanding on the complexity of humanities data reasoned by its diversity, heterogeneity, and unstructured nature. Exhibitions and digital projects handle information that is often difficult to present and represent, and thus, there are standards to structure, share, and make data useful through implementing interoperability and open data principles. Omeka's default metadata standard is Dublin Core, but it also supports custom ontologies that consist of defined classes and properties. It further supports linked data and relational data structures, yet the valid use of metadata will depend entirely on the user's implementation. With its mainly object-oriented nature, Omeka facilitates the representation of humanities

data by enabling object identification and display through its support of metadata and linked data. However, users are responsible for ensuring valid implementation as a trade-off for ease of use. Materiality is conveyed through multimedia embeddings and integrating multiple object views, yet dynamic content remains linked rather than integrated. Omeka neither explicitly dedicates itself to object materiality nor does it facilitate it through specific features.

3. Which DH projects can Omeka create?

This thesis gained insights by analyzing three case studies and surveying 31 examples of Omeka websites. Omeka can create an exhibition for virtually any discipline while being most suitable for projects containing visual data to present a research object. Further, it privileges descriptive metadata to add information to objects and mainly supports Dublin Core. Thus, Omeka tends to be used in projects where images represent objects, and objects are primarily described by listing their metadata. Contextualizing, curating, and narrating an exhibition relies on views of surrogate objects, whereas more engaging views such as maps, timelines, graphs, and networks require the use of add-ons. Omeka is used by small to large-scale projects, is created by projects ranging from a single creator to multiple teams, and can be a part of a cost-intensive or completely free project. Thus, Omeka can be a viable tool for publishing exhibitions when financial and technical resources are scarce. Creating a quality project will likely require significant efforts by exhibition creators in planning, structuring, and adding items to an exhibition website. Often, creators must invest effort into learning Omeka and its metadata standards. Small to medium-sized exhibitions can benefit from using Omeka if the invested effort and cost are lower than the costs of a dedicated technical staff or agency and if the learnings from creating an Omeka project can be reused or valuable beyond single projects. Moreover, creators will need to evaluate if their material and aims are compatible with a simple exhibition with low-level object-oriented customizations or an exhibition with higher engagement levels that require add-ons or custom solutions.

4. Which users and audiences is Omeka suitable for?

Omeka addresses basic usability, where creators can publish websites for casual

users. They provide templates and default settings that comply with basic web accessibility standards and work across screen sizes and devices. A creator's responsibility is to ensure that their content and any customizations comply with usability principles. When designing for casual users, exhibition creators should consider best practices and guidelines from usability and interface design principles according to predefined user goals or behaviors. If websites consider casual users with no goals, they should provide browsing options. The usefulness of Omeka projects for researcher visitors depends firstly on the published material and secondly on how this information can be accessed through the interface. Search functionalities are helpful, but the scope of an exhibition should be communicated through overviews. Ideally, there would be browsing interaction options for researchers to explore possible objects of interest. Moreover, testing is the only way to ensure usability and confirm design choice assumptions. Researchers and experts generally face the same usability problems as casual users. Hence, interfaces should comply with basic usability principles. Further, for researchers to use tools such as Omeka, they must be clearly beneficial, transparent, and have a surmountable learning curve. A tool's conditions, constraints, and possible results should be communicated quickly, understandably, and phrased in simple language. Domain-specific needs and interoperability should also be considered when designing for researchers. Further, to design an exhibition for an Omeka visitor requires defining them and specifying their needs. While Omeka presents itself as a general tool many people can use, it is only usable and useful to its intended audiences. Thus, exhibition creators need to understand and establish who their project is aimed at and test their assumptions, or else risk creating a website that might not appease anyone. Since, as Krug states," . . . there is no Average User." (Krug 2014, 108).

The evaluation of Omeka examples reveals its use across domains, from small independent projects to larger institutional endeavors. While smaller projects benefit from cost-saving, independence from institutional constraints, and enabling learning opportunities for students, they also encounter challenges related to the platform's learning curve and metadata comprehension. Default settings and templates enable them to save costs and resources but also provide low levels of engagement, which are only sometimes suitable for their material. Larger projects, in contrast, often

involve multiple technologies, larger teams, funding, and more customizations. Through the selected case studies “Frost on Chickens,” “George Washington Carver,” and “Medieval London,” Omeka’s adaptability in facilitating object contextualization and interpretation is evident. These case studies represent library projects published by a single creator and a student-driven historical archaeology course project. While they result in simpler layouts, they enable object contextualization, enrichment, display, and interpretation. These projects further provide a realistic view of a typical Omeka exhibition, where few customizations were added and with the minimal resources available to create it. The projects successfully serve their intended purposes: promoting historical understanding, facilitating student learning, or contextualizing the material of a digital collection.

To answer my leading hypothesis - whether using Omeka for online exhibitions can be beneficial for small to medium-sized cultural collections by offering a viable alternative to custom-coding or outsourcing the creation of a website - Omeka can indeed be beneficial for small to medium projects, if the learning curve for creating an online exhibition can be surmounted. Additionally, Omeka is a viable option for projects where most creators do not have the skills or the resources to code their own websites. Omeka is beneficial when there is a significant margin in the trade-off between the effort and costs needed to create an exhibition using Omeka compared to creating an exhibition with another tool or custom solution. Omeka is beneficial if its downsides and constraints as a tool do not significantly impact the aims and quality of the exhibition. Further, Omeka can be a useful tool when used with others serving the larger purpose of a project. Medium- to larger-sized projects can use Omeka as a part of multiple tools and software, such as a repository, archive, or secondary exhibition website. Omeka cannot remedy or solve the existing problems in any discipline or field, such as sparse project documentation, metadata errors, and project sustainability. Overall, Omeka mostly shoulders the burden of a technical implementation but does not ensure or facilitate the quality of a scholarly project.

5.2. Future Outlook

This study identified and addressed critical problems using digital tools to publish exhibitions across DH and CH. However, the problem of “Default Tools,” which I

proposed in the introduction, will require further research. Instead of adapting solutions from other fields, digital humanities may develop their own tools through multidisciplinary sources according to what aligns with project aims and values. Future research could also address using other standardized tools, such as Drupal and Scalar, and evaluate how much value they bring to published online exhibitions in practice. Studying available tools and their resulting projects in detail may answer questions about which direction tool development should progress, such as: Should we create tools for multiple types of users that prioritize flexibility and customization? Or should we dedicate more resources to creating domain-specific tools? Additional research on exhibition case studies in different domains can illuminate specific exhibition creation and user needs. Moreover, I provided glimpses into relevant topics per referenced discipline. However, further research could be expanded to involve more current topics and areas of study, such as artificial intelligence and other distant viewing methods, such as spatial modeling or pattern analysis, to determine their potential use, value, and consequences. Lastly, this thesis showed the importance of rich interfaces and considering users, which I see as further research that can be conducted for online exhibitions overall and discipline-specific needs. Testing and determining different solutions to present objects will undoubtedly expand the possibilities and willingness of users to interact and engage.

6. Appendix

The tables in the Appendix are selected rows from a web-scraped resource of Omeka add-ons by an active Omeka contributor and developer, “Daniel-KM” (Daniel Berthereau).[96] I excluded any add-ons that have not been updated in ten years, and I last accessed these resources in February 2024.

6.1. Information Visualization Omeka Add-ons

Table A.1. Omeka Classic Browsing Plugins

Plugin	Author	Updated	Target	License	Description
Archiviz-Elasticsearch	Brad Rittenhouse	2023-06-09 (v.1.0.0)	3.0	MIT	Stack of plugins that allows users to digitize text documents, generate tags for important people, places, etc., manage those tags and visualize and navigate their collection through an interactive knowledge graph showing where these important entities intersect.
AvantRelationships	George Soules	2023-11-10 (v.3.1.0)	3.0	GPLv3	Adds functionality for creating and visually displaying real-word relationships.
Block Party	Jeremy Guillette	2022-02-14 (v.1.0.1)		GPL v3	Adds new, useful Exhibit blocks, like groups of Items, Collections, or other Exhibits.
Blocks	Roy Rosenzweig Center for History and New Media	2015-12-14 (v.0.3)	1.0	GPL	Adds blocks/widgets to public display
BookReader	Julien Sicot (upgraded for Omeka 2.0 by Daniel Berthereau)	2023-11-21 (v.2.7)	2.2.2	GNU/GPL	Adds the Internet Archive BookReader (http://openlibrary.org/dev/docs/bookreader) into Omeka and allows to create online flip book from image files constituting an item.
CA Layouts	Rachael Gilg	2017-06-22 (v.1.0)			Extend Exhibit Builder with custom layouts, including a JCarousel slideshow.
CA Timeline	Rachael Gilg	2017-06-22 (v.1.0)			Embed a TimelineJS timeline with a shortcode on an Omeka website.
Carta	AcuGIS	2020-03-08 (v.1.2.2)	2.0	GPLv3	Add Leaflet maps to your pages, exhibits, and collections
Posters	Roy Rosenzweig Center for History and New Media	2018-02-14 (v.1.1)		GPLv3	Create interpretive posters using Omeka items.
Category Tree	History Dept. (RICHES) University of Central Florida	2019-11-23 (v.1.0)	2.0	GPLv3	Gives administrators the ability to create a hierarchical tree of their categories. Adds the ability to assign categories to items, making them easier to categorize and search.

[96] https://daniel-km.github.io/UpgradeToOmekaS/omeka_plugins.html, https://daniel-km.github.io/UpgradeToOmekaS/omeka_s_modules.html.

Collation Builder	Dan McEwan	2019-11-19 (v.0.1)	2.0	GPLv3	Provides a display for visualizing collation data for a manuscript
Collection Tree	Roy Rosenzweig Center for History and New Media	2022-11-07 (v.2.1)	2.0	GPLv3	Gives administrators the ability to create a hierarchical tree of their collections.
Derivative Images	Roy Rosenzweig Center for History and New Media	2023-11-02 (v.2.0)	2.2	GPLv3	Recreate (or create) derivative images.
Enhanced Collections	Bowling Green State University	2023-06-14 (v.0.1.0)	2.0		Adding a layer of functionality on top of Omeka's built-in collections
Exhibit Builder	Omeka Team	2023-12-01 (v.3.6.1)	3.0	GPLv3	Build rich exhibits using Omeka.
Facets	Jean-Baptiste HEREN	2022-09-03 (v.1.0)	2.6.1	GPLv3	Filter search using facets
Favorites	University of Twente	2017-12-11 (v.0.1)	2.1	GPLv3	Adds layered favorites functionality to the platform. When logged in, items can be added to folders. When not logged in, a cookie will keep your favorites for a while.
Geolocation	Roy Rosenzweig Center for History and New Media	2016-07-14 (v.2.2.3)	2.2	GPLv3	Adds location info and maps to Omeka
Geolocation Plus	Roy Rosenzweig Center for History and New Media | Gonzalo Cuesta Marín	2021-02-27 (v.1.0.0)	2.2	GPLv3	Adds location info and maps to Omeka
Geolocation PLUS	Center for History & New Media	2016-03-15 (v.2.1)	2.0-beta		Adds location info and maps to Omeka
Graph	Vincent BUARD (Numerizen) for ITEM / ENS	2020-12-31 (v.0.2)	2.2	GPLv3	Graphic presentation of items, collections and files relations
Item Compare	Numerizen - Vincent BUARD for ITEM / ENS	2020-12-31 (v.0.2)	2.2	GPLv3	Item comparison tool for the E-man Project
Item Views	Patrick Murray-John	2021-02-15 (v.1.0.1)	2.1	GPLv3	Omeka plugin to keep track of item views and display recently viewed and popular items
LC Suggest	Omeka Team	2021-09-21 (v.2.0.4)	2.0	GPLv3	Enable an autosuggest feature for Omeka elements using the Library of Congress Authorities and Vocabularies service: http://id.loc.gov
Lightbox Gallery	Anna Michelle Martinez-Montavon	2019-11-23 (v.1.2.0)	2.0	GPLv3	Adds new gallery, file with text, and book layouts to Exhibit Builder that display files using Lightbox.
MapFig	MapFig	2023-03-04 (v.2.0.1)	2.0	GPLv3	Add Leaflet maps to your pages, exhibits, and collections
Metadata Browser	Kevin Reiss, digitalMETRO project (upgraded by Daniel Berthereau)	2020-02-09 (v.2.11)	2.2.2	GPLv3	Set up public theme browsing display for selected Omeka Elements. Selected browsing choices also appear in sitemap file if XmlSitemap plugin is also installed. digitalMETRO Project [http://nycdigital.org/]
My Omeka	Center for History & New Media	2023-01-28 (v.1.0-dev)	1.3		Adds user favoriting, note taking, and tagging to Omeka items.

Neatline	Scholars' Lab	2023-10-19 (v.2.6.4)	2.0	Apache License, Version 2.0	Plot your course in space and time.
Neatline ~ SIMILE Timeline	Scholars' Lab	2023-01-27 (v.2.0.4)	2.0	Apache License, Version 2.0	Add SIMILE Timeline to Neatline exhibits.
OpenLayersZoom	Daniel Berthereau (upgrade of the release built by Matt Miller)	2023-04-15 (v.2.3)	2.0	GNU/GPL	An OpenLayers based image zoom widget
OpenSeadragon	Digital Public Library of America	2023-01-28 (v.0.3.1)	2.0	GPLv3	Embeds an OpenSeadragon image viewer to provide zoomable images
Orphan	Jason Roma	2017-09-19 (v.0.1)	2.4.1	GPLv3	This plugin allows browsing items with no Collection assigned.
Related Content	Daniele Binaghi	2021-12-05 (v.2.0)	2.0	GPLv3	Suggests Items related to the one currently shown
ShadowPage	Katherine Lynch	2020-07-01 (v.0.1)	2.0		Uses Shadowbox.js to create page-turning functionality for items with multiple image files associated with them
Shortcode Carousel	Omeka Team	2023-03-10 (v.1.0.2)	2.2	GPLv3	Adds a shortcode to insert a carousel item viewer
TEI Editions	King's College London Department of Digital Humanities	2023-04-25 (v.1.0.0-pre8)	2.6	EUPL-1.2	Create and visualise Omeka items based on TEI data
Three JS Viewer	River Campus Libraries	2020-07-30 (v.0.0.4)	2.0	MIT	A three.js viewer in Omeka
Timeline	Omeka Team	2023-09-11 (v.2.0)	3.0	GPLv3	Adds a TimelineJS block to ExhibitBuilder
Timeline	Omeka Team	2022-10-26 (v.1.0)	3.0	GPLv3	Adds a TimelineJS block to ExhibitBuilder
Visuals	University of Twente and Meertens Institute Amsterdam	2016-03-29 (v.0.1)	2.1.2		Provides several additional ways of visualizing data in an Omeka instance

Table A.2. Omeka S Browsing Modules

Module	Author	Updated	Constraint	License	Description
Agile Tools	Agile Humanities Agency	2023-11-23 (v.1.2)	^4.0.0	CeCILL v2.1	Adds blocks and tools for Omeka theming, including page regions, card layouts, and an implementation of Slick Carousel.
Block Plus	Daniel Berthereau	2023-11-27 (v.3.4.20)	^4.0.0	CeCILL-2.1	Add some new blocks for the static pages and improve some of the existing ones (image gallery, D3 graph, mirror page, search form, assets, item set showcase, exhibits, etc.).
CartoAffect	Samuel Szoniecky	2023-11-12 (v.0.1.9)	^4.0.0	CeCILL v2.1	Cartographie des affects
Data Visualization	Omeka Team	2023-12-05 (v.1.1.0)	^4.0.0		Visualize your data

Derivative Images [archived]	Daniel Berthereau	2021-01-04 (v.3.3.7.0)	^3.0.0	CECILL-2.1	Recreate (or create) derivative images.
Diva IIIF Viewer	Daniel Berthereau	2021-03-18 (v.3.3.2.3)	^3.0.0	CeCILL v2.1	Integrates Diva, an advanced, light and themable viewer, in order to display one or multiple images, local or remote, via the IIIF standard.
Exploratory Map	Corey Tegeler	2022-12-02 (v.1.0)			
Faceted Search	Omeka Team	2021-04-05 (v.0.1.0)	^3.0.0		Add faceted search to your sites
Faceted Browse	Omeka Team	2023-12-08 (v.1.4.0.)	^4.0.0	GPLv3	Add faceted browsing to your sites
Favorite	Billxu	2023-01-28 (v.0.0.1)	^1.4.0 || ^2.0.0	CeCILL v2.1	Allow user to add favorite item.
Fields as Tags	Libnamic	2023-08-31 (v.1.1.0)	^4.0.0	MIT	Shows browsable tags based in metadata fields in Omeka S item lists
IIIF Presentation	Omeka Team	2023-07-31 (v.1.0.2)	^4.0.0		Implementation of the IIIF Presentation API
IIIF Preview	GhentCDH	2023-09-19 (v.3.0.2)	^3.0.0	CC0	Display IIIF Viewer in admin item/item-set view
Image With Text		2021-05-09 (v.1.3.0)	^3.0.0	MIT	Display images with text overlaid on them
Item Carousel Block	Omeka Team	2021-03-12 (v.1.2.1)	^4.0.0		Add an item carousel page block.
Item Set Calendar	BibLibre	2023-11-24 (v.0.3.0)	^3.0.0 || ^4.0.0		Browse items of an item set in a calendar view
Item Set Party	BibLibre	2023-11-23 (v.0.1.0)	^3.0.0		Automatic item sets hierarchy based on hasPart relations
Item Sets Graph	Giacomo Nanni	2023-10-11 (v.1.1)	^3.1.0 || ^4.0.0		
Item Sets Tree	BibLibre	2023-10-13 (v.0.7.1)	^3.0.0 || ^4.0.0		Allows to organize item sets in a tree
Menu	Daniel Berthereau	2023-06-13 (v.3.4.8)	^3.1.0 || ^4.0.0	CeCILL v2.1	Create multiple menus, for example a top menu, a sidebar menu and a footer menu, or any structure anywhere.
Mirador Viewer	Daniel Berthereau	2023-05-16 (v.3.4.7.16)	^3.0.0 || ^4.0.0	CeCILL v2.1	Integrates Mirador, an advanced viewer, in order to display one or multiple images, audio, and video, local or remote, via the IIIF standard.
Network Map	Corey Tegeler	2022-12-02 (v.1.0)			
PersonalNotebook	BibLibre	2023-09-29 (v.0.1.0)	^3.0.0 || ^4.0.0		Allow users to take personal notes about Omeka resources
Random Items Block	BibLibre	2023-09-29 (v.0.3.0)	^3.0.0 || ^4.0.0		A page block layout to display random items
ResourceTree	Cooba corporation	2023-03-30 (v.2.1.0)	^3.0.0		create hierarchical relation of resources.
Search History	Daniel Berthereau pour la Fondation Maison de Salins	2023-09-08 (v.3.4.4)	^3.1.0 || ^4.0.0	CeCILL v2.1	Allow user to save search and to callback it via the guest account.
Search Solr (archived, replaced by Search Adapter for Solr)	Daniel Berthereau (forked from module Solr of BibLibre)	2021-04-14 (v.3.5.13.3)	^3.0.0	CECILL-2.1	Search Omeka resources instantly and deeply with Lucene / Solr
Selection	Daniel Berthereau	2023-06-08 (v.3.4.6)	^3.1.0 || ^4.0.0	CeCILL v2.1	Allow any visitor to store selected resources or search queries through sessions and to export them to common formats.
Simple Carousel	Jonathan Candelaria (Maintaing Project)	2023-06-14 (v.1.3.0)	^4.0.0	MIT	Display carousels into pages
Simple Reference	Artefacto	2021-05-21 (v.1.0.0)	^3.0.0	MIT	Display reference of all items by year range
Storymap	Alan Stanley	2021-04-14 (v.3.4.4)	^1.2.0 || ^2.0.0	CeCILL v2.1	Integrate the Knightlab Storymap to create advanced storymaps from the geocordinates of items.
Timeline	Daniel Berthereau	2023-02-09 (v.3.4.18)	^3.1.0 || ^4.0.0	CeCILL v2.1	Integrate the Simile Timeline and the Knightlab Timeline to create advanced timelines from the dates of items.

6.2. Close & Distant Reading/Viewing Omeka Add-ons

Table A.3. Omeka Classic Annotation Plugins

Plugin	Author	Updated	Target	License	Description
Ngram	Roy Rosenzweig Center for History and New Media	2023-01-17 (v.1.2)	1.2	GPLv3	Generate ngram graphs from your collections
Text Analysis	Roy Rosenzweig Center for History and New Media	2017-07-06 (v.2.5)	2.5	GPLv3	Analyze your corpora using text analysis services. (Create corpora using the Ngram plugin.)
Text Annotation	Omeka Team	2023-03-10 (v.1.0)	0.2	GPLv3	Allows for annotation of text content on a page using the Hypothes.is webservice.
Exhibit Image Annotation	Omeka Team	2021-09-21 (v.1.2)		GPLv3	Annotate images in your exhibits.
Annotator	Erin Bell	2023-01-28 (v.1.0.1)		GPLv3	Adds hypothes.is scripts to Omeka items and collections, allowing registered hypothes.is users to highlight and annotate text.

Table A.4. Omeka S Annotation Modules

Module	Author	Updated	Constraint	License	Description
Scripto IIIF	BibLibre	2023-10-03 (v.0.2.0)	^3.2.0 || ^4.0.0		Expose Scripto content as IIIF annotations
Annotate	Daniel Berthereau for EHESS	2023-06-26 (v.3.4.9)	^3.1.0 || ^4.0.0	CECILL-2.1	Implement the W3C Web Annotation Ontology to let users annotate, tag, comment, rate, highlight, draw, etc. any resource in a normalized way.
Annotate images and maps (Cartography)	Daniel Berthereau for EHESS	2023-06-13 (v.3.4.2)	^4.0.0	CeCILL-2.1	Allows to annotate images and to locate data on standard wms maps with the w3c web annotation data model and vocabulary.

Table A.5. IIIF Omeka Classic Plugins

Plugin	Author	Updated	Target	License	Description
IIIF Toolkit Embed	Jeremy Guillette	2023-08-07 (v.1.1)	2.3	Apache License 2.0	Adds a customizable, embeddable Mirador viewer page to show content from IIIF Toolkit on other sites
IIIF Toolkit	University of Toronto Libraries	2021-05-27 (v.1.1.0)	2.3	Apache License 2.0	Embeds Mirador with a built-in annotator, a manifest generator and importer, Simple Pages shortcodes and Exhibit Builder blocks for a rich IIIF-compliant presentation experience.
Mirador	Kent State University Libraries	2019-11-13 (v.2.2)	2.0	GPLv3	Mirador Viewer for TIFF images
UniversalViewer	Daniel Berthereau	2023-09-11 (v. 2.6.0-beta.2)	2.2.2	CeCILL v2.1	Integrates the IIIF specifications, a simple IIP Image Server and the Universal Viewer in order to create carousels of virtual books from image files and to display any media file (pdf, audio, video, 3D…) in a unified player.
IIIF Toolkit Annotation Remapper	University of Toronto Libraries	2021-05-27 (v.1.0.0)	2.4	Apache-2.0	Tool for batch-remapping annotations from one manifest to another. Requires IIIF Toolkit.

IIIF Manifest Filter	Daniel Berthereau	2020-07-01 (v.2.0.1)	2.2.2	CeCILL v2.1	Manage the hook (event) `uv_manifest` of the plugin Universal Viewer to modify the IIIF manifest from a theme file.
IIIF	Klokan Technologies GmbH	2020-04-16 (v.1.1)	2.3	GPLv3	IIIF Storage Adapter, items with images from IIIF, zoomable viewer, upload to IIIFHosting, manifest.json
IIIF Toolkit / IIIF API Synchronization Bridge	University of Toronto Libraries	2018-04-05 (v.1.0.0)	2.4	Apache-2.0	Plug-in for synchronizing IIIF Toolkit changes with IIIF API.

Table A.6. IIIF Omeka S Modules

Module	Author	Updated	Constraint	License	Description
Mirador Viewer	Daniel Berthereau	2023-05-16 (v.3.4.7.16)	^3.0.0 || ^4.0.0	CeCILL v2.1	Integrates Mirador, an advanced viewer, in order to display one or multiple images, audio, and video, local or remote, via the IIIF standard.
Mirador	Brumfield Labs, LLC	2020-06-08 (v.1.0.0)	^2.1.2	Apache	
Iiif Search	bubdxm, improved by Daniel Berthereau	2018-12-10 (v.3.4.5)	^3.1.0 || ^4.0.0	GPL-3.0-or-later	Search api for IIIF compliant viewers (Universal Viewer, Mirador, etc.)
IIIFHosting	Klokantech	2018-10-25 (v. 1.0.0-beta)	^1.0.0-beta3		IIIFHosting connector
FIT	FIT Library Digital Initiatives	2023-12-01 (v.1.1.8)			Makes some modification to Omeka-S to work with FIT Library's digital infrastructure and to play well with Archivematica. Modifies IIIF ingest. Adds new data types.
IIIF Server	Daniel Berthereau	2023-11-23 (v.3.6.15)	^3.1.0 || ^4.0.0	CeCILL v2.1	Integrates the IIIF specifications to allow to share instantly images, audio and video.
Image Server	Daniel Berthereau	2023-11-21 (v.3.6.15)	^3.1.0 || ^4.0.0	CeCILL v2.1	Simple and iiif compliant image server to process and share instantly images of any size in the desired formats.
Pyramid Image Builder	BibLibre	2023-09-29 (v.0.1.0)	^3.0.0 || ^4.0.0		Build pyramid images for Omeka S media, useful for IIIF Image servers
IIIF Preview	GhentCDH	2023-09-19 (v.3.0.2)	^3.0.0	CC0	Display IIIF Viewer in admin item/item-set view
IIIF Presentation	Omeka Team	2023-07-31 (v.1.0.2)	^4.0.0		Implementation of the IIIF Presentation API
IIIF Viewers	Satoru Nakamura	2023-03-23 (v.1.2.1)	^3.0.0 || ^4.0.0	CC0	Add links of IIIF Manifest and Viewers.
IIIF Search (External)	Satoru Nakamura	2022-02-11 (v.1.0.0)	^3.0.0	CC0	Add the url of the search api to the manifest.
IIIF Download	Satoru Nakamura	2022-02-10 (v.1.0.1)	^3.0.0	CC0	Add a download button for images from iiif manifest.
Diva IIIF Viewe	Daniel Berthereau	2021-03-18 (v.3.3.2.3)	^3.0.0	CeCILL v2.1	Integrates Diva, an advanced, light and themable viewer, in order to display one or multiple images, local or remote, via the IIIF standard.

6.3. Interface Omeka Add-ons

Table A.7. Omeka Classic User Engagement Plugins

Plugin	Author	Updated	Target	License	Description
Contribution	Omeka Team	2023-02-10 (v.3.3)	3.0	GPLv3	Allows collecting items from visitors
Corrections	Patrick Murray-John	2020-11-21 (v.1.0)	2.0	GPLv3	Adds simple user-supplied corrections to metadata.
Commenting	Omeka Team	2021-09-24 (v.2.4)	3.0	GPLv3	Allows commenting on Items, Collections, Exhibits, and more

Intense Debate	Erin Bell	2021-09-03 (v.1.0.2)	2.8		Embed Intense Debate comments on item and/or collection templates. Comments are moderated at intensedebate.com (account required).
Disqus Engage	Erin Bell	2021-09-03 (v.1.0.1)	2.8		Embed Disqus comments on item and/or collection templates. Comments are moderated at disqus.com (account required).
Participate	Franck Dupont - Limonade&Co <technique@limonadeandco.fr>	2021-02-15 (v.0.1)	2.2	GPLv3	Provide the ability to send files and comments to administrator
Disqus	Scholars' Lab	2017-06-15 (v.1.3-0.1)	1.3		Add Disqus comments to Items
CrowdEd	Garrick S. Bodine and Stephanie A. Schlitz	2020-10-21 (v.0.8.1)	2.0-RC1		Adds ability for crowd-sourcing metadata of Omeka items.

Table A.8. Omeka S User Engagement Modules

Module	Author	Updated	Constraint	License	Description
Comment	Daniel Berthereau (port and improvement from the RRCHNM Omeka Classic plugin)	2023-11-23 (v.3.4.13)	^3.1.0 || ^4.0.0	CeCILL v2.1	Add public and/or private commenting on item sets, items and media and manage them.
Contribute	Daniel Berthereau	2023-09-11 (v.3.4.23)	^4.0.0	CECILL-2.1	Allow guest users or visitors to add a resource and to edit and complete metadata of a resource in the public side.
Correction (archived)	Daniel Berthereau	2020-07-17 (v.3.0.11)	^1.3.0 || ^2.0.0	CECILL-2.1	Allow guest users or visitors identified by a token to correct and complete metadata of a resource in the public side.

6.4. Complexity Omeka Add-ons

Table A.9. Omeka Classic Export Plugins

Plugin	Author	Updated	Target	License	Description
CSV Export Format	University of Toronto Libraries	2024-01-12 (v.1.1.2)	2.3	Apache License 2.0	Adds CSV as an item export format. Can optionally work with annotations and nested collections from IIIF Toolkit with Mirador.
ExportEacCpf	Graziella Pastore (ENC - INRIA) & Luca Foppiano (INRIA)	2023-10-25 (v.0.1)	2.4	BSD 2-Clause License https://opensource.org/licenses/BSD-2-Clause	Adds functionality to export Omeka items as a basic EAC-CPF XML file.
OHMSExport	Eric C. Weig	2023-07-18 (v.1.1)	2.5		Adds ability to export a set of records as a OHMS XML file.
CSVExport	Anneliese Dehner	2023-06-22 (v.1.1)	2.5		Adds ability to export a set of records as a CSV file.
CSV Export	Erin Bell	2023-06-22 (v.1.0)	2.4	GPL	Creates a simple CSV data output for items.

Export	BibLibre	2023-06-14 (v.0.2.0)	2.0	GPL	Extensible export plugin
BagIt	Scholars' Lab	2020-11-17 (v.2.0.1)	2.1.0	Apache 2.0	Implements the BagIt specification for storing collections of files. Adds an administrative interface that allows users to (a) generate and export Bags containing files on the site and (b) import Bags and make their contents available through the Dropbox interface.
METSExport	Eric C. Weig	2020-03-19 (v.1.1)	2.5		Adds ability to export a set of records as a METS XML file(s).
EAD	Daniel Berthereau	2020-02-09 (v.2.4.3)	2.2.2	CeCILL v2.1	Creates, imports, exports, manages and display EAD finding aids via OAI-PMH Static Repository.
Bibtex export	Franck Dupont - Limonade&Co <technique@limonadeandco.fr>	2019-11-27 (v.0.1)	2.4	GPLv3	Provides ability to export items in Bibtex
Spreadsheet	WebServesUs	2019-11-23			Adds the ability to export a spreadsheet (Microsoft's XLS format) of search results
EMAN Exports Formats	Vincent BUARD for ITEM-ENS	2019-10-30 (v.1.0.1)	2.3	Apache License 2.0	CSV Export and extras
Export	Jason Roma	2018-10-03 (v.2.0)	2.4.1	GPLv3	Plugin for exporting transcription data.
METS Export	UC Santa Cruz University Library	2017-12-11 (v.1.3)	2.1	GPLv3	Adds functionality to export Omeka items as METS xml files, either at the item or the collection level
Merritt Link	UC Santa Cruz University Library	2017-07-17 (v.1.9)	2.1	GPLv3	Adds the option to export objects into the CDL Merritt Repository
Export to SPOKEdb JSON	Michael Slone, Eric C. Weig	2017-03-14 (v.0.0.20)	2.1.4	MIT	Exports unrestricted records to SPOKEdb-style JSON.
OHMSxml for the SPOKEdb Database	Eric C. Weig (University of Kentucky Libraries)	2017-01-30 (v.2.1)	1.0		Adds a OHMS XML export to Omeka outputs.

Table A.10. Omeka Classic Extraction & Modification Plugins

Plugin	Author	Updated	Target	License	Description
DOC Text	University of Minnesota Department of Laboratory medicine and Pathology	2023-01-27 (v.1.0)	2.0	GPLv3	Extracts text from Word DOC files so they can be browsed and searched.

PDF Text	Omeka Team	2022-04-18 (v.1.3.1)	2.0	GPLv3	Extracts text from PDF files so they can be browsed and searched.
Extract OCR	Sylvain Machefert, based on preivous work from Roy Rosenzweig Center for History and New Media (upgraded for Omeka 2.0 by Julien Sicot)	2021-02-15 (v.1.0.1)	2.0	GPLv3	Extracts text from PDF files and store them in XML so they can be searched. (Can be used to highlight results with BookReader plugin)
PDF Search	Roy Rosenzweig Center for History and New Media	2020-11-17 (v.1.0.1)	1.5	GPLv3	Extracts text from PDF files so they can be searched.
PDF TOC	Sylvain Machefert, based on PDF Search, from Roy Rosenzweig Center for History and New Media. (upgraded for Omeka 2.0 by Julien Sicot based on PDF Text) (modified by Jean-Baptiste Pressac to work with the version 2.01 of pdftk)	2020-10-15 (v.1.0.3)	2.0	GPLv3	Extracts table of contents from PDF files
PDF Text	Kyle Felker	2018-12-13 (v.1)	2.0	GPLv3	Extracts text from PDF files so they can be browsed and searched. Rewritten by staff at GVSU to attach text to both item and file level.
Archiviz-Elasticsearch	Brad Rittenhouse	2023-06-09 (v.1.0.0)	3.0	MIT	Stack of plugins that allows users to digitize text documents, generate tags for important people, places, etc., manage those tags and visualize and navigate their collection through an interactive knowledge graph showing where these important entities intersect.
Transcript	Vincent BUARD (Numerizen) for ITEM / ENS	2023-10-24 (v.0.9)	2.2	GPLv3	Transcription tool with enhanced TinyMCE supporting TEI tagging, validation, file import and rich source editing
PDF Text Modified	Kyle Felker	2018-01-26 (v.1)	2.0	GPLv3	Extracts text from PDF files so they can be browsed and searched.Heavily Modified by Kyle Felker
File Modify	Daniel Berthereau	2023-01-24 (v.2.4)	2.2.2	CeCILL v2.1	Modify (convert, compress, watermark, rename or any other command) uploaded file before saving it in archive folder and before creating metadata in

					Omeka database. Renaming files requires Archive Repertory plugin.

Table A.11. Omeka Classic Import Plugins

Plugin	Author	Updated	Target	License	Description
Archive Repertory	Daniel Berthereau	2024-02-08 (v.2.15.8)	2.1	CECILL-2.1	Keeps original names of imported files and put them in a hierarchical structure (collection / item / files) in order to get readable urls for files and to avoid an overloading of the file server.
Bulk Import Files	Daniel Berthereau	2024-02-08 (v.2.0.4.1)	2.2.2	CECILL-2.1	Import files in bulk with their internal metadata (exif, iptc and xmp for images, audio and video, pdf, etc.).
Omeka API Import	Omeka Team	2024-02-05 (v.1.1.2)	2.0	GPLv3	Import data from other Omeka 2.1 or higher sites using the API
Import Hyperlink	Bowling Green State University	2023-12-08 (v.3.0)	2.0	MIT	Imports details about a Hyperlink including embed code.
OHMS Import	By Eric Weig, Doug Boyd, Janneken Smucker	2023-11-13 (v.2.0.7)	2.0	GPL	Imports OHMS XML into Omeka.
Zotero Import	Roy Rosenzweig Center for History and New Media	2023-11-02 (v.2.2)	2.0	GPLv3	Imports libraries and collections from Zotero user and group accounts.
OAI-PMH Harvester	Omeka Team	2023-10-03 (v.2.0.4)	2.0	GPLv3	Harvests metadata from OAI-PMH data providers.
Dropbox	Omeka Team	2023-06-25 (v.1.0)	2.0	GPLv3	Allows users to upload files outside of Omeka and batch-add many files at once.
CSV Import	Omeka Team	2023-04-06 (v.2.0.7)	2.0	GPL	Imports items, tags, and files from CSV files.
EAD Import	Scholars' Lab	2023-01-27 (v.1.0)	1.1		Imports EAD files into database.
Neatline CSV Import	Scholars' Lab	2023-01-27 (v.0.1)	2.0-beta	Apache License, Version 2.0	Import CSV file into Neatline
YouTube Import	UC Santa Cruz Library	2022-08-15 (v.1.3)	2.0	GPLv3	Adds the ability to import Youtube videos into Omeka as items while preserving as much metadata as possible
Archive Folder	Daniel Berthereau	2021-10-12 (v.2.7)	2.2.2	CeCILL v2.1	Automatically import a local or remote folder into Omeka as collections, items, files, and metadata.

Import Reader Skeleton	BibLibre	2021-02-15 (v.0.1.0)	2.0	GPL	Plugin skeleton to implement a new Import reader
BagIt	Scholars' Lab	2020-11-17 (v.2.0.1)	2.1.0	Apache 2.0	Implements the BagIt specification for storing collections of files. Adds an administrative interface that allows users to (a) generate and export Bags containing files on the site and (b) import Bags and make their contents available through the Dropbox interface.
OAI-PMH Static Repository	Daniel Berthereau	2020-09-03 (v.2.6)	2.2.2	CeCILL v2.1	Automatically build a standard OAI-PMH archive from files and metadata of a local or a distant folder.
Oembed Import	The University Library of the University of North Carolina at Chapel Hill	2020-06-25 (v.2.0.0)	2.1.4		Allow importing of items from oembed-compatible URLs.
EAD	Daniel Berthereau	2020-02-09 (v.2.4.3)	2.2.2	CeCILL v2.1	Creates, imports, exports, manages and display EAD finding aids via OAI-PMH Static Repository.
Feed Importer	Patrick Murray-John	2019-11-23 (v.0.1)	1.4		Import items from RSS and ATOM feeds
CSV Import+	Daniel Berthereau (improvement of CSV Import of Center for History & New Media)	2019-01-22 (v.2.3.3)	2.2.2	GPL	Imports and updates collections, items, files, tags and any metadata or extra data from CSV files.
CSV Import	Center for History & New Media	2018-12-18 (v.1.3)	1.3		Imports items, tags, and files from CSV files.
Database Transfer	Iwe Muiser for the Dutch Folktale database	2018-12-18 (v.0.5)	2.0-dev	GPLv3	Transfer of database data
CsvImportPenn	Penn Digital Scholarship Development Team; Haoran Shao, Breanna Porter, Sasha Renninger	2018-10-12 (v.2.0.4)	2.0	GPL	Imports items, tags, and files from CSV files. This is an extension of the CHNM plugin to include the ability to import EDIT THIS SASHA
OAI-PMH Harvester	Roy Rosenzweig Center for History and New Media	2018-10-12 (v.2.0.2)	2.0	GPLv3	Harvests metadata from OAI-PMH data providers.
Shared Shelf Link	ARTstor, INC	2018-08-15 (v.1.0)	1.5.3		Allows Shared Shelf users to publish image files and data records from a project in Shared Shelf, an online media management software from ARTstor, to Omeka collections. Shared Shelf is a subscription-based service.

Flickr Import	UC Santa Cruz University Library	2018-04-05 (v.1.3)	2.1	GPLv3	Adds the ability to import Flickr photosets and galleries into Omeka as items or collections, while preserving as much metadata as possible
XML Import	Daniel Berthereau (based on GenericXmlImporter of Scholars' Lab)	2018-02-19 (v.2.16)	2.2.2	Apache v2	Imports metadata and files from one or multiple XML via a generic or a custom XSLT sheet and via CSV Import+.
Vimeo Import	UC Santa Cruz University Library	2017-11-28 (v.1.3)	2.0	GPLv3	Adds the ability to import Vimeo videos into Omeka as items while preserving as much metadata as possible
Import	BibLibre	2017-10-31 (v.0.2.0)	2.0	GPL	Extensible import plugin
Content DM Link	UC Santa Cruz University Library, Ned Henry	2017-07-17 (v.1.6)	2.0	GPLv3	Adds the ability to import items from Content DM into Omeka.
Nuxeo Link	Ned Henry	2016-06-08 (v.1.1.12)	2.1	GPLv3	Adds the ability to navigate a Nuxeo DAMS and import Nuxeo documents as Omeka items. Designed specifically for use with the UCLDC Nuxeo DAMS.
Omeka Mapfig Studio	MapFig Ltd	2016-04-23 (v.1.0)	2.0	GPLv3	Import Maps from MapFig Studio
CollectionSpace Importer		2015-08-13 (v.-)	2.0	GPLv3	

Table A.12. Omeka Classic Maintenance & Derivatives Plugins

Plugin	Author	Updated	Target	License	Description
Site Message	Eric C. Weig	2021-11-01 (v.1.0)	2.0	MIT	Omeka Plugin which allows administrators to configure content and public display for a custom message for users. This could be used for a number of reasons including; Harmful Language Statement, Message Concerning Scheduled Downtime for Maintenance, etc.
Headless	BibLibre & mw	2021-10-15 (v.0.1.0)	2.0	GPL	Hide Omeka PHP frontend, allowing only API requests. based on Maintenance plugin by BibLibre
Maintenance	BibLibre	2021-04-16 (v.0.1.0)	2.0	GPL	Put Omeka site in maintenance mode
Derivative Images	Roy Rosenzweig Center for History and New Media	2023-11-02 (v.2.0)	2.2	GPLv3	Recreate (or create) derivative images.

MOAS Derivatives	University of Nottingham	2016-07-12 (v.1.1.0)	2.4	MIT	Adds image derivative sizes that we need.

Table A.13. Omeka Classic Markup Plugins

Plugin	Author	Updated	Target	License	Description
AvantDPLA	George Soules	2021-10-24 (v.3.1.0)	3.0	GPLv3	Emits XML for ingestion into DPLA via a service hub.
Sitemap	Bowling Green State University Libraries	2021-02-08 (v.1.0)	2.0	MIT	Creates a sitemap.xml file of Omeka items.
XmlSitemap	Kevin Reiss; digitalMETRO Project	2019-05-22 (v.0.11)	1.2		Set up a XML Sitemap for an omeka instance. Public content appears in sitemap. Configuration choices available. digitalMETRO Project [http://nycdigital.org/]
Sitemap 2	UC Santa Cruz University Library	2019-02-19 (v.2.3)	2.3	GPL3	This Omeka 2.0+ plugin provides a persistent url for a dynamically generated XML Sitemap, for SEO purposes.
OHMSxml for the SPOKEdb Database	Eric C. Weig (University of Kentucky Libraries)	2017-01-30 (v.2.1)	1.0		Adds a OHMS XML export to Omeka outputs.
TEI Editions	King's College London Department of Digital Humanities	2023-04-25 (v.1.0.0-pre8)	2.6	EUPL-1.2	Create and visualise Omeka items based on TEI data
TEI Display	Scholars' Lab	2023-01-27 (v.1.0)	2.0-dev	Apache License, Version 2.0	Attach TEI documents to Omeka items.
OpenSeadragon TEI Viewer	River Campus Libraries	2021-05-24 (v.0.0.3)	2.0	MIT	Foo
Tei Display	Jean-Philippe Magué	2019-11-23 (v.2.0)	2.0	GPLv3	Display TEI files
Bookmeka	Frédéric Glorieux (Huma-Num et LABEX OBVIL)	2019-11-23 (v.0.1)	2.0	LGPL http://www.gnu.org/licenses/lgpl-3.0.en.html	Display full-text books in Omeka, odt > tei > (html, epub, txt)
MlaTei		2016-01-22 (v.1.0)		GPL	Plugin for the CoE MLA Variorum Shakespeare Challenge
TeiAnnotationsPlugin	Peter Sefton	2014-10-31 (v.1.0)	2.0	GPLv3	Fetches TEI annotations related to an item ready for display
Reports	Omeka Team	2021-09-21 (v.2.0.3)	3.0	GPLv3	Generates item reports in HTML and QR Codes of items in PDFs.

HTML5 Media	John Flatness	2020-06-13 (v.2.8.1)	2.0	GPLv3	Enables HTML5 for media files using MediaElement.js.
Clickable Links	Gero Zahn	2018-02-13 (v.0.1)	2.0	GPLv3	Filter non-HTML text fields for URLs and make render them as »target='_blank'« clickable.
Doc to HTML	Thom Mc	2017-02-28 (v.0.1)	2.0	GPLv3	When a Docx file is added to an item, renders it in HTML5 (requires Pandoc 1.13 or later)
HTML Viewer	Thom Mc	2015-09-02 (v.0.2.3)	2.0	GPLv3	Include content of attached HTML file in item page
Html Display	Lloyd Harischandra - University of Western Sydney	2015-02-25 (v.1.0)	2.0	GPLv3	A plugin to display html files attached to the items inline.

Table A.14. Omeka S Export Modules

Module	Author	Updated	Constraint	License	Description
Bulk Export	Daniel Berthereau	2024-02-12 (v.3.4.30)	^4.0.0	CECILL-2.1	Extensible bulk export and formatter module for admin and public sides.
MarcXml Export	BibLibre	2024-02-09 (v.0.1.0)	^3.1.0	GPLv3	This module produces and exports files in marcxml format from selected resources according to a defined mapping.
Export	Laura Eiford	2022-08-12 (v.1.6.0)	^1.0.0 || ^2.0.0 || ^3.0.0	GPLv3	Export collection metadata into a CSV file.
eBook Creator	Daniel Berthereau	2021-04-12 (v.3.3.0.9)	^3.0.0	CECILL-2.1	Merge selected resources into an ePub or a pdf file for publishing, report, or archiving purpose.

Table A.15. Omeka S Extraction Modules

Module	Author	Updated	Constraint	License	Description
Extract Text	Omeka Team	2023-11-29 (v.2.0.0)	^4.0.0		Extract text from files to make them searchable.
Extract Metadata	Omeka Team	2023-08-05 (v.1.1.0)	^4.0.0		Extract embedded metadata from files
PdfText	Vincent BUARD	2021-03-18 (v.1.0)			Extract data from PDF files for indexation
Extract Ocr	bubdxm, completed by Daniel Berthereau	2019-03-14 (v.3.4.6)	^3.0.0 || ^4.0.0	GPL-3.0-or-later	Extract text layer from a pdf and attach it to item as a xml file, formatted with standard alto or simple pdf2xml or common tsv. The process uses the command line tool pdftohtml of poppler.
PdfToc	bubdxm, bases PDF TOC plugin omeka	2019-01-11 (v.1.0)			Extracts table of contents from PDF files

Pdf Creator	Daniel Berthereau	2023-05-16 (v.3.4.2)	^3.1.0 || ^4.0.0	CeCILL v2.1	Create a pdf for a resource from an html template dynamically.

Table A.16. Omeka S Import Modules

Module	Author	Updated	Constraint	License	Description
Archive Repertory	Daniel Berthereau (based on BibLibre port)	2024-02-08 (v.3.15.16)	^3.0.0 || ^4.0.0	CeCILL v2.1	Keeps original names of imported files and put them in a hierarchical structure (collection / item / files) in order to get readable urls for files and to avoid an overloading of the file server.
Bulk Import	Daniel Berthereau	2024-02-08 (v.3.4.50)	^4.0.0	CECILL-2.1	Extensible bulk import module for xml, sql databases, spreedsheets, and json endpoints.
Bulk Import Files	Daniel Berthereau	2024-02-08 (v.3.4.7)	^3.1.0 || ^4.0.0	CECILL-2.1	Import files in bulk with their internal metadata (exif, iptc and xmp for images, audio and video, pdf, etc.).
Omeka 2 Importer	Omeka Team	2024-02-08 (v.1.2.0)	^2.0.0		Import content from an Omeka 2 site via its API.
CSV Import	Omeka Team and Daniel Berthereau	2024-02-03 (v.2.1.1)	^2.0.0	GPLv3	Import and update content (items, item sets, media, users) from a CSV, a TSV or an ODS file.
Zotero Import	Omeka Team	2024-01-12 (v.1.3.0)	^4.0.0		Import items and files from Zotero user and group libraries.
Zip to Bulk Import	Archatomic and Conlan Craft with LaTaevia Berry & Fisk University	2024-01-10 (v.0.0.1)	^4.0.0		Extends CSVImport and AnyCloud with functionality that allows users to upload a zip file containing digital objects and corresponding metadata within a csv.
EAD Import	BibLibre	2023-12-21 (v.1.1.0)	^3.0.0		Import items and item sets from XML files with custom mapping and ability to save and reload it later
Scripto Import Contributors	BibLibre	2023-10-23 (v.0.2.1)	^3.2.0 || ^4.0.0		Import contributors from Mediawiki. Requires Scripto
Omeka S Item Importer	Omeka Team	2023-10-13 (v.1.3.0)	^4.0.0		Import items from other Omeka S installations
RefFormation	BibLibre	2023-09-08 (v.0.1.0)	^3.2.0 || ^4.0.0		Import RefFormation thesaurus (requires Taxonomy)
Zotero Importplus	Omeka Team & Samuel Szoniecky	2023-07-18 (v.2.0.1)	^4.0.0		Import items, files, notes and tags from Zotero user and group libraries.
Cmap Import	Samuel Szoniecky	2023-03-20 (v.0.0.2)	^3.0.0		Import items from Cmap IVML file.
Persistent Identifiers	Omeka Team	2023-02-13 (v.1.1.1)	^4.0.0		Create/import/assign persistent identifiers to Omeka S items.
OAI-PMH Harvester	Daniel Berthereau (based on the port of Vincent Buard for PSL)	2022-11-03 (v.3.0.7)	^1.2.0 || ^2.0.0	GPL-3.0	Fetch records from remote OAI-PMH repositories

Diigo Import	Samuel Szoniecky	2022-08-05 (v.0.0.6)	^3.0.0		Import items and files from Diigo user libraries.
Archive Folder	Daniel Berthereau	2016-03-29 (v.2.4)			Automatically import a local or remote folder into Omeka as collections, items, files, and metadata.

Table A.17. Omeka S Maintenance & Derivatives Modules

Module	Author	Updated	Constraint	License	Description
Maintenance (archived, replaced by EasyAdmin)	Daniel Berthereau	2023-01-25 (v.3.3.3.2)	^3.0.0	CeCILL v2.1	Add a setting to set the site under maintenance for the public. Can be disabled when unused.
Derivative Media Optimizer	Daniel Berthereau	2024-01-23 (v.3.4.9)	^4.0.0	CECILL-2.1	Create and cache derivative files for items (zip, pdf, iiif, etc.) and optimize audio and video files for performance and cross-browser compatibility.
Derivative Images [archived]	Daniel Berthereau	2021-01-04 (v.3.3.7.0)	^3.0.0	CECILL-2.1	Recreate (or create) derivative images.

Table A.18. Omeka S Markup Modules

Module	Author	Updated	Constraint	License	Description
Analytics Snippet Matomo (Piwik)	Daniel Berthereau	2023-09-11 (v.3.4.6)	^3.1.0 || ^4.0.0	CeCILL v2.1	Submodule for Analytics Snippet to track json (in particular Omeka S API) and xml (like with OAI-PMH Repository) calls with Matomo (Piwik).
Analytics Snippet	Daniel Berthereau	2023-09-11 (v.3.4.4)	^3.1.0 || ^4.0.0	CeCILL v2.1	Add a snippet, generally a javascript tracker, in public or admin pages, and allows to track json and xml requests.
XML Viewer	Daniel Berthereau	2021-09-13 (v.3.4.0.6)	^3.1.0 || ^4.0.0	CeCILL v2.1	Allows to render xml files, like TEI.
Verovio MEI Viewer	Daniel Berthereau	2021-06-14 (v.3.3.0.7)	^3.0.0	CeCILL v2.1	Integrates Verovio, an XML-MEI and MusicXML viewer for musical scores.

6.5. Metadata Omeka Add-ons

Table A.19. Omeka Classic Metadata Plugins

Plugin	Author	Updated	Target	License	Description
OAI Qualified DC for OAI-PMH Repository	Bowling Green State University Libraries	2023-11-29 (v.1.0)	2.0	MIT	Adds an oai_qdc metadata format to the Omeka OAI-PMH Repository plugin.
COinS	Omeka Team	2023-11-14 (v.2.1.1)	2.0	GPLv3	Adds COinS metadata to item pages, making them Zotero readable.
Dublin Core Extended	Omeka Team	2023-11-07 (v.2.3)	2.0	GPLv3	Adds the full set of Dublin Core properties to the existing Dublin Core element set, including element refinements and supplemental elements. See DCMI Metadata Terms: http://dublincore.org/documents/dcmi-terms/
OAI-PMH Harvester	Omeka Team	2023-10-03 (v.2.0.4)	2.0	GPLv3	Harvests metadata from OAI-PMH data providers.

Hide Elements	John Flatness	2023-08-09 (v.1.4)	2.0	GPLv3	Hide admin-specified metadata elements.
Resource Meta	Omeka Team	2023-05-03 (v.1.0.0)	3.0	GPLv3	Add meta tags to resources
Book Core	Marcus Burkhardt	2023-04-01 (v.0.1)	2.3	Apache License Version 2.0, http://www.apache.org/licenses/LICENSE-2.0.html	Adds the Book Metadata Element Set and Maps the Book Metadata to Dublin Core
GeoBlacklight Metadata	Stephen Balogh, NYU Libraries	2023-01-27 (v.1.5.1)	2.3	GPLv3	Adds additional metadata elements within a new GeoBlacklight array, then combines these elements along with reappropriated Dublin Core and Dublin Core Extended elements to produce JSON records in accordance with GeoBlacklight schema.
Default Metadata	Ben Ostermeier and Eric C. Weig	2023-01-21 (v.3.0.1)	2.0	MIT	Omeka Plugin that allows administrators to specify default values for item metadata fields, including Dublin Core and Item Type Metadata fields. Metadata fields are then auto-filled with default values when items are created or edited.
MODS Expanded	Brendan Ryan	2022-12-01 (v.1.0)	1.3.2		A MODS metadata plugin for Omeka with the full complement of categories as used by the Digital Commonwealth.
VRA Core	Roy Rosenzweig Center for History and New Media	2022-09-27 (v.1.2)	2.2	GPLv3	Adds VRA Core Elements to Item, Collection, and File metadata.
OCR Element Set	Daniel Berthereau	2020-02-09 (v.2.6)	2.2.2	CeCILL v2.1	Creates a file element set for OCR metadata and text.
refNum Element Set	Daniel Berthereau	2020-02-09 (v.2.4)	2.2.2	CeCILL v2.1	Creates a file element set for refNum, a standard for digitalized documents, especially books and manuscripts (see http://bibnum.bnf.fr/refNum).
OAI-PMH Gateway	Daniel Berthereau	2020-02-09 (v.2.3.1)	2.2.2	CeCILL v2.1	Expose files and metadata of a standard OAI-PMH static repository through Omeka used as a gateway.
Europeana Element Set	Daniel Berthereau	2020-02-09 (v.2.1)	2.2.2	CeCILL v2.1	Add the specific elements of the Europeana Semantic Elements, which completes the Dublin Core.
PBCore 2	Omeka Team and WGBH	2019-10-14 (v.1.0.0)	2.2	GPLv3	Adds elements for describing resources with the PBCore metadata standard
OHMS Oral History Metadata Element Set	Eric C. Weig, University of Kentucky	2018-05-16 (v.1.0.0)	2.1		Plugin which installs a custom metadata set for OHMS oral history elements.
GeoChron	History Dept. UCF RICHES	2018-04-03 (v.2.0)	2.1		Adds location and time info and maps to Omeka
Geolocation to Coverage	Caleb McDaniel	2018-07-24 (v.0.1)	2.6		Gets addresses and lat/long from an item’s Geolocation and adds them as element texts for the item's metadata in Dublin Core Coverage
MOAS Elements	University of Nottingham	2017-07-27 (v.1.4.1)	2.3	MIT	Provide the element sets and metadata needed for MOAS projects
BIO	Pop Up Archive	2017-05-10 (v.0.9)	2.5		Creates a new element set based on BIO vocabulary for OMEKA Classic.
MODS	CUL LDPD	2016-02-21 (v.1.0)	1.3.2		Adds MODS Element Set, with controlled vocabulary support
Geolocation PLUS	Center for History & New Media	2016-03-15 (v.2.1)	2.0-beta		Adds location info and maps to Omeka

Table A.20. Omeka S Metadata Modules

Module	Author	Updated	Constraint	License	Description
COinS	Roy Rosenzweig Center for History and New Media (Omeka S port by BibLibre)	2023-09-29 (v.3.1.0)	^3.0.0 || ^4.0.0	GPLv3	Adds COinS metadata to item pages, making them Zotero readable.
unAPI	Omeka Team	2022-12-13 (v.1.3.0)	^4.0.0		Make your item metadata discoverable using unAPI.
Relators		2022-04-13 (v.1.0)	^3.0.0		Add relators to your metadata.

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