

Best Practices for Textile Collections About Documentation and Digital Data Curation

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Abstract

Cultural heritage organizations produce a vast quantity of heterogeneous datasets that are often held inside their walls; sometimes, they are not easily accessible for technological and organizational reasons. This increases when dealing with textile collection-based institutions that are usually small or medium-sized with a lack of resources or expertise to deal with the current digital trend. This paper shows the results of the SILKNOW H2020 project from involvement with museums housing textile collections, with the goal of helping them improve their digital asset management. This was done through three workshops held with forty museums and textile institutions and a qualitative survey with thirty-one institutions, with the aim of developing a compendium of Best Practices for Textile Collections about Documentation and Digital Data Curation, together with recommendations for future developments.

Keywords

digital data curation, textile collection, cataloging, vocabulary standardization, best practices

Introduction

In the last decades, museums are facing a digital transformation by making information accessible and understandable for citizens (Roßkopf 2023; Valtysson, Kjellman, and Audunson 2023). The practical implementation of digital transformation varies greatly from one context to another; for instance, ownership and funding models of those collections, intellectual property rights, information resources (e.g., catalogs,

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inventories, mere accession lists, or any kind of intermediate models), and their availability in digital formats (Klepacki and Schröder 2023). Digital transformation in all types of museums, especially due to the need of provide access to their collections, seems to have increased because of the COVID-19 crisis (Belenioti 2022; Friel, Farrell-Banks, and McDermott 2023; Giannini and Bowen 2022; Magliacani and Sorrentino 2022; Marty and Buchanan 2022). The results include managing a vast array of diverse datasets, which are frequently confined within their premises and are inaccessible to the general public. Even when they are open, technical and organizational factors may hinder accessibility. This issue is particularly pronounced in the case of textile collections that require specialized expertise for documentation and preservation. Conversely, heritage institutions, including galleries, libraries, archives, and museums (collectively referred to as GLAMs) are progressively adopting digital support. However, small- and medium-sized museums frequently struggle to achieve similar success because of inadequate resources, knowledge, or funding.

The research project SILKNOW (Portalés et al. 2018), funded by the European Union under the H2020 program, the EU's funding program for research and innovation that emphasized excellent science, industrial leadership, and tackling societal challenges, including cultural heritage. SILKNOW ran from 2018 to 2021 and aimed to improve the understanding, conservation, and dissemination of European silk heritage from the fifteenth to the nineteenth century through advanced computing research that benefits a variety of users, such as museums, education, tourism, creative industries, and media. To do so, it was formed by several researchers from art history, conservation, history, computer science (3D imaging, semantic web, data visualization, Geographic Information Systems, artificial intelligence, computer vision, and text processing), weaving industry, 3D printing, and philology. This interdisciplinary team created a single repository with information on historical textiles scattered across collections, especially in small- and medium-sized museums. The project also developed a Virtual Loom to visualize the inner structure of historical textiles and assist non-experts in appreciating their value. Additionally, computers were expected to help with the automated discovery of textiles that are visually similar or related to pieces in other locations. Other results included a Multilingual Thesaurus with a specific vocabulary of historic silk textiles in four languages (English, Spanish, Italian, and French) and Educational Materials for Spanish language learning. Finally, one of the main outcomes of this project was the development of Best Practices guidelines to help textile institutions overcome the digital challenges they face when dealing with data heterogeneity, information management systems, digital repositories, and data sharing.

This paper presents how the SILKNOW team project developed this best practices to deal with digital data. Those were done after three workshops and surveys in textile institutions to incorporate their textile collections into the information and knowledge society, with particular attention given to institutions that lack the technical and staff

resources to do so. The resulting guidelines are quite broad due to the extreme heterogeneity of collections, institutions, and contexts makes it very difficult to provide more specific advice. However, this first step is already a valuable contribution to several goals, such as (1) the consolidation of museums in the digital arena through the widespread adoption of digital open-access policies; and (2) the support and training of museum professionals tasked with its cataloging and dissemination. The paper is organized into sections that provide an overview of the state-of-the-art in museums and open access, the methodology followed to develop the best practices, and the conclusions of this study.

State of the Art

Digitization and open access to information offer the opportunity to build a global representation and interaction of human knowledge, including cultural heritage, and the prospect of universal and unrestricted access. This is certainly the spirit of the Budapest Open Access Initiative Declaration (Open Society Institute 2001). However, the Berlin Declaration (ECHO 2003) has promoted the Internet as a functional tool that serves as a global basis for scientific knowledge and human reflection. This declaration also includes concrete and specific measures to be taken into account by research policymakers, as well as scientific institutions, funding agencies, libraries, archives, and museums. The ultimate goal is to consolidate different institutions related to cultural heritage in the digital sphere through open access.

This represents a paradigm shift, and the problem of intellectual property arises. For this reason, on the one hand, the Declaration of Berlin stipulates that the author(s) and holder(s) of the intellectual property of these contributions must guarantee free, irrevocable, and worldwide access to scholarly work to all users equally. However, it establishes licenses to copy, use, distribute, transmit, and publicly display it in any digital medium. This change speaks to the importance of the reuse of knowledge but establishes the obligation to attribute authorship (EU rules continue to provide the mechanisms to enforce recognition of appropriate and responsible use of published works, as is now the case).

The survey of the literature gives us that most of the scientific literature focuses on specific aspects in which the digitization of cultural heritage involves the generation of visitor experiences that are based on the generation of 3D models (Arvanitis and Pavlovskyye 2023; Miłosz et al. 2022; Montusiewicz, Barszcz, and Korga 2022) visualization processes or other models that are based on the experiential immersion of visitors (Giannini and Bowen 2022; Komianos 2022; Man and Gao 2022; Trunfio, Jung, and Campana 2022), both through the web environment and in the virtual experience that completes the visit to the physical exhibition space of the museums (Fukuda and Ishibashi 2023; Hutson and Hutson 2023; Klentien 2022; Tsita and Satratzemi

2019; Zhang and Xue 2023; Zhou, Chen, and Wang 2022). However, some publications have raised the need for work on the concepts and methods involved in digitization efforts (Palumbo 2022; Sachdeva and Chaudhary 2022).

Support and training for museum professionals in charge of cataloging and dissemination is essential, so good practices and recommendations can facilitate other museum tasks, such as exhibitions or catalogs. To this end, it is essential to avoid individualized and specific solutions and to work with models based on standardized data and metadata (Jones 2022; Qing et al. 2022). This is necessary as standardization and systematization processes that allow collections to be interconnected at a regional, national, or international level are scarce (Avgousti and Papaioannou 2023; Nevile, Kateli, and Pulis 2023). As a growing number of cases and literature shows, small- and medium-sized institutions have also adopted (sometimes ambitious) digitization, open access, and interoperability schemes for their collection of information (Morley 2018; Pekel 2015; Terras 2015; Valeonti, Terras, and Hudson-Smith 2020).

Although at national level, some repositories share their collections in a standardized way, such as *Ceres*, a catalog for Spanish museums (Tundidor 2016), or *Joconde*, a catalog of French museums (Ministère de la Culture 1995), there are still many small- and medium-sized cultural institutions and museums for which digitization processes are complex and standardization processes can be alien and difficult to manage on their own. The SILKNOW project, focused on these type of institutions and developed a decalogue to guide museums in the processes and treatment of data for interoperability and open access purposes.

On the other hand, even though standards exist for textile objects, they are rarely applied in digital catalogs because of their complexity and specialization. In contrast, records structured according to general data standards are too non-specific to suit the needs of textile objects. For example, substantial parts of the most significant information (weaving techniques, decorative patterns, styles) are stored in general description fields, often as plain text. This makes it difficult to find similarities or correspondences between objects. Cultural institutions often create their own controlled vocabularies based on their textile collection (Schreiber et al. 2008), such as The Textile Museum Thesaurus of the Textile Museum in Washington D.C. or the Museon Arlaten or the Museon Arlaten (Arles, département des Bouches-du-Rhône), the Getty AAT (The Getty Institute 2017; non-specialized but excellent as an open structure), the CIETA vocabularies (Centre International d' Etude des Textiles Anciens 2020; specialized in historical textiles and multilingual), or the European Fashion thesaurus (Van Steen 2012; multilingual but mainly dedicated to fashion). The result is a multitude of vocabularies in different languages that are difficult to standardize. In fact, the need for a multilingual thesaurus on textiles has already been pointed out by the specialized literature within museum studies (Jose et al. 2023), especially because it will facilitate exchanges between collections and institutions (Isaac et al. 2007).

Finally, this paradigm shift is also recognized in the new definition of museum agreed by ICOM: “Museums have no borders, they have a network,” which emphasizes interconnectivity and the need to work together. In Prague, on August 24, 2022, the Extraordinary General Assembly of ICOM approved the proposal for the new museum definition by 92.41 percent (in favor: 487, against: 23, abstention: 17). Following its adoption, the new ICOM definition of a museum (2022) is as follows: “A museum is a non-profit, permanent institution at the service of society that researches, collects, conserves, interprets, and exhibits tangible and intangible heritage. Open to public, accessible, and inclusive museums promotes diversity and sustainability. They operate and communicate ethically, professionally and with the involvement of communities, offering varied experiences for education, enjoyment, reflection and knowledge sharing.”

Thus, the trend toward open access and the integration of information into inter-institutional repositories necessitates cataloging standards and interoperability. Unfortunately, the vast majority of small- and medium-sized museums lack the knowledge to achieve these goals. SILKNOW offers recommendations in this document as a useful basis for such efforts in museums and textile collections.

Methodology

A Structured Analysis of the Needs of the Sector

To develop a document of best practices on documentation and digital asset management for textile collections, SILKNOW organized three workshops in March and April 2021. They addressed cultural institutions specializing in textile collections as well as museums that possess textiles among many other artistic or artisanal holdings. The first contact with potential workshop participants was an online survey disseminated among seventy-three institutions that had textile holdings in their collections who expressed their interest in the aforementioned workshops. These seventy-three institutions came from previous research conducted by one of the authors of this paper, who was doing her PhD research at that time, and her database included 116 museums from twenty-four European countries.

Therefore, a qualitative analysis was conducted using the survey method with an electronic questionnaire as the instrument with a non-probabilistic convenience sample. Our interests were conservators, curators, and documentalists of European museums who handled silk textiles. Data collection was carried out through a questionnaire hosted on an online platform and sent by email, which contained unstructured questions aimed at providing organizers with a basis of empirical information to group common concerns and prepare workshop discussions. Questions were previously tested in informal discussions with museum conservators of the project partner Garin 1820, a museum and the silk industry. The survey consisted of two main blocks. On

the one hand, questions associated with the documentation and cataloging of collections, and on the other, those focused on open access and digital data management. These were grouped and analyzed using qualitative methodology (Hernández Carrera 2014).

Once responses were obtained, we proceeded to the next stage of data analysis and interpretation of the results. To this end, we coded the responses to conduct a descriptive analysis of the relative frequencies. Statistical analyses were performed using the Excel software package.

Listening to Experts: International Workshops

To develop a document of best practices on documentation and digital asset management for textile collections, SILKNOW organized three workshops in March and April 2021. Expressions of interest and answers were obtained from nine Italian museums, eleven Spanish museums, and twenty professionals participating in the workshop in English, including participants from Mexico, the United States, Portugal, Switzerland, and Georgia. Workshops were divided into two blocks: one focused on documentation, and the other on digital access. In these workshops, the idea was to act as facilitators for discussions between museums, helping them share their experiences and reach common ground.

Workshops have reached a broad range of textile collections, from local museums to art and design museums, fine arts, and ecclesiastical ones (as shown at the end of this paper). Participants included scholars, curators, conservators, digital professionals, and museum directors. This diversity helped us understand the diversity of the sector, as they represented most of the variety of textile collections that can be found in Europe, as well as their main concerns. It also helped to understand how each museum approached the digital arena. Simple repositories in excel or word to APIs, from a single person in charge of the museum to a few professionals in each area. Hence, the textile museum sector varies enormously in the treatment of digital data, as not all have the same digital skills. However, almost all participating museums demonstrated an interest in the need to share and connect their data, as can be seen in the results section.

As per the organization of the workshops, the authors of this study prepared a structure for discussion that would be replicated in each workshop. Workshops were divided into two blocks of the survey: one focused on documentation and the other on digital access. First, the organizers shared the survey results according to each block, and once they were presented, we re-asked the same questions and encouraged participants to develop their thoughts on each question. The main idea was to act as facilitators for discussions between museums, helping them share their experiences and reach a common ground. To facilitate discussion, each workshop was set up to take place in the

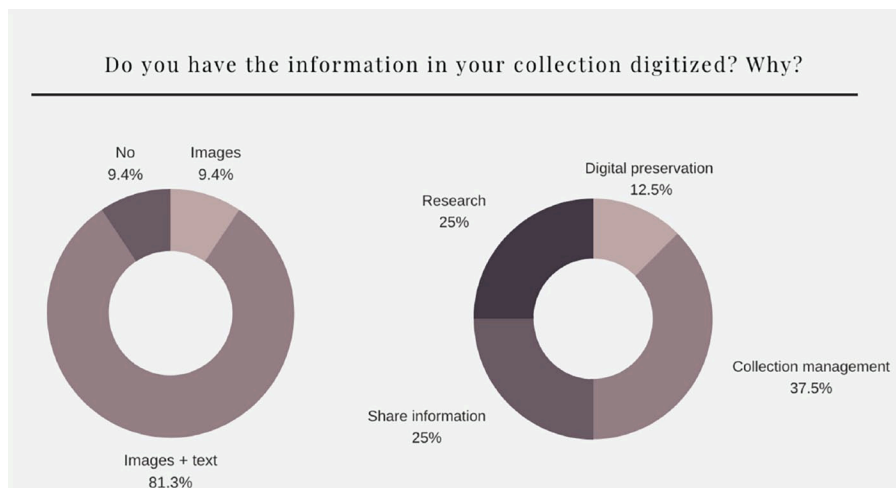


Figure 1. Museums and their reasons for digitizing information.

language of most of the participants: Spanish, Italian, and English. These discussions were originally planned to take place in person; nonetheless, due to the COVID-19 pandemic, they had to be taken in Zoom conversations and endured for around 2.5 to 3 hours, one day per language. This methodology can be replicated in other circumstances and with other types of museums that wish to access the digital arena, as the results were quite positive, as can be seen in the next section.

Results

First, the results showed that most of the information held in museums was digitized or digitized. Approximately 81.3 percent of the digitized information comprised images and text, while 9.4 percent either only had images or did not have digitized information at all. It is worth noting that while the majority believed that sharing information is a high priority for connecting with others for research and opening collections outside the museum's walls, when asked why they digitize their collection, the main answer was collection management (37.5 percent), followed by research and sharing information (around 25 percent), and digital preservation (12.5 percent). The majority of collections count on both inventories and catalogs, which are either digital 32.3 percent or already digital (58.1 percent). Nevertheless, the exact ratio varies significantly from country to country. For example, in Spain, 70 percent of the respondents had their collections only in inventories. Figure 1 shows two graphs: on the left, the percentage of digitized collections, and on the right, the reasons for doing so.

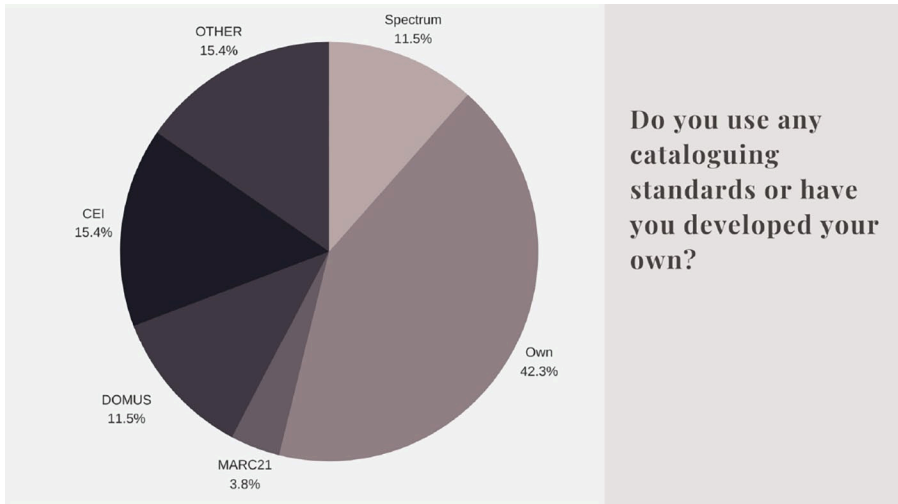


Figure 2. Museums' cataloging standards.

Regarding cataloging standards, the surveys clearly showed scarce adoption. While some museums reported that they follow standards such as SPECTRUM (McKenna and Patsatzi 2007) or CERES (MCE 2023), the majority create specific (and even idiosyncratic) catalog records that fit the features of their collections and the needs or resources of the staff in charge of them. Figure 2 displays the catalog standards used by the respondents. As mentioned, 42.3 percent used their own standards, followed by the standards for ecclesiastical objects CEI (15.4 percent), DOMUS, the National Spanish Museum Management System (11.5 percent; Carretero Pérez 2005), SPECTRUM (11.5 percent) and others, such as *Dédalo*, an open-source software platform and Cultural Heritage management system (Cascón-Katchadourian and Guallar 2021).

The main reason for developing these standards was the specificity of the textile collections. Terminology was one of the main issues raised when asked about the specific challenges of inventory/cataloging textile collections. Figure 3 presents the specific challenges in cataloging textile collections. First, the lack of specific information regarding textiles was 19.4 percent, followed by textile terminology at around 16.1 percent, which is related to the next most raised answer, that is, the identification of materials and techniques at 12.9 percent. Finally, although there were few responses, it is worth mentioning that 3.2 percent replied that they did not know which software to use.

With regard to controlled vocabularies, most respondents used one or another, but they were not textile-specific; nevertheless, 25.9 percent did not use any thesauri.

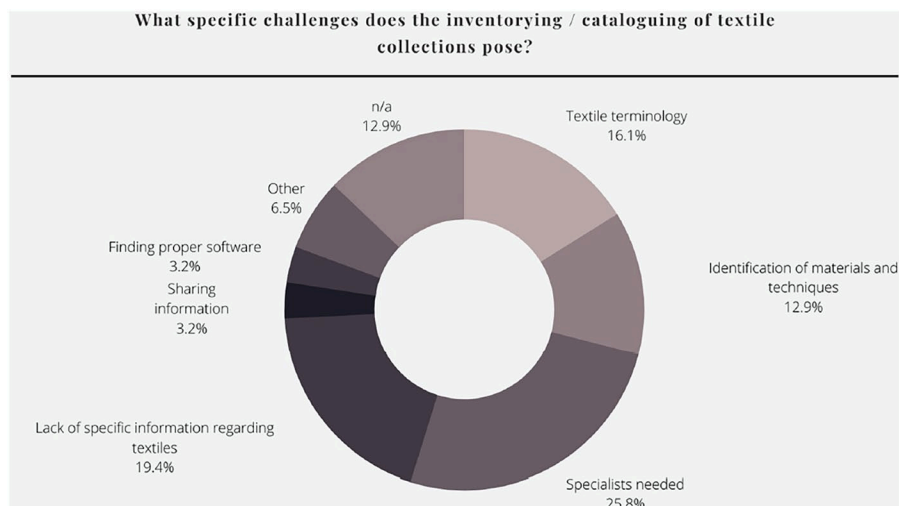


Figure 3. Specific challenges when cataloging textiles.

A small minority reported using the CIETA and ICOM Costume vocabularies (International Committee for Museums and Collections of Costume 1986), while the rest use national thesauri (7.4 percent), the AAT (14.8 percent; The Getty Institute 2017), and have developed their own vocabularies (14.8 percent). This explains why there is so much heterogeneity in the field and demonstrates the need for thesauri-specific textile collections. Furthermore, this heterogeneity hinders the interoperability of data when opening up collections, one of the challenges faced by surveyed museums (Figure 4).

When asked if there was any provision for multilingualism, 57.6 percent answered no, compared to 30.3 percent and 12.1 percent who did not know. Finally, regarding who performs or oversees these tasks, the answers mostly identify curators and documentalists as staff members in charge, as shown in Figure 5.

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The second part of the survey dealt with challenges and opportunities for open access. First, we asked what the main difficulties were when implementing the improvements. Around 50 percent of the respondents said that technical limitations were the main issue when addressing improvements, followed by 27.8 percent for human resources, budget (11.1 percent) and 5.6 percent for lack of knowledge.

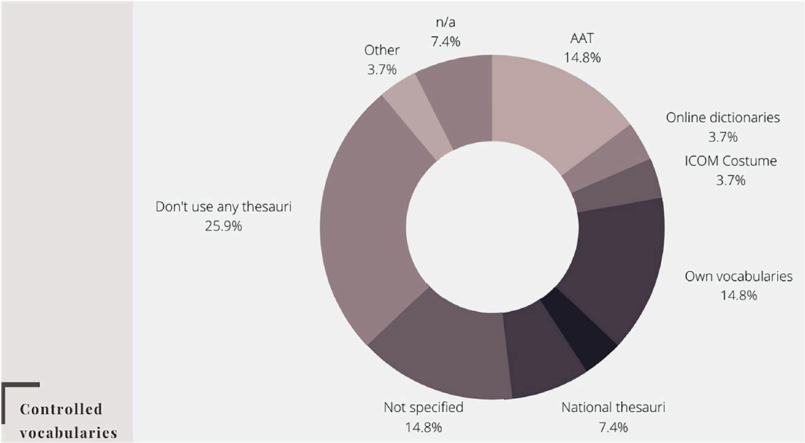


Figure 4. Controlled vocabularies used by the respondents.

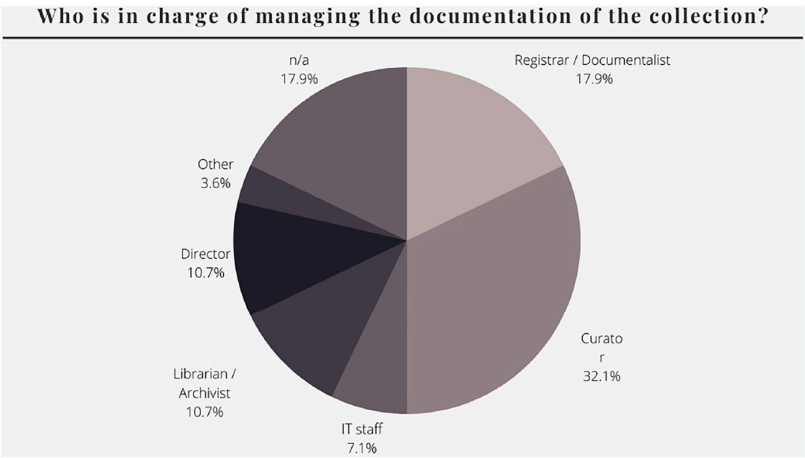


Figure 5. Staff in charge of documenting collections.

At a more conceptual level, we asked how they dealt with dubious or non-specific information in their records. This is a common source of trouble for repositories that host information from different institutions, as each one deals with uncertainty in different ways. Most participants said that they tried to be as accurate as possible, and when this was not possible to an acceptable extent, they added comments in a general description field within the catalog record.

Another issue is the intellectual property of museum objects and the associated digital information. A broad range of situations has been reported, from museums that provide full open access to their entire collections to others that employ various kinds of licenses following their own national standards, while others retain full copyrights on their collections. For example, museums with indigenous heritage have reported that they do not provide full digital access to this heritage, as they have to protect them from plagiarism by fashion designers. Others reported that even if sharing CC licenses is important, they wanted to protect their catalog records from academic plagiarism by adding curators' names in some cases. Finally, some reported that they have open access policies, but do not want to put their collections in many repositories outside their own, as they believe that the scattergun approach to putting things out should be avoided.

Following these questions, when asked if open access was a priority, most of the respondents answered affirmatively, but some were unsure how to proceed with it. Approximately 51.7 percent of the respondents found sharing data as a high priority, while 24.1 percent would only do so for research purposes. Approximately 6.9 percent found this important, but they had other issues to solve first, and 17.2 percent did not answer this question.

Finally, when asked if their information was exportable, 63 percent of the respondents answered yes, compared to 11.1 percent. Nevertheless, many of the respondents (25.9 percent) did not answer this question. We found two different perspectives among those who responded affirmatively. From those who considered exportable PDF, Word, or Excel files to those who had their collection as APIs, csv, or MySQL. That is, two quite different case scenarios exist in textile museums, from the small and medium ones that usually do not have the knowledge, tools, human, and financial resources to do so, versus the big and well-established museums with open access politics and a long way already traveled in the digital arena.

As per the workshops, the first workshop was held on February 15, 2021. It was attended by thirteen professionals specializing in textile collections, some of whom came from eight Spanish museums. Spanish institutions' main concerns were that cataloging is not approached systematically, especially in museums that do not specialize only in textiles. Catalogers often change, or they may not specialize in textile heritage. In this regard, it is important to understand each museum's circumstances, including the museology and history of its collections. These elements greatly impact information about their holdings. In addition, IPR was raised here, as there was a shared fear of making their catalogs accessible to other repositories, if that meant losing visibility for the owning institution or not sharing in any revenues that this might generate. This makes information seem more important than the institutions and professionals that generate it.

The second workshop was held on 25th February and was carried out in Italian. Representatives from nine small Italian museums were gathered. During this workshop, participants raised the importance of a common need to train catalogers,

conservators, and documentalists constantly, but also to train parish staff, who are custodians of most church textiles, thereby involving communities in conservation decision-making practices. In this regard, the participants explained the need to share information among users to rediscover the close link between the textile artifact and its local surroundings, reinforcing their mutual connections. Finally, they agreed on the importance of seeking common guidelines, using tools such as a shared thesaurus, as well as the importance of constantly updating catalog records, especially for safeguarding artifact aid after a catastrophic event (such as an earthquake).

The third workshop was held on the 6th April, and participants from Europe, America, and Asia were gathered. The fifteen attendees included representatives from nine museums, one EU-funded research project, and two independent scholars. This workshop was the most eclectic, as we had not only a variety of museum professionals (documentalists, registrars, taxonomists, conservators, and curators) but also museums with different typologies from Europe, Asia, Latin America, and the United States. Participants agreed that using controlled vocabularies helps to minimize differences between data sources, but they should also reflect language evolution and diversity. One important concern was Intellectual Property Rights (IPR), in this case related to plagiarism, be it from researchers that fail to acknowledge the authors or sources of their information or from fashion designers that appropriate historical or indigenous designs without giving credit to them.

Best Practices: From Theory to Practice

The activities shared above paved the way for researchers to develop Best Practices and Recommendations for the textile collection sector (Sebastián and Gaitán 2021). These results are of utmost importance, especially when the 2020 survey by the Network of European Museum Organizations (NEMO) on digitization in European museums showed that only 20 percent of EU collections are online, whereas 43 percent are digitized but inaccessible (NEMO 2020). Not to mention the fact that most of those collections correspond to large museums, whereas small and medium ones do not have or the resources or the knowledge to address these digital challenges (Avgousti and Papaioannou 2023). SILKNOW's Best Practices were divided into four main blocs: (1) general remarks, (2) case studies, (3) specific guidelines, and (4) top recommendations.

General Remarks

The first part is intended for textile collections to determine the basic steps and guidelines currently available in the digital arena. In addition, one of the main goals was to raise awareness of textile collections that they are not the small niche they might think

of. To do so, SILKNOW provided a list of some interesting projects that are making headways, such as those mentioned in Table 1.

These projects provide an overview of open access and demonstrate that it is a growing demand of today's society, to which cultural institutions are responding by making their collections available—to varying degrees—allowing access to cultural heritage from anywhere, democratizing it, and generating creative projects associated with it, ranging from co-creation to new dynamic experiences with audiences. This trend is favored both to attract new audiences and actively involve them in the conservation and protection of cultural heritage, as well as for the recognition of culture as a human right, so that it is preserved for the enjoyment of this and future generations. In this sense, it is not only about sharing data and allowing the reuse of this digital heritage, but also about being open, accessible, and dynamic in order to establish links with society and thus fulfill the museum's missions, not by looking back at nostalgia, but looking at the present and the future, which is increasingly digital. In fact, some of them share common thesauri, such as IMATEX, SILKNOW, and Silk Memory; they know each other as projects and share experiences in open access.

In this section, we include one of the main issues raised during the workshops: IPR, terminology standardization, and open access. First, we encouraged practitioners to prioritize access over quality, as strange as it might sound, but cataloging is always a work in a process where museums can establish and follow some workflow priorities for online catalog publishing. For instance, we recommend the publication of what is on show (permanently or in temporary exhibitions), loans, and new accessions. Because cataloging is imperfect, it is important to let users know about it, for example, with a general disclaimer in the search interface, or with reminders for specific parts of data. Likewise, digitization processes must be carried out in appropriate formats to allow data interoperability (Castelli, Felicetti, and Proietti 2021). This effort should be supported and maintained by academic institutions, cultural institutions, learned societies, government agencies, or well-established organizations that seek to implement open access, unrestricted distribution, interoperability, and long-term archival capacity (Fafalios et al. 2023). In other words, it ensures its permanence, maintenance, and growth during the dumping and review of information.

Regarding terminology standardization, these Best Practices provides a series of thesauri that can be accessed online, with the recommendation to train museum staff and support them, ensuring the proper use of those standards. Table 2 shows a list of vocabularies and thesauri based on the best practices.

Regarding how to manage data, the SILKNOW recommendation is to manage people and IPR, not just data. In this sense, we must bear in mind that textile collections are very diverse; in themselves, some may be focused only on fabrics, others on fashion, and others are old factories with historical looms and tools; hence, catalog records should respect and record that diversity. To do so, we provided a series of

Table 1. Textile Projects Leading the Digital Arena.

SilkMemory provides access to the archive database of the Lucerne School of Art and Design with digitized text and image sources about the silk industry of the Canton of Zurich. Born after the commercial demise of the once-thriving Swiss silk industry, it provides a thoughtful answer to a danger that is common to many European countries: the dispersal and loss of the valuable archival and material heritage generated by those industries. It offers a database of fabrics, books, and images kept in their archives. <https://silkmemory.ch/>

IMATEX is the online database offering information about the collection of the Centre de Documentació i Museu Tèxtil de Terrassa. Created in 1996, it was originally built as a gateway for designers searching for inspiration in CDMT's historical collection, and later transformed into a generic online information resource. It is extremely rich in content, including costumes, accessories, designs, paraments, sample books, a library and an outstanding collection of more than 9,000 textiles. <http://imatex.cdm-t.cat/>

The **PARVENUE** project, led by art historians from the Heinrich-Heine-Universität in Düsseldorf, is built on a tight collaboration with the Deutsche Textilmuseum in Krefeld, one of the European capitals of silk industry. One of the areas of the project is built on a preliminary cataloging of the collection of 30,000 fabrics and costumes in the museum, not yet available online. <https://www.parvenue-projekt.de/>

The **SILKNOW** (the research project that has produced this very document) should also be a source of useful information for anyone interested in historical fabrics. It has a very broad set of goals, one of them being an enhanced access to the information about European silk heritage that is scattered across many institutions worldwide. ADASilk, our exploratory search engine giving access to collections from dozens of museums, is a proof of concept on many of the ideas and approaches outlined in this document. Our publications can also provide information and guidance. <https://silknow.eu/>

The **ART-CHERIE** project brought together partners from Belgium, Greece, Italy, and the United Kingdom, from quite a broad scope, including an interesting connection to the training of fashion designers. Among other outputs, it aimed at providing a Digital Database of Museo del Tessuto di Prato Exhibits and Collection. However, it is not openly accessible. <https://www.artcherie.eu/>

The **MINGEI** project aims at exploring the possibilities of representing and making accessible both tangible and intangible aspects of craft as cultural heritage. One among the crafts under study is silk weaving, led by one of the project partners, Haus der Seidenkultur in Krefeld. The project does not directly intend to build a database, but rather a repository of innovative storytelling models, including interactive Augmented Reality and Mixed Reality. It does have a strong emphasis on developing content description tools that comply with existing semantic web standards, such as CIDOC-CRM. <https://www.mingei-project.eu/>

The **Restaging Fashion project** purports to build an online catalog of costumes, prints, and drawings, held in different German institutions, adding 3D visualizations of some of these objects. <https://uclab.fh-potsdam.de/projects/restaging-fashion/>

The **SEMAP** project. Advanced access to cultural assets through the Semantic Web and Spatio-temporal Maps.

SeMap aims to offer an innovative diffusion of movable assets kept in museums, linking them semantically and through spatio-temporal maps. Thus, users will be able to more intuitively access both cultural objects and the significant relationships between them. In this way, it will allow Spain to be at the European forefront of access to digital collections, which not only focuses on traditional users of this type of tool but also goes further and addresses the demands of the educational, tourism, ICT, and of the citizen in general.

The objectives of SeMap are: Provide semantics to digitized heritage objects, to allow the link between different collections; Making digitized heritage objects more accessible in an innovative way; Disseminate and keep our heritage alive through the web. <https://www.uv.es/semaph/>

Table 2. Vocabularies and Thesauri Listed on the Best Practices.

Resource	Type of resource	Information provided
SILKNOW Thesaurus	Thesaurus Open Access SKOS format	Dedicated to the specific vocabulary of historic silk textiles, which also includes local term variants. It collects more than 800 terms that not only come from academic and historical sources but also from oral history, as knowledge coming from weavers is something that SILKNOW intends to preserve. Terms include silk weaving techniques, designs, looms, costumes, etc. All of them in four languages: Spanish, French, English, and Italian.
Textile Museum Thesaurus	Thesaurus Open Access PDF format	Based on the collection of the George Washington University Museum, meaning that only terms in use in the museum's catalog records are included within these hierarchies. It functions both as a controlled vocabulary for cataloging their collections and as an electronic querying aid, structured to permit the highest level of success in retrieving the appropriate objects during searches.
The Europeana Fashion Vocabulary	Vocabulary Open Access PDF format	Dedicated to fashion and fashion-related concepts. It focuses not only on the objects that are the result of creative processes in the fashion industry, but also on the processes themselves and the resources and techniques used (with a focus on object—material—technique)
ICOM Vocabulary of Basic Terms for Cataloguing Costume	Vocabulary Open Access Website	It offers comprehensive guidance on cataloging costume to ensure that the information on each garment in museum collections is recorded clearly. The lists of basic terms for women's, men's, and infants' garments have been published as a guide, setting out what information should be recorded, not just about garments and accessories dresses, but also about the many aspects of its study.
Vocabularies from CIETA, the Centre International d'Étude des Textiles Anciens.	Vocabulary Open Access Website/PDF	Since CIETA's foundation, its members have sought to establish a precise terminology for the tools, processes, and structures of weaving. Therefore, they have published a number of vocabularies, each focusing on one particular language, with the definitions of the terms listed and their equivalents in a set of other languages.
The Getty Art & Architecture Thesaurus (AAT)	Thesaurus Open Access Website	It includes generic terms, associated dates, relationships, and other information about concepts related to or required to catalog, discover, and retrieve information about art, architecture, and other visual cultural heritage. This include related disciplines dealing with visual works, such as archeology and conservation. Their goal is to be ever more inclusive of various cultures and their visual works. Also, in recognition of diverse collections found in art museums, the AAT contains terminology to describe objects and associated activities that are ceremonial or utilitarian in nature but are not necessarily labeled as art according to traditional Western aesthetics.

recommendations that included establishing managing roles, that is, to clearly incorporate the responsibility of dedicated staff for cataloging collections, but also of those in charge of the management of digital information within the institution. On the other hand, once information is digitized and incorporated into a structured data repository, sharing it across institutions is at hand, in most cases. Instead of only expecting users to find museums' websites on the web, an additional way to proceed is to aggregate these data into larger repositories. These shared repositories ensure better cataloging and information management strategies, as some degree of data planning and standardization are required to guarantee successful integration into an interoperable repository (Luther et al. 2023). They also increase visibility for small- and medium-sized institutions (which usually do not have such a big public profile among the general audience), guaranteeing a permanent exercise of our rights of access to culture, despite failing institutional abilities during any given crisis. Another side effect of large repositories is the increased sustainability of digital resources, against data obsolescence, and ensuring the appropriate usage of the required investment. Searching in a repository that contains dozens of millions of records seems daunting, but it is no worse than any ordinary Internet search. Nevertheless, standardization is a prerequisite for producing homogeneous queries and obtaining meaningful results.

Case Studies

The second part of Best Practices included three different scenarios for digital transformation. The first refers to institutions whose records are stored on paper and want to access the digital arena. This included training the staff, taking a graduate degree to attend short online courses, and learning from other experiences. We also recommend keeping museum users in mind from day zero, as cultural heritage institutions usually tend to think first about museum staff and then imagine some kind of general audience; doing serious research about the profiles of your users will save money and staff time. In this sense, one of the final recommendations is to conduct a pilot study by digitizing just a small cross-section of the collection, and then evaluating the results and some other practical guidelines with a step-by-step process. Figure 6 shows a full description of scenario A in SILKNOW's Best Practices.

The second scenario was considered for institutions that are mostly digital but with different databases, odd cataloging standards and rules, and little use of controlled vocabularies. In this scenario, the Best Practices included establishing priorities, for example, defining which objects should be more detailed than others, and setting a calendar of goals to fill those gaps in the information. In addition, we recommend the use of collection management software, as well as finding a Europeana aggregator that suits the institution and the collection, as it will help institutions to improve the normalization

Scenario A – The Good Old Times

"All of our information on the collection is stored on paper – yes, only on paper. We've been thinking about going digital but don't know how to succeed, not even where to start."

>> Some ideas to consider <<

✿ Build digital skills for you and your staff. This can take many forms, from taking a graduate degree to attending short online courses, or even independent training, but digital transformation will not happen through goodwill only. Upskilling the staff in charge is a must.

✿ Learn from your peers. Find museums with a similar profile, that are already digitally-savvy. Ask them about their mistakes and their successes (not necessarily in that order). Professional associations, conferences, workshops, etc. are usually the place to start.

✿ Many companies are specialized in digitizing information. Relieving your staff from that additional burden will usually be the way to go, especially if there is a lot of data to handle and you are already very late for the information age. It might be quite an investment but grants and other sources of public funding for these processes are more and more common, nowadays. Get ready for external funding applications.

✿ Before acquiring any software, you should consider issues such as who will manage the database, or the extent of your financial resources to buy a CMS? See the Getting into Specifics section below, for a listing of available software, including some free, open-source options.

✿ Keep your users in mind from day zero. We tend to think first about museum staff and then imagine some kind of general audience that will happily read whatever we give them. Sadly, it never works that way. Do serious research about the profiles of your users, beginning with your staff and then proceeding to visitors. Look into your current and your desired audiences, their needs, wishes, expectations... and then plan your information around those profiles. This will save you many later disappointments (like "why does our website have such poor traffic stats?").

✿ First, make a pilot study, digitising just a small cross-section of your collection, and evaluate the results. With that experience in mind, organize a digitization calendar or campaign, and go ahead.

✿ Once you're done and have a new shiny database, please keep your paper records! They are an essential part of your institution's memory.

>> Practical guidelines and best practices <<

✿ This Small Museums Cataloguing Manual introduces users to the cataloguing process, from planning and procedures to digitisation and management of digital collections: <https://mgnsu.org.au/sector/resources/online-resources/collection-management/collection-management-systems/>

✿ The path of successful digital transformation has been walked by many small museums by now. The Swedish LSH museum provides a very informative and realistic example: <https://pro.europeana.eu/post/making-impact-on-a-small-budget>

✿ In case you want or have to deal with your records on paper on your own, OCR (Optical Character Recognition) will be part of your everyday work. The following tutorials can help you to get along:

→ Generating an Ordered Data Set from an OCR Text File.

>> <https://programminghistorian.org/en/lessons/generating-an-ordered-data-set-from-an-ocr-text-file>

→ Cleaning OCR'd text with Regular Expressions.

>> <https://programminghistorian.org/en/lessons/cleaning-ocrd-text-with-regular-expressions>

→ OCR and Machine Translation.

>> <https://programminghistorian.org/en/lessons/OCR-and-Machine-Translation>

→ Detecting Text Reuse with Passim.

>> <https://programminghistorian.org/en/lessons/detecting-text-reuse-with-passim>

→ Cleaning Data with OpenRefine.

>> <https://programminghistorian.org/en/lessons/cleaning-data-with-openrefine>

Figure 6. Full description of scenario A, as described on SILKNOW's Best Practices.

and quality of their data. Figure 7 shows the description of scenario B as described on SILKNOW's Best Practices.

Finally, the third scenario is for institutions that have an online catalog that offers the highlights of the collection, but would like to provide open access to their data and are unsure of how to do it properly. The main recommendations here included advocating for open access to the institution and setting a clear policy about IPR on their contents, including information about the collections, both text and images, and a guide on how to make those data interoperable. Figure 8 shows the description of Scenario B, as described in SILKNOW's Best Practices.

Specific Guidelines

The third part includes manuals, software, and other tools to access, develop, and improve the inclusion of textile collections in the digital arena, including collection management systems (CMS) designed for museums, tools for thesauri development and maintenance, data models, and interoperability initiatives such as CIDOC-CRM or other tools such as Wikifier, Ontome, or IIIF. Table 3 describes the specifics.

Top Recommendations

The last part is the Top 5 Recommendations we provide in these Best Practices, these are:

1. Before digitizing your collection, consider the overall context. Examine your mission, your financial and human resources, and how are you planning to use these data. This can facilitate decision-making at a more strategic level.
2. When digitizing, take into account the growing demand from various stakeholders (including educators, researchers, cultural and creative sector, IT) for rich metadata and high-quality digital items, allowing for their use and reuse within the context of both cultural heritage and other sectors. Standards are essential, so try to implement them in your institution as much as possible.
3. Think about long-term sustainability for your work. In-house solutions might be a way to begin, but they will not go far when expectations grow. Get serious advice for your software and format choices. Work to make your data FAIR-compliant, from the very beginning.
4. Facilitate access to and use of digitized cultural material as much as possible. Make sure to provide clear information on the user's rights, for instance by adopting Creative Commons licenses.
5. Make alliances. They are wonderful opportunities for improvement and greater visibility. Partnerships with other institutions, cultural aggregators, research projects, etc. can transform your institution beyond your expectations, be they a three-year collaborative lab or a weekend hackathon.

Scenario B – Perfect Digital Storm

"Yes, we're mostly digital, but... Some parts of our collection are already catalogued on digital support, but very unevenly: different databases, odd cataloguing standards and rules, little use of controlled vocabularies... Some of that information is outdated, questionable, or plain wrong. Of course, small sections are not yet catalogued. Can't imagine even trying to put all that on our website."

>> Some ideas to consider <<

It's ok to establish priorities within your collection. (In fact, please do so.) Sometimes, specific sections of your textile holdings simply do not require a detailed, piece-by-piece cataloguing. Yes, it would be fun to have it, but it would just take too much time, and there isn't such a great demand for them. They might be interesting only for specialists, or still lack basic supporting research, or be too extensive and repetitive... Basic cataloguing, one that just indicates the existence of those pieces (or groupings of them) and a few simple pieces of data, is a very reasonable option in those cases.

At the same time, set a calendar of goals to fill those gaps in your information. Try to coordinate your efforts and obtain additional help: a research project, a conservation campaign, a temporary exhibition, a loan request, a new fundraiser event... These and other occasions should serve as stimuli and sources of support for a better coverage of your collection.

Patchy, uneven information is better than no information at all. The more you give your users, the more you will get from them. Waiting to go online until you have your perfect catalog will take forever. Begin publishing some information, even if you are not entirely happy with it, and tell users that you know it's imperfect. Ask for understanding, and help.

Based on your experience, try to understand which tasks belong to your core mission. It's best to cater to those with your permanent staff. Other tasks can be outsourced more efficiently, pooled and shared with other museums, collections, etc. In this regard, documenting and sharing information on your collection does belong at the center of your institution, in our opinion. Build it into your main responsibilities, and make sure that decision makers support it with appropriate resources.

>> Practical guidelines and best practices <<

Cataloguing historical textiles is an art in itself. The closest thing to a cataloguing standard is that provided by CIETA, but it isn't easily accessible, and can be too demanding for most no-specialized catalogers. If you have the training and the resources, use it. Otherwise, feel free to establish your own in-house standard, one that suits your collection and your resources. In any case, do not invent the wheel again: look at museums whose documentation you know and admire, and learn from their records.

Work with a single yet flexible database or CMS, as those listed below in section 6.b. You will always have to find a compromise between standardization and the diversity or degree of detail of your information. Approaches will necessarily differ between small, specialized collections and larger, more heterogeneous museums. One size does not fit all.

Using standard terminology, and doing it right, is no easy task. It takes time and effort, but results always pay back. Luckily, there's already a great deal of progress in this subject: check the thesauri in section 2.

Figure 7. Full description of scenario B, as described on SILKNOW's Best Practices.

Scenario C – Already Online but Not Yet Open

"We have an online catalog that offers the highlights of our collection. The thing is, we're sharing just a tiny part of the information we have. We would love to provide open access to our data but are unsure on how to do it properly."

>> Some ideas to consider <<

☀ Be ready to advocate for open access within your institution. There's still a lot of traditional prejudice (and some reasonable precaution) to be found in this regard.

☀ Set a clear policy about IPR on your contents, including information about your collections, both text and images. Let users know what they can or can't do with them. Give due recognition to all parties involved: authors, compilers, etc. Make sure that the same happens when your information is available through external repositories.

☀ Most authorities are giving full support to open access efforts, in the understanding that public funding should benefit everyone. There might be legal obligations or grant requirements that you must fulfill, now or in the near future. Quite likely, this is going to become standard for many heritage institutions. Get up to speed on it.

☀ Integrate online and on-site experience. It usually helps everyone understand the importance of open access and semantic web technologies. For instance, extending on-site experience (via a visitors app, or a version of your website) with information about other pieces that are not on view, or related pieces in other locations, or additional information – current or past events, publications, audiovisual materials, etc.

☀ Making your data interoperable can be a boon or a bane. It will depend on many circumstances. Standards, data models, mappings, licenses, file formats... ok, it looks daunting, but if your datasets are reasonably well organized and homogeneous, sharing them through external repositories (like Europeana or Wikimedia Commons) should not be overly difficult.

☀ Join the open access community. There's much to learn from people who are already working in this area, and quite often they are willing to provide guidance.

>> Practical guidelines and best practices <<

☀ Intellectual property is key, when working with shared repositories. You will need to have clear policies and agreements. The following resources will provide you with good examples and some templates, but your collection's legal officers will definitely want to make sure everything fits their requirements.

- RightsStatements.org currently provides 12 different, standardized terms or 'rights statements' that summarize the copyright status of objects in cultural heritage collections, as well as how those objects may be used.

>> <https://rightsstatements.org/en/>

- The Europeana Data Exchange Agreement (DEA) structures the relationship between Europeana and its data providers.

>> <https://pro.europeana.eu/page/the-data-exchange-agreement>

- For Creative Commons licenses, check section 3 above.

☀ Making your data and the repository interoperable will require you to tweak with your metadata, mapping your data structure to theirs. A model case is Europeana, having already a lot of experience and resources about these processes:

<https://pro.europeana.eu/share-your-data/metadata>

- Their guidelines give detailed support for providers wanting to map their data to the Europeana Data Model.

>> https://pro.europeana.eu/files/Europeana_Professional/Share_your_data/Technical_requirements/EDM_Documentation/EDM_Mapping_Guidelines_v2.4_102017.pdf

- Many mappings, refinements and extensions are already available, based on work by Europeana and partners that adapt EDM to the needs of specific domains and applications or make systems that use EDM interoperable with other data models.

>> <https://pro.europeana.eu/page/edm-profiles>

Figure 8. Full description of scenario C, as described on SILKNOW's Best Practices.

Table 3. Manuals, Software, and Other Tools for Entering the Digital Arena.

Name of the resource	Information
Working methods	
Small Museums Cataloguing Manual	Introduces users to the cataloging process, from planning and procedures to digitization and management of digital collections. Available for download in pdf format.
Europeana	A step-by-step process for museums and cultural heritage organizations provides guidance about sharing information through this common repository. It is very useful, not just for its specific purpose, but for any institution planning to improve their management of digital information about heritage collections.
Wikimedia Commons workflow	It offers similar guidance for data and media partnerships between Wikimedians and cultural institutions. The following overview is meant to help globally understand the overall workflow and to give pointers to the most often-used tools.
The Programming Historian	It publishes novice-friendly, peer-reviewed tutorials that help humanists learn a wide range of digital tools, techniques, and workflows to facilitate research and teaching. All tutorials are rigorously peer reviewed to ensure the lesson works as intended and that all concepts are explained for a non-specialist reader.
Some CMS (Collections Management Systems) designed for museum	
Spectrum	A UK-born collection management standard that is also widely used around the world. It offers a broad range of procedures for collections management for museums of any size and any collection type. It is offered in English, Arabic, Spanish, French, Dutch, Norwegian, Polish, and Swedish.
Coeli	A cloud-based solution for cataloging, managing, and disseminating cultural heritage collections in an agile and intuitive way. Coeli includes a complete procedure-based collections management system together with powerful data harvesting and sharing capabilities.
TMS Collections and eMuseum	Gallery Systems' core collections management product, TMS Collections, is a browser-based application designed specifically for collections, content, media, exhibition, and loan management. Developed in partnership with museum professionals, TMS Collections can organize and manage all collection types.
MuseumPlus	A browser-based, comprehensive and globally used CMS developed by the Swiss zetcom Group. It offers state-of-the-art technology combined with a highly configurable frontend.
Micromusée	A collections management system for all types of collections and museums. Version 7 offers a renowned interface for a better user experience and higher efficiency. It enhances the possibilities for shared or multilingual databases. <i>Micromusée</i> is user friendly and easy to customize.
OMEKA	A free, flexible, and open source web-publishing platform for the display of library, museum, archives, and scholarly collections and exhibitions. As a web application, it allows users to publish and exhibit cultural heritage objects, and extend its functionality with themes and plugins.
Dédalo	Open-source software platform developed by a small community of enthusiasts supported by a small company. <i>Dédalo</i> is freely available for individuals, organizations, enterprises or institutions to install, configure, and extend in accordance with their particular needs and without restrictions. It offers the possibility of a web publication API and a thesaurus.
Matriz	The reference system for the inventory, management, and online publication of cultural (movable, immovable, and intangible) and natural heritage of the Portuguese ministry of culture. As an integrated information system, it includes components for automatic inventory management and online publication on MatrizWeb and also on the Europeana portal.

(continued)

Table 3. (continued)

Name of the resource	Information
eHive	A web-based collection cataloging system. It is used worldwide by hundreds of museums, societies, and private collectors to catalog objects, store images, manage acquisition information, and publish their collections online.
S-Museum	It can be used in every type of establishment, from the smallest to the largest, for any kind of collection: art and history, archeology, modern art, natural history. It is available in various languages and offers an open and interoperable system enabling data harvesting, data import as well as the availability of data and digital assets for third-party systems, websites, mobile applications, etc.
Tools for thesauri development and maintenance	
Skosmos	A web-based tool providing services for accessing controlled vocabularies, which are used by indexers describing documents and searchers looking for suitable keywords. Vocabularies are accessed via SPARQL endpoints containing SKOS vocabularies.
Protégé	A free, open-source platform that provides a growing user community with a suite of tools to construct ontologies that represent domain models.
TemaTres	An open source vocabulary server for managing controlled vocabularies, taxonomies, and thesauri. It is an open source web tool, distributed under the GNU Public License (GPL) for the management and exploitation of controlled vocabularies, thesauri, taxonomies, and other models of formal knowledge representation. Internally, it uses a model based on terms, which differs from a model based on concepts. On the other hand, it has features specially oriented at providing traceability data and quality control for the created models. It is an easy tool to use and is a possible starting point.
Thmanager	An Open Source Tool for creating and visualizing SKOS RDF vocabularies, a W3C initiative for the representation of knowledge organization systems such as thesauri, classification schemes, subject heading lists, taxonomies, and other types of controlled vocabulary.
VocBench	An open source web platform (under the MPL Mozilla Public License) that allows for the collaborative editing of SKOS(XL) multilingual thesauri. This tool is mainly developed by the University of Rome Tor Vergata, and is closely related to the AGROVOC thesaurus.
Data models and interoperability initiatives	
CIDOC CRM (Conceptual Reference Model)	Built by ICOM's Documentation Committee, it is a theoretical and practical tool for information integration in the field of cultural heritage. It can help researchers, administrators, and the public explore complex questions with regards to our past across diverse and dispersed datasets. The CIDOC CRM achieves this by providing definitions and a formal structure for describing the implicit and explicit concepts and relationships used in cultural heritage documentation and of general interest for the querying and exploration of such data. Such models are also known as formal ontologies. These formal descriptions allow the integration of data from multiple sources in a software and schema agnostic fashion.
LIDO	A format for contributing collection information for resource discovery within museums. The strength of LIDO lies in its ability to support the full range of descriptive information about museum objects. It can be used for all kinds of objects, for example, art, architecture, cultural history, history of technology, and natural history. It is intended for delivering metadata, for use in a variety of online services, from an organization's online collections database to portals of aggregated resources, as well as exposing, sharing and connecting data on the web.
Linked Art	A community working to create a shared model based on Linked Open Data to describe art. It also intends to implement that model in software and use it to provide content.
UK's Jisc	It applies great advice on how institutions can take steps to improve interoperability between funder, publisher, and institutional systems.

Please note that the entire Best Practices are free, Open Access, and available at the SILKNOW's website: https://silknow.eu/wp-content/uploads/BestPractices_v3.pdf

Conclusion

Access to cultural heritage is recognized as a basic human right. Its enjoyment and recognition by the community makes them its custodians, valuing it as worthy of protection. Although textiles, especially silk, play a key role in the history and current life of many European communities, they are insufficiently recognized as an important kind of cultural heritage, both tangible and intangible. Moreover, its conservation is a very complicated task given its physical fragility and dispersion in many small institutions.

On the other hand, the digital challenges faced by museums vary greatly depending on their size and financial and human resources. Small and medium-sized museums have little access to digital tools and repositories that can allow them to share their data beyond their own walls and websites.

Digital open access and data management are, therefore, one of the major challenges facing museums. Indeed, many culturally significant historical artifacts have been digitized and made available online. This means that experts in cultural heritage, and often the public, now have the ability to search for and access information about artifacts instantaneously, even when stored in distant parts of the world. However, each institution has its own cataloging practices, which sometimes change, even within the same museum. Therefore, the resulting information could vary significantly. The inherent heterogeneity of these data creation silos is incompatible with each other and therefore mutually incomprehensible. Data heterogeneity was further increased by the multiplicity of languages used. This makes the discovery of these data even more difficult because it requires users to master various languages and very different information management systems, as well as explicit or implicit data models. To overcome these issues, museums need to talk to each other as they are the first to suffer from these problems. SILKNOW provided three workshops as a forum to share, debate, and propose best practices to help many museums that share the same situation.

The resulting guidelines are quite broad because the extreme heterogeneity of collections, institutions, and contexts makes it difficult to provide more specific advice. However, we are sure that this first step is already a valuable contribution to a number of goals, such as the consolidation of museums in the digital arena, through the widespread adoption of digital open-access policies, the support and training of museum professionals tasked with its cataloging and dissemination, the recognition of textile heritage, its value and complexities, and the need for increased protection. National plans and international charters should play an instrumental role in this regard.

Appendix

List of participants:

- Museo Lázaro Galdiano, Madrid
- Museu de la Seda de Moncada
- Museo Nacional de Artes Decorativas, Valencia
- Museu del Disseny, Barcelona
- Centro de Documentación y Museo Textil, Terrassa
- L'Etno, Valencia
- Patrimonio Nacional
- Conselleria d'Educació, Cultura i Esport (regional government, Valencia)
- Museo Diocesano di Caltanissetta
- Museo Diocesano di Cuneo
- Museo Diocesano di Monreale
- Museo Arcidiocesano "G.Boccanera" di Camerino
- Museo Diocesano di Genova
- Museo Basilica San Sebastiano
- Museo Diocesano di Massa Carrara—Pontremoli
- Museo Diocesano di Padova
- Museo Diocesano di Reggio Calabria
- Museo Textil de Oaxaca, Mexico
- Philadelphia Museum of Art, United States
- Haus der Seidenkultur, Germany
- The Metropolitan Museum of Art, United States
- Klosterkammer Hannover, Germany
- Olympic Foundation for Culture and Heritage, Switzerland
- Fachhochschule Potsdam, Institute for Urban Futures, Germany
- State Silk Museum, Georgia
- Centre for Textile Research, University of Copenhagen, Denmark
- Mingei research project
- Museu Nacional do Traje, Portugal

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Ethics Approval

This non-interventional study employed participant survey and assessment data. All participants were provided with an information sheet and signed an informed consent form. Participants were informed that they may withdraw their contributed information at any point. All personal data is anonymized. This study was accepted by the Data Protection Officer of the University of Valencia as defined by the Organic Law 6/2001, from 21 December, by the Statutes and intern rules and regulations as well any rules and regulations surging from the application.

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Data Availability Statement

Raw data were generated at University of Valencia. Derived data supporting the findings of this study are available from the corresponding author on request.

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