Moving
Museum Catalogues
ONLINE

An Interim Report from the Getty Foundation

The Online
Scholarly Catalogue Initiative

PARTICIPATING MUSEUMS

Art Institute of Chicago

Freer Gallery of Art and Arthur M. Sackler Gallery, Washington, D.C.

J. Paul Getty Museum, Los Angeles
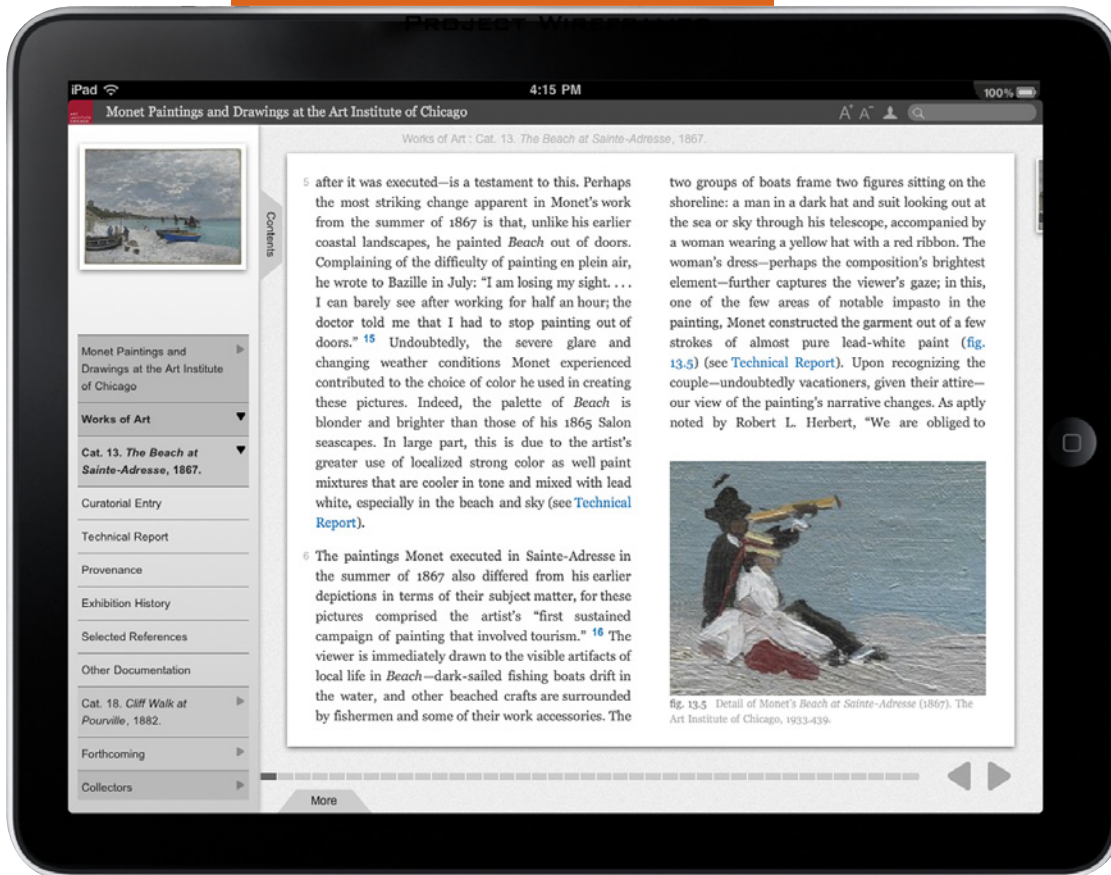
Los Angeles County Museum of Art

National Gallery of Art, Washington, D.C.

San Francisco Museum of Modern Art

Seattle Art Museum

Tate, London

Walker Art Center, Minneapolis

Works of Art : Cat. 13. *The Beach at Sainte-Adresse*, 1867.

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Monet Paintings and Drawings at the Art Institute of Chicago

Works of Art ▼

Cat. 13. *The Beach at Sainte-Adresse*, **1867.** ▼

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Provenance

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Selected References

Other Documentation

Cat. 18. *Cliff Walk at Pourville*, 1882.

Forthcoming

Collectors

5 after it was executed—is a testament to this. Perhaps the most striking change apparent in Monet's work from the summer of 1867 is that, unlike his earlier coastal landscapes, he painted *Beach* out of doors. Complaining of the difficulty of painting en plein air, he wrote to Bazille in July: "I am losing my sight. . . . I can barely see after working for half an hour; the doctor told me that I had to stop painting out of doors." [15] Undoubtedly, the severe glare and changing weather conditions Monet experienced contributed to the choice of color he used in creating these pictures. Indeed, the palette of *Beach* is blonder and brighter than those of his 1865 Salon seascapes. In large part, this is due to the artist's greater use of localized strong color as well paint mixtures that are cooler in tone and mixed with lead white, especially in the beach and sky (see Technical Report).

6 The paintings Monet executed in Sainte-Adresse in the summer of 1867 also differed from his earlier depictions in terms of their subject matter, for these pictures comprised the artist's "first sustained campaign of painting that involved tourism." [16] The viewer is immediately drawn to the visible artifacts of local life in *Beach*—dark-sailed fishing boats drift in the water, and other beached crafts are surrounded by fishermen and some of their work accessories. The

two groups of boats frame two figures sitting on the shoreline: a man in a dark hat and suit looking out at the sea or sky through his telescope, accompanied by a woman wearing a yellow hat with a red ribbon. The woman's dress—perhaps the composition's brightest element—further captures the viewer's gaze; in this, one of the few areas of notable impasto in the painting, Monet constructed the garment out of a few strokes of almost pure lead-white paint (fig. 13.5) (see Technical Report). Upon recognizing the couple—undoubtedly vacationers, given their attire—our view of the painting's narrative changes. As aptly noted by Robert L. Herbert, "We are obliged to

fig. 13.5   Detail of Monet's *Beach at Sainte-Adresse* (1867). The Art Institute of Chicago, 1933.439.

More
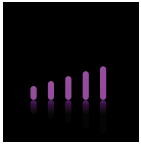

Art Institute of Chicago's online catalogue prototype displayed on an iPad. Work pictured: *The Beach at Sainte-Adresse*, Claude Monet, 1867. Oil on canvas, 29¹³⁄₁₆ x 40⁵⁄₁₆ in. Mr. and Mrs. Lewis Larned Coburn Memorial Collection. 1933.439. Image courtesy of Art Institute of Chicago.

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Introduction

The publication of scholarly catalogues has long been a critical part of a museum's mission. Based on meticulous research, they make available detailed information about the individual works in a museum's collection, forming the building blocks for a museum's public activities and ensuring the contents a place in art history. High production values and thorough content have made them a vital resource for researchers, as well as treasured objects in their own right. But what is the future of the printed catalogue?

Costly to produce and limited in accessibility by small print runs, printed catalogues are difficult to update on a timely basis. Potential content often exceeds allotted space. They are thoroughbred horses confined to stock pens.

Technology promises new breakthroughs. Through digital publishing, museums can offer deeper, richer content, tailored to the needs of varied audiences. Online catalogues can reach virtually unlimited scholarly audiences around the globe. They allow for frequent updates and changes, and permit direct links to a limitless array of primary and secondary resources, from archival documentation and conservation information to audio and video interviews with artists and curators. These catalogues combine all of a museum's activities, from curatorial and conservation to education and new media. They are the new public face of the institution.

Launched in 2008, the Getty Foundation's Online Scholarly Catalogue Initiative (OSCI) is helping museums explore this new frontier in scholarly publishing. The Foundation invited the following nine museums with diverse collections to plan and then implement model catalogues for works in their permanent collections: the Art Institute of Chicago; the Freer Gallery of Art and the Arthur M. Sackler

STRATEGIC VISION:

When art museums have innovative models for online scholarly catalogues, they will be able to dramatically increase access around the globe to in-depth knowledge about works of art in their collections.

Gallery, the Smithsonian's Museums of Asian Art in Washington, D.C.; the J. Paul Getty Museum in Los Angeles; the Los Angeles County Museum of Art (LACMA); the National Gallery of Art in Washington, D.C.; the San Francisco Museum of Modern Art (SFMOMA); the Seattle Art Museum (SAM); the Tate in London; and the Walker Art Center in Minneapolis (for concise information on each participating museum, see appendix 1). The museums were selected for the importance of their collections, the range of issues their catalogues presented, the support of their leadership and the expertise of their staff, and their commitment to new forms of publishing.

These museums have now completed the two-year planning phase, during which they conducted new research and completed conservation analyses. Equally important, they explored new interactive ways to deliver content and the technology platforms that would allow them to do so. At periodic meetings, museum teams worked collaboratively to arrive at conceptual and technical breakthroughs. As the hard work of implementing these ambitious projects begins, their thoughtful and innovative solutions will transform museum publishing.

While these catalogues are still very much a work in progress, the lessons the OSCI participants have learned thus far are nonetheless of tremendous value for other museums contemplating the move to online publishing. This transition can seem daunting, particularly for an institution trying to go it alone. Until now, few models have been available. OSCI, and the spirit of collaborative inquiry that drives it, provides an initial roadmap for this future.

This report on the planning phase of the OSCI initiative begins with a brief summary of the opportunities and challenges presented by publishing scholarly catalogues online, followed by the lessons participants learned. Finally, the report includes a series of appendixes with fuller descriptions of the individual projects at each museum, including details regarding collections management systems and digital publishing platforms, and documents and tools created by OSCI team members that may be helpful to other museums beginning the move online.

The future of museums may be rooted in the buildings they occupy, but they will also need to address audiences across the world. Institutions that respond to the opportunities of the Internet will be the ones that have the authority in the future. Our challenge is to encourage curators to work for the world online as much as they do in the galleries.

—Sir Nicholas Serota, Director, Tate
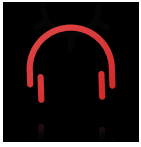
Opportunities

Digital publishing is the future for museums. Readers have accepted and even popularized e-books and software that provide easy access to texts and images from a variety of devices (Kindles, iPads, iPhones, Androids, and so on). With new computing technologies, museums can convey broader and deeper content, and thus enhance and express the significance of the collections in their care. The moment is right for museums to embrace online publications.

Multilayered Content and More Images

> We viewed the opportunity to be a part of OSCI as the next logical departure for our institution. We acquire many works through commissioning the artists. How do we communicate this primary source, that first relationship with artists, in our catalogues?
>
> —Robin Dowden, Director of New Media Initiatives, Walker Art Center

No longer will museums be artificially limited by the physical properties and economic constraints of print publication. With digital publication, the range of primary and secondary material that can be included, from archival records and conservation documentation to comparative images and audio and video files, is virtually limitless. The online environment also offers enhanced ways to view images and to present objects, including the ability to zoom in on details and see three-dimensional views of sculpture. Searching through the electronic catalogue is faster and more effective; related books and articles are only a click away. Readers can customize the catalogue for their own uses, bookmarking particular pages, making notes, and assembling their own study collections.

■ Easy Updating

> J. Paul Getty Museum staff began their current project in response to a call from curators in the Paintings Department. . . . Curators were tired of creating publications that were out of date before they even went to press.
>
> —Nik Honeysett, Head of Administration, Getty Museum

With online publishing it will no longer be necessary to wait for years, or even decades, until a catalogue is completed. Portions can be posted as they are readied, and scholars worldwide can provide feedback in an interactive manner. Museums can publish new accessions immediately, and make updates and changes to the existing catalogue as soon as new information becomes available.

■ Expanded Audiences

> One of the conditions our advisory board placed on the acquisition of the [Gerhard] Pulverer Collection of premodern Japanese illustrated books . . . was that it not become an arcanely referenced stamp collection. They wanted us to explore ways to make the material accessible both in the traditional sense of being exhibited and in some nontraditional senses.
>
> —James Ulak, Deputy Director, Freer/Sackler Galleries

Online scholarly catalogues can reach anyone with a computer and access to the Internet. Most print runs of permanent collection catalogues number in the thousands, and high costs prevent many libraries, let alone independent scholars, from acquiring them. Now scholars who may never have access to the original work of art, or even to a good library, will be able to conduct serious research. Online publishing also meets the growing expectations and needs of tech-savvy scholars.
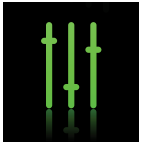
Challenges

Online users want more of everything. With technology you can have more. . . . How far should we go?

—Diana Folsom, Manager, Art and Education Systems, LACMA

While an online environment holds much promise for making collection catalogues more current, interactive, and widely available, significant barriers still exist. In many cases, opportunities are also challenges:

- How much content is too much content?

- How many audiences can you address simultaneously?

- How can the museum manage copyright issues for unlimited comparative images?

- How frequently can an institution update an online catalogue?

Buddha Shakyamuni, artist unknown, Northern Thailand or Northwestern Laos, Southeast Asia, 1563. Metal, copper alloy with traces of gilding, 11¹³⁄₁₆ x 6 x 3⅞ in. Purchased with funds provided by Mr. and Mrs. Edgar G. Richards. M.86.149a–b. Photo courtesy of Museum Associates/LACMA.

■ Maintaining the Integrity of the Permanent Collection Catalogue

Books are familiar, tangible, and, most importantly, lasting objects; the Internet is less so. Curators are concerned that online collection catalogues may not last beyond the next change in technology and will not be recognized as legitimate scholarship. Many of the following questions arise:

- How will online catalogues be cited?
- Will successive versions of the catalogue, updated and changed, be maintained so that scholars can trace the progress of scholarship?
- Can enduring access to catalogues be guaranteed?
- Will libraries catalogue and "acquire" these resources?
- What are the best practices for long-term preservation of online scholarly catalogues?
- Should online catalogues look familiar to their users or can they explore new modes of presentation?
- How should content be structured if readers can access and enter the catalogue at any point and, moreover, can navigate the catalogue through a myriad of pathways?
- Does providing the user with more control to choose content mean relinquishing an authorial and authoritative voice?

To be successful, online catalogues must meet all of the scholarly expectations of the print catalogue while considering thoughtfully the implications of the online environment.

■ Confronting Technology

Museums are not set up to publish online; in fact, their current systems present major obstacles. Museums store information about their collections in various databases, including collections management systems, content management systems, and digital asset management systems, none of which are designed for online publishing. Moreover, these systems typically do not "talk" to one another, often necessitating yet another layer of technology—middleware—to integrate them for online publishing. Developing this middleware is more difficult than many institutions initially imagined.

■ Reinventing the Wheel

Museums have a track record of creating proprietary and highly individualized solutions to meet each institution's technology needs, as witnessed by the proliferation of different collection management systems. In addition, there is a tendency to develop "local" solutions to technology problems, rarely looking beyond a particular museum's community. In an era of limited budgets, the "go it alone" approach is not sustainable. The challenge in developing digital publishing environments is for museums to work together to develop examples of good practices and to look imaginatively for ideas in other sectors, perhaps news or entertainment.

■ Adapting Administrative Structures and Staffing

Online scholarly catalogues do not follow the workflow of a print catalogue, in which curators work on the text and then hand it off to the publications department. Digital publishing involves numerous departments, ranging from curatorial, publications, information technology, web, and collections management, all of which have to work in close collaboration and coordination. This may require museum staff to rethink traditional divisions of labor and to restructure workflows; however, they are understandably reluctant to reorganize departmental structures or divisions of labor when no other operational model currently exists. Additionally, in many museums the new positions involved in online publishing, such as digital editor and information architect, require skill sets and training that current staff does not possess.

■ Prioritizing Digital Publishing

Institutions will be challenged to keep this long-term project on schedule, particularly when many other pressing projects, such as special exhibitions, are in the pipeline. Several reasons account for this, including the following:

- Online publishing may not conform to current workflows;
- It involves the development of new processes, tools, and infrastructure; and
- It depends on key staff members—curators, photographers, publications staff, collections managers, information technologists, registrars, and conservators—who are engaged in multiple projects.

■ Addressing Expectations of Cost

As with any new undertaking, a logical question to ask is, "How much is this going to cost?" The reality is that there is, as yet, no simple answer. At the outset the transition to digital publishing will likely not be any less expensive than print publication. In fact, many museums will continue to produce print publications, in particular special exhibition catalogues, necessitating dual publishing systems. No one-size-fits-all digital publishing environment is currently available to the museum community (and seems unlikely to emerge); therefore, the cost for any one institution to embrace online publishing cannot be accurately predicted. While the assumption is that cost savings can be made over time, no hard data yet exists to confirm this.

■ Managing Intellectual Property Rights

Managing intellectual property rights for the online environment is complex. For example, if an online catalogue is to exist in perpetuity, can long-term permission to publish images online be secured? Moreover, the legal process is evolving concomitantly with new technologies. Intellectual property rights present significant challenges that can only be addressed by the larger museum community. (For further detail on intellectual property rights, see appendix 2.)

Scanning, Robert Rauschenberg, 1963. Oil and silkscreen on canvas, 55¾ x 73 in. San Francisco Museum of Modern Art. Fractional and promised gift of Helen and Charles Schwab. © Estate of Robert Rauschenberg / Licensed by VAGA, New York.

Lessons Learned

The participating OSCI museums, through work on their individual catalogues and a series of intensive collaborative convenings, have made major advances and exciting discoveries in addressing the challenges of online publishing. What follows are some important lessons learned along the way.

LESSON 1 — Remember That Online Publishing Is Real Publishing

As we looked at the definition of the scholarly catalogue, we understood that there are serious scholarly components that one expects to see—provenance, bibliography, and exhibition history. We wanted all of that to be present and at the same time we reflected upon some of the unfortunate inadequacies in print publications, including a lack of comparative illustrations and conservation documentation. We want everything that print does and we want to rectify issues that were not satisfactory in the print run, including very expensive unit costs. This is a very high order of undertaking.

—Gloria Groom, David and Mary Winton Green Curator of Nineteenth-Century Painting and Sculpture, Art Institute of Chicago

■ Online catalogues must meet expectations of scholars

Print catalogues have an integrity, a structure, and an organization that is readily recognized by scholars and desirable to maintain. Thoroughly researched, vetted, and peer-reviewed, they have acknowledged authorship, references, and notes; they possess a widely recognized format; and they are easily cited. Scholars expect these same characteristics in an online publication. The look, functionality, and the extent to which new models for online catalogues meet and exceed these scholarly expectations will play a crucial role in their adoption and widespread use.

While there was general consensus around this issue, individual museums differ in their approach to satisfying this demand. At the Art Institute, for example, the catalogue must be clearly visible

as a separate and discrete "catalogue" on its website, while the Walker envisions distributing the content of its scholarly catalogue throughout its website. In addition, the Art Institute has decided to treat its catalogue as an edition, meaning it will remain static until the next edition of its catalogue is published, whereas the Walker's catalogue will constantly be updated. The Getty Museum team intends to present scholarly essays in "locked" archival PDF format to ensure ease in citing individual essays and long-term preservation. All participants clearly agreed, however, that it is essential to define scholarly expectations for online catalogues at the very outset of the project.

■ An online publication is different than a database

> The core of this project has always remained stable. What has really changed is how we were trying to wrap our heads around the difference between the database and the catalogue.
>
> —Robin Dowden, Walker Art Center

The most comprehensive data about individual artworks in a museum's permanent collection usually resides in the museum's collection management system (CMS). Larger museums often have multiple systems for storing data; in addition to a CMS, they may have a content management system and/or a digital asset management system to manage other types of data, from images to video and audio files. These systems are not designed to "talk" to one another, let alone function as publishing tools. For example, none provides an "authoring tool"—a software package that supports writing a lengthy

Visitors in Hélio Oiticica and Neville D'Almeida's *CC5 Hendrixwar/Cosmoca Program-in-Progress* (1973) in the Walker-organized exhibition, *Hélio Oiticica/Rikrit Tiravanija: Contact*, 2010. Photo: Cameron Wittig for Walker Art Center.

text with the appropriate footnotes, bibliography, and image references. Nor do any of them provide an adequate "publishing tool"—the ability to transform text and media to a variety of different formats and platforms, such as iPads, iPhones, and so on. Each OSCI museum team needed to decide how to meet this challenge. Should they keep their existing CMS, but build new authoring and publishing tools on top of it? Or would it be better to develop a new breed of technology architecture that will support the full set of requirements (collections management and publishing)?

In short, a database and an online catalogue are not the same thing. A database stores data—whether text, images, audio, or other media—which can be linked and referenced, combined and recombined in whatever manner is best suited for disseminating knowledge and utilizing content. These databases are crucial for online publishing as they are the building blocks from which online catalogues are created; however, they are not online scholarly catalogues in and of themselves. Publishing to the web using existing systems is not an easy task.

LESSON 2 · Choose a Manageable Project

Originally we thought we would do [Robert] Rauschenberg and friends. We came back and said, "Let's just focus on one artist." This was the moment where we really scaled back and said, "It's okay to do fifty Rauschenberg works."

—Sarah Roberts, Associate Curator of Collections and Research, SFMOMA

■ Make a sound choice

Scholarly collection catalogues generally focus on an important collection or portion of a collection, and online catalogues follow the same rationale. Publishing online also requires determining which collection would benefit most from the distinctive opportunities of this new environment. LACMA curators, for example, realized they could provide better context for their Southeast Asian collection when publishing online, and are now designing interactive timelines and features that place objects in their archaeological settings, as well as videos demonstrating ritual use. The SFMOMA team knew that documentary footage and artist interviews would greatly enhance their Robert Rauschenberg catalogue, while the Art Institute wanted to provide a better understanding of artists' working methods through extensive conservation documentation.

■ Start small and set limits

Even if everything is ultimately possible, everything cannot be done at once. As the OSCI planning process came to a close, seven of the museum teams had reduced the size and scale of their original projects as they continued to grapple with complex technical challenges and anticipated the need to restructure workflows. Participants at the Freer/Sackler Galleries decided to focus on forty-six books featuring the work of Katsushika Hokusai, instead of the entirety of their newly acquired Pulverer Collection of premodern Japanese illustrated books, which includes over 30,000 images. The Art Institute's catalogue was limited to paintings and drawings by Renoir and Monet, rather than half of its nineteenth-century paintings and drawings collection. All of the museums decided to provide more resources for a smaller number of objects, keeping in mind that the digital environment will allow them to scale up their projects over time.

Mitsu no tomoe and Tokiwa no taki, Totoya Hokkei, Edo period, 1832. One thread-bound book, woodblock printed, ink and color on paper, 9$\frac{15}{16}$ x 6$\frac{7}{8}$ x $\frac{3}{8}$ in. Purchase of The Gerhard Pulverer Collection, Museum funds, Friends of the Freer and Sackler Galleries and the Harold P. Stern Memorial fund in appreciation of Jeffrey P. Cunard. FSC-GR-780.210. Image courtesy of Freer Gallery of Art.

LESSON 3 Understand Your Content

Each of the OSCI teams carefully considered the kind of the content it would create and include, and how these various pieces of content would relate to one another in a web environment that does not conform to traditional linear narratives.

■ Ensure you have clean data

> The best approach is the separation of data, its transformation, and its presentation. This modular approach is fundamental to how [museums] are going to survive and be productive . . . as the platforms that we disseminate to are constantly evolving and changing.
>
> —Nik Honeysett, Getty Museum

To publish online successfully, museums need to create, store, retrieve, transform, combine, and disseminate data. The OSCI museums recognized, therefore, that a fundamental first step was ensuring the quality and integrity of the data associated with objects in their collections.

Many OSCI teams recommend a modular approach to data—keeping it separate and, above all, "clean." They spent considerable time engaging with standardized vocabulary and metadata, and even discovered gaps in current resources. LACMA, for example, first hired an information architecture consultant to assist with identifying project goals, which included using the Lightweight Information Describing Objects (LIDO) standard for object metadata. Next, an outside researcher was brought in to develop the appropriate vocabularies to populate the class and object type fields. The project involves the arts of Asia, so the researcher consulted at least four accepted controlled vocabularies and discovered that a number of terms relevant to Southeast Asian art were absent from the Art and Architecture Thesaurus (AAT), and is currently contributing these to the AAT to expand this vocabulary.

■ Identify further research

As with preparing a print catalogue, when reviewing existing object files and catalogue entries, OSCI participants discovered that many entries needed to be updated in order to incorporate recent research. They also realized that taking advantage of the expanded capacity of the online environment meant pushing research and interpretation in new, previously unexplored directions. So, in addition to allocating funding and staff time for curatorial research and conservation analysis, as well as new

photography, comparative images, and rights and reproductions (as would be expected with a print catalogue), OSCI teams utilized the planning phase to brainstorm new types of content, such as multimedia productions, and innovative ways of linking together a variety of content.

■ Define your audience

Producing content is inseparable from considering one's audience. While printed permanent collection catalogues are typically aimed at an exclusively scholarly audience, the Internet allows museums to engage multiple audiences simultaneously. Each OSCI museum found it useful to debate and ultimately to define its intended audience early on in its planning, often through usability studies that allowed them to test prototypes and study more closely the research behavior of scholars in an online environment. The National Gallery of Art pioneered a "skim, swim, and dive" approach, in which general audiences can read basic information, students can link to more detailed findings, and specialists can delve into deep scholarly content and comparative material. Other museums chose to focus on the traditional scholarly audience, mindful that an interested general public might also find its way to the information. Through usability studies museums also developed a better understanding of how audiences can contribute to content creation. SAM, for example, is developing a means to incorporate feedback from the scholarly community, gathered electronically, into its catalogue. Whatever the final decisions regarding target audience and level of audience interaction, defining the audience(s) was a crucial first step in structuring the catalogue and in determining the style of writing.

A Naval Encounter between Dutch and Spanish Warships, Cornelis Verbeeck, ca. 1618/1620.
Gift of Dorothea V. Hammond. Image courtesy of National Gallery of Art, Washington, D.C.

LESSON 4 Integrate Technology

Create functional requirements documents

Once institution members grasped the differences between the capacities of their existing databases and their expectations for the scholarly catalogues they will produce, they assessed their current systems. They recognized that to plan for the future, they first needed to create functional requirements documents. While few of the project teams had anticipated creating such documents, many now believe that the quality and scope of these documents determines the success of any project.

A functional requirements document outlines what a digital publishing environment must be able to do. In order to create functional requirements, museum staff need to understand how content is currently created, managed (stored and retrieved), and disseminated, and have a good understanding of what currently works and what doesn't, and what might need to be done differently to move forward into digital publishing. In the most successful OSCI projects, staff worked closely with the information technology department, or with external technology consultants, to develop the functional requirements document. This document made it possible for museums to identify clearly the software and hardware components needed to do the job correctly, and also to more accurately ask for and allocate funds to support the technical needs of online publication projects. (For an example of a functional requirements document, see appendix 3.)

The role of the website

Most museums intend to publish their online scholarly catalogues via their websites. This requires anticipating where on the site the catalogue will be located, how users will find the catalogue, and how the catalogue relates to other information found on the institution's website. It also requires anticipating how the systems that support the website will interact with those supporting the online catalogue. The National Gallery of Art tackled this problem by redesigning its main website in tandem with the creation of the website that will house its online scholarly catalogue, although this meant that the technical and web staff members carried a high workload. At Tate, where a new website is projected, the OSCI team developed tools that will convert the catalogue entries and related materials they have already produced to be easily integrated into the new online environment when it is completed. (For further recommendations concerning website Uniform Resource Locators [URLs], see appendix 4.)

■ Everyone on the team needs to engage with technology

It was evident from the outset that a successful online publication would be a marriage of content and technology. What was not as evident was that curators would need to become more familiar with technology, that technologists would need to become more attuned to the needs of curators and other scholars, and that those with experience in print publication would need to find common ground with web designers and technologists, and vice versa. The OSCI teams also learned that having a project team member with significant systems experience was highly beneficial, but when this was not feasible, developing good working relationships with information technologists was vital.

Few curators dream of becoming experts in information architecture and even fewer information technologists have a background in academic art history. The most successful planning projects, however, resulted from ongoing conversations among all key constituents, particularly around technology. Curators discovered that they did not need to become technology specialists—they only had to become more familiar with basic concepts and vocabulary about systems, and how they work. Database programmers gradually learned more about the rigors of scholarship so that they could design prototypes that would meet expectations of the field, including acknowledged authorship, vetted texts, references, and citations. They also recognized the crucial role that look, feel, and functionality play in the acceptance of an online catalogue by the scholarly community.

LESSON 5 — Have the Right People and Structure

■ Ensure senior staff is part of the planning process

Crucial to the success of all the OSCI projects has been the inclusion of senior staff in the planning phase, either directly as project team members or indirectly as members of ad hoc committees. Whether an institution is large or small, OSCI participants found having senior staff on board facilitated communication and streamlined decision-making, particularly in cases where key assignments were shared across various departments.

■ Find project champions

> The project has had unswerving executive-level and senior-level support from the beginning.
>
> —Judy Metro, Editor in Chief, National Gallery of Art

While the input of senior staff members is essential, it is equally important to have top administrators advocating for the project and keeping it at the forefront of a museum's many priorities. Time and

again participants mentioned key staff members who championed the project, which included directors and deputy directors, chief operating officers, senior curators and conservators, and the heads of the information technology and registration departments. It doesn't matter if an institution is large or small: someone at the top needs to know about this project and be ready to talk enthusiastically and intelligently about how online publishing aligns with institutional mission and goals.

■ Successful projects have a project lead and a project manager

OSCI participants identified a project lead and a project manager as two absolutely critical staff positions (with the exception of smaller institutions where these positions may be handled by the same individual). Online publishing projects are complex. Museums need to recognize that no matter how flat the hierarchy at an institution, someone has to be in charge to keep a project moving forward, and there needs to be someone on the project team who is efficient, organized, and attentive to day-to-day details.

■ Collaboration and communication are essential

> OSCI is a hydra that reaches into every department. It straddles multiple departments. SFMOMA has a culture that makes that possible. OSCI is the thing with five legs.
>
> —Sarah Roberts, SFMOMA

Successful projects are ultimately about the right people with the right skill sets completing the necessary tasks. Internal staff associated with OSCI projects included curators, conservators, content contributors, educators, collections database administrators, administrative and editorial support, software developers, information technology staff, and those with web expertise. In some cases,

Trophy IV (for John Cage), Robert Rauschenberg, 1961. Metal, fabric, boot, wood, tire tread, chain, and flashlight, 33 x 82 x 21 in. San Francisco Museum of Modern Art. Purchase through a gift of Phyllis Wattis. Art © Estate of Robert Rauschenberg/Licensed by VAGA, New York, 98.303.

the right specialists were found beyond the walls of an institution. With so many people involved, OSCI participants realized that good, consistent communication was a top priority and built in the necessary time. Regular reporting on the project proved to be an effective way to ensure buy-in from staff not directly involved in the project or its outcome. In addition, staff found it critical to be transparent about the process, sharing information and workflows across departments. Significantly, the fastest route to early buy-in at the higher level for OSCI projects was ensuring that no key individuals were left out of the conversation, even if they were not originally on the core team and had to be added later.

■ Understand where you need new positions, professional development, or outsourcing

What has become pretty clear is we are going to have to rewrite job descriptions.

—Robin Dowden, Walker Art Center

With little in-house technology support, we partnered with our collections software supplier to provide much-needed technical assistance in talking through issues and making the most of the system we have.

—Michele Miller, Collections Database Administrator, SAM
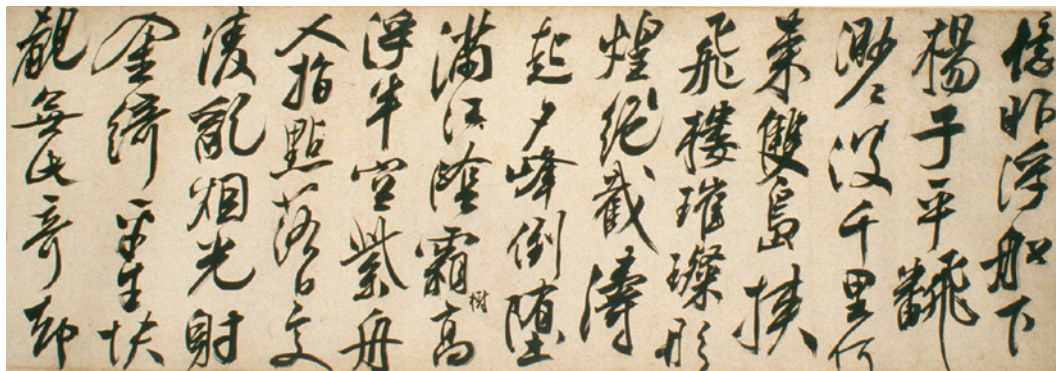
Poem to the painting "Sunset on the Jin and Jiao Mountains," Wen Zhengming, Chinese, 1521. Hand scroll; ink on paper, 14 x 390 in. Seattle Art Museum. Purchased in honor of Jay Xu and Jennifer Chen with funds from the Bill and Melinda Gates Foundation Art Acquisition Endowment, Anonymous, Mimi and Bill Gates, The Asian Art Council, Jeffrey and Susan Brotman, Lyn and Gerald Grinstein, Jane and David Davis, Christine Y. Nicolov, David and Daphne Tang, Griffith and Patricia Way, Gail Joice, Winifred and Ven Lee, Julie Emerson, Phil Stoiber, Scotty Ray, Albert and Angelina Yen, Mike McCafferty, SAM Volunteers Association, John Stevenson, Sheila Farr, Julie Creahan, Nancy Curtis, and Steve Erickson. 2003.1. Photo: Elizabeth Mann.

As museums invest more time and resources in building institutional capacity for online publishing, the range of expertise needed will change and evolve. Some tasks associated with online publishing may require the creation of new positions, retraining or professional development opportunities for current staff, or outsourcing. For example, a designer accustomed to print publications may need new skills in design and spatial orientation in order to reconceive how content can be organized in an online environment. Most OSCI museums simply did not have full-time staff with all the skills needed to make planning for online publishing a success. In particular, with respect to technology, staff at several institutions knew or quickly discovered they would need to outsource some or all of this work.

■ Plan for staff turnover

Staff turnover, layoffs, illness, and reassignments played a significant role in each of the OSCI planning projects. These changes often meant that other staff had to take on more and/or different duties. All projects experience delays, but the OSCI participants learned that if project documentation is up-to-date, new staff can pick up more easily where others left off. In some cases, adding new staff members into the project at a later stage proved to be transformational, as they brought new insights and fresh perspectives. Nonetheless, the cost of replacing staff that leave can be onerous financially as well as in project delays, particularly in regions where technology is very robust and the competition to hire skilled technologists is stiff.

■ Expect to review, refine, and change existing workflows

The transition from the linear and well-established process for producing print catalogues to the dynamic nature of the online environment has a definite impact on the content-to-publish workflow. Although the OSCI institutions experienced few changes in already-established workflows during the planning process, almost all anticipate measurable changes in organizational structure, workflow, and job descriptions in the implementation phase. The Walker, for example, is using its online catalogue as a vehicle through which to completely redefine how research and documentation related to its collection are generated, collected, and published. As an institution devoted to contemporary art, the Walker often acquires artworks through a commissioning process that allows it to collect extensive archival information about the creation of the work of art. Team members are creating a system that will allow an artwork (and related primary source materials) to be published as soon as it is acquired by the institution.

Everything we do is predicated on extensibility and sustainability.

—Sam Quigley, Vice President for Collections Management, Imaging, and Information Technology/Museum CIO, Art Institute of Chicago

■ Don't reinvent the wheel

After much discussion, OSCI participants realized that no one-size-fits-all solution to online publishing was possible given the different histories and needs of each institution. Yet, they also championed a policy of "Not Invented Here," meaning that the museum community must work together in developing the technology for online publishing. Even if museums do not adopt identical systems, they may be able to incorporate or modify tools and processes from peers' systems and, at the very least, share insights. Such a policy is cost-effective, saving museums both time and money. It is quite simply not economical—given the scarce resources available to most museums—for each museum to build a proprietary publishing environment. Moreover, leveraging discoveries and working together will increase individual and community capacity in this field. To do this, museum professionals must be willing to share concerns, unexpected roadblocks, and failures, as well as successes.

The Beach at Sainte-Adresse, Claude Monet, 1867. Oil on canvas, 29¹³⁄₁₆ x 40⁵⁄₁₆ in. Mr. and Mrs. Lewis Larned Coburn Memorial Collection. 1933.439. Image courtesy of Art Institute of Chicago.

◼ Make online publishing part of your museum's ongoing publishing program

Tate London established a policy that all publishing would be done online. We knew it was going to be an investment. We didn't know the challenges, but we instinctively knew that the benefits would always outweigh the difficulties.

—Jennifer Mundy, Head of Collection Research, Tate

For much of the planning phase, OSCI participants thought of and spoke about their individual "projects" as such, rather than thinking of them as drivers for profound organizational change within their museums or in the museum community. By the end of the planning phase, however, they began to understand that their online catalogues were part of a fundamental reorientation toward digital publishing in museums.

At this date, most OSCI museums have additional scholarly publication projects in the pipeline. This requires a commitment to maintain and even upgrade the digital publishing environment and, therefore, the necessary operational budget. Ongoing institutional support is more likely, participants learned, if they can develop an online publishing model with reusable templates that are flexible, functional, visually appealing, and meet the needs of diverse audiences. Furthermore, the success of their digital publishing will be ensured if they think strategically and make sure all their digital publishing initiatives are integrated. The good news is that most museums are already engaged in online publishing to some extent, for example, by displaying collections online, with accompanying tombstone information and images.

The Cinder Path, Spencer Gore, 1912. Oil paint on canvas, 27 x 31 in. Purchased (Grant-in-Aid) 1975, Tate T01960. Photo © Tate.

THE NEXT PHASE

Looking forward, new technology solutions continue to be explored. Following the creation of a successful prototype for the Art Institute, the IMA Lab (the media and technology arm of the Indianapolis Museum of Art) began working with the OSCI consortium to develop an online publishing toolkit. This will facilitate online publishing of scholarly catalogues by the OSCI museums and, eventually, the larger museum community. The suite of tools will be based on Drupal, an open-source content management system. Highlights include an "authoring" tool that allows curators to combine easily their written texts with information and images extracted from their museum databases, and a "reading" tool that allows the online catalogue to be read easily on different computing devices and browsers. With the OSCI toolkit, museums will be able to customize catalogues to meet the requirements of their own technology systems and publishing vision.

Other alternatives are also in development. For its part, the Seattle Art Museum is working with Gallery Systems, the producer of the collections management system The Museum System (TMS) and the publishing platform eMuseum, to enhance these software products in order to support their online scholarly catalogue. These modifications will henceforth be included in any future general release of these Gallery Systems products.

Online catalogues represent a significant commitment of human and financial resources and require comprehensive research and planning. Decisions made for an initial online catalogue will have far-reaching consequences, not only for future catalogues but online museum publishing in general. Through solving the knotty problems of moving scholarly catalogues online, museums are now at the forefront of innovative online publishing, and that will interest and engage a global audience as never before possible. Most of all, online scholarly catalogues enable museums to do full justice to the wondrous works of art they hold in trust for future generations, and the deep intellectual content that they have painstakingly assembled. Over the next few years all OSCI museums will complete their projects, and the Getty Foundation will continue to share the results of the initiative.

Inside Perspectives

Two members of Online Scholarly Catalogue Initiative (OSCI) teams share their excitement and insights on their projects.

Gloria Groom is the David and Mary Winton Green Curator of Nineteenth-Century Painting and Sculpture at the Art Institute of Chicago, and the curatorial point person for the institution's OSCI catalogue.

When the Art Institute of Chicago's OSCI team started this project (and here I include the other members of the curatorial team, Douglas Druick and Jill Shaw), our biggest concern was that the final project be as booklike as possible without the limitations of the print format. That meant that we needed to learn what technology could do. But first technology (the Information Technology teams at the Art Institute and the IMA Lab of the Indianapolis Museum Art [IMA]) had to enter into our curatorial world to develop a prototype that would be based on our experience as researchers, authors, and editors. This was a labor-intensive but fully satisfying place to start. We spent hours with IMA Lab staff in the room or on the phone going over how research is done, and we were surprised at how many different ways we, for any given project, gather and use facts. From the curatorial perspective, the following were certain key concepts and features that were critical to address from the very inception of our prototype:

- Content must speak to a scholarly audience, making it necessary that all content be edited by the publications staff;

- Easy access to a high resolution, color image of the key artwork discussed in the catalogue entry;

- The ability to footnote;

- The ability to personalize copies with marginalia, highlighting, bookmarks, and Post-it notes;

- A sense of understanding where you are in the catalogue and how much more there is;

- The ability to "put your thumb" in the catalogue as a placeholder and jump around (to images, bibliography, and so on) without losing your place;

- The ability for each book to have its own "look" in terms of design and organization; and

- A permanent, fixed publication date to be cited by scholars (which requires a Persistent Uniform Resource Locator [PURL link] and easily citable text).

The conversations with IMA Lab staff were absolutely mind-blowing. In considering our needs, they would come back to the table with examples from open-source software, sometimes showing examples from Sci-Fi zines, sports sites, CNN news, or anywhere that they could suggest or "borrow" certain tools (such as paragraph marking or the ability to make photographs shift to meet the scale of the screen), which would enable our wish list to come true. At each stage of the brainstorming process, we were allowed to test drive the results once or twice, and return to them when another component was added to ensure that each step forward fit into the practical, philosophical, and aesthetic concept for this creature still being created. This included conservation examinations and macros of details from the paintings. For us this is also critical research, and for the first time, the art historical entries are being driven not only by art history but also by conservation findings. In this way we are presenting the raw data from which we have drawn our conclusions and thus opening the conversation to include the reader, who is armed with the same photographs, macros, overlays, and tools as the curator, and can now take an insider's look at any given work.

We had to make a number of compromises, from research itself—we didn't include every detail or every photograph from conservation unless it was directly related to the object's historical importance—to word length, since captions used for in-line photographs had to be limited due to the general, booklike design.

The opportunity to have long discussions about how research is done, how archives are best accessed and cited, how conservation studies need to be linked to the art historical story, how note-taking helps sort information, and how a digital format allows for note-taking to become an integral part of the research process, yielded more insights into why we research the way we do, which led to more ways for the IMA Lab to investigate answers to our questions.

Most gratifying for me was to know that we are forging something new, which will not only display research but will form the basis for further research. From our early investigation into a number of museum websites stressing archival or conservation documentation, it seems that the technology shaped the research component at least in terms of the resulting format for accessing research. By starting with intense discussions about how information from curators and conservators is used and how we would conduct our research with this information, IMA Lab staff and the Art Institute's technological team were able to evolve the product from a thorough understanding of the "why" and the "how." Working from the ground up, they will soon have created a sophisticated electronic animal that bears all the hallmarks of the research and publishing world we've left behind, and plunges us into an even richer contextual, factual, and visual sphere in which to consider the work itself. We are getting closer to the launch of three entries, and I can't wait to hear the response from the academic community across the world as they "play" with what we feel is a major contribution to scholarly catalogues.

Nik Honeysett is Head of Administration at The J. Paul Getty Museum, Los Angeles and is overseeing the museum's transition to online scholarly catalogues.

For any museum technologist worth his or her salt, the OSCI projects provide a fascinating journey through the challenges and opportunities of managing information and information technology in a museum environment. Indeed, technology challenges were encountered at every step of the way, from the broad spectrum of the diversity of technology infrastructures and solutions to the more granular technical requirements of the individual projects. OSCI also provides an opportunity to consider and solve new and emerging requirements as we transition from print to digital publications.

The chance to peek under the hood of each of the participating museum's technology infrastructure has been fascinating. At one of our periodic convenings, we each presented and talked about our individual infrastructures and the technology decisions we are making to deliver these online publications. At first glance, the schematic diagrams were as diverse as one might imagine; however, on closer inspection, it was clear that most of us had implemented, in our own way and in varying degrees, a best-practice approach to managing information in a complex and information-rich environment.

That best-practice approach is the separation of data, its transformation, and its presentation. This modular approach is fundamental to how content-rich institutions are going to survive and be productive in an environment where dissemination is de rigueur and the platforms that we disseminate to are constantly evolving and changing. The pace of this change seems relentless. When the OSCI project was commissioned, tablet computers were only being discussed by technology reviewers. We are only halfway through the OSCI project and delivering a scholarly catalog to an iPad is emerging as a key requirement. This is the nature of long-term technology projects, but it is manageable by ensuring we make key decisions in how we build our infrastructures, how we organize our data, and how we structure our workflows. The emergence and dominance of the iPad has been a sobering reminder that we can't take any technology for granted as we plan to deliver our catalogues.

As each institution has discovered, this challenge is also manifest in our collections management systems (CMS), which, to a broad degree, are based on a card catalogue data model and were not designed with rich authoring and publishing in mind. The functional requirements for this core piece of museum information technology have dramatically changed. As we move to publish directly from data and to a variety of platforms, we need a much more complex CMS, one that will allow us to build complex relationships; author rich, long-form text; transform text and media to a variety of different formats; and publish to a variety of different platforms. Each institution has to decide how to meet this challenge. Keep the existing CMS but top and tail it with an authoring and publication tool? Or is it better to implement a new breed of technology architecture that will support the full set of requirements? Vendors play a key role in this solution, but, like us, they struggle to keep up with the required pace of change. Technology problems can be solved in any number of ways so it is not surprising that OSCI solutions cover the full gamut.

As the participating institutions struggle with how to create a sustainable environment for digital publishing in all its forms, including scholarly catalogues, they face an additional challenge: How will that environment continue to support print publishing? If the relatively short history of information and communication technology has taught us anything, it is that new forms do not replace old ones. Newspapers, radio, and television have not died despite the apocalyptic predictions. They have created a richer and more complex information environment. In his book *The Information: A History, a Theory, a Flood*, James Gleick elegantly summarizes, "Hardly any information technology goes obsolete, each one throws its predecessors into relief" (New York: Pantheon, 2011).

In the same way, digital publishing is unlikely to kill print, particularly for the kinds of publications that museums produce. It may be some time before we truly get out of the print business, so our additional challenge is to support this hybrid environment in a sustainable and economic way. Just as we now have to publish to iPads, and maybe to Nooks and Kindles, we may have to produce a print version, at the very least a print-on-demand version, but we need to manage this without a duplication of effort or content.

These are the tough challenges that technologists relish. We all have legacy systems that need to be updated or converted, but we cannot solve them purely with technology. There are clearly new processes that we need to adopt to realize our digital publishing goals, and changing the mindset of what a publication is and can be is at the heart of that. As we look to reorganize and review our data models, we need to ensure that scalability, sustainability, flexibility, and modularity are key components in the thought and decision-making process, because it is entirely possible that in another two years there will be a new technology platform for our online scholarly catalogue.

The OSCI group discussions around technology solutions and approaches have been hugely beneficial to the individual institutions, irrespective of their technical resources and capabilities. So, as the OSCI participants embark on their implementation phases, this wealth of technical and creative talent is bearing fruit. The elegant prototypes that have addressed some thorny issues about data management, functionality, and user experience now have to break out of their comfortable constraints and deliver the institutional transformation and support of our digital scholarly publishing needs. The learning and sharing will continue.

APPENDIX 1:
Projects at a Glance

The following are short descriptions of the projects undertaken by the Online Scholarly Catalogue Initiative (OSCI) participants. These descriptions, based on the work from the planning phase, include technical specifications regarding infrastructure and publishing platforms currently in development at individual museums.

Planning phase grants for each institution ranged from $140,000 to $240,000. The implementation phase grants will range from $200,000 to $400,000. Eligible costs for the planning stage included consultant fees; staff release time; research travel to libraries, collections, and archives; hardware and software upgrades or development; data entry, conversion, or cleanup; photography and digitization; multimedia fees (for rights to audio and video and/or the creation of this material); conservation technical analyses; preliminary design cost; usability studies; and preliminary rights costs.

During the planning phase, all or portions of the project teams came together regularly to work on issues ranging from copyright and author credits to data mapping and standards, and most recently, to review the information architecture and tools that have emerged. Each team was asked to document its progress and processes in a series of regular reports shared via a project wiki. In addition, they presented updates at annual meetings held in Los Angeles.

Many of the OSCI projects will change in expected—and unexpected—ways as participants continue to address the exciting challenges of online publishing. Readers interested in gaining additional insight into the initiative earlier in its development may find these conference presentations to be of value: "Presenting the Getty Online Scholarly Initiative" (National Museum Publishing Seminar, June 2010, _https://grahamschool.uchicago.edu/php/museumpublishingseminar/ podcasts-and-presentations.php_); Nik Honeysett, "The Transition to Online Scholarly Catalogues" and Sam Quigley and Liz Neely, "Integration of Print and Digital Publishing Workflows" (Museums and the Web, April 2011, _http://conference.archimuse.com/mw2011/session/e_books_and_museum_publishing_).

Art Institute of Chicago

Participants from the Art Institute of Chicago originally aimed to publish their important collection of nineteenth-century European paintings. As the planning grant progressed, they decided to begin with smaller volumes, monographic or group publications, of fewer works. Information about each work was designed to be as comprehensive as possible. In addition to providing the scholarly community with extensive content, including in-depth conservation documentation, they decided to focus on some key features: for content producers, a streamlined authoring experience; and for readers, ever-present access to the plate image, annotation capacity, citation standards, and imaging tools. Works by Claude Monet and Pierre-Auguste Renoir were best suited to this task.

The Art Institute uses a custom-built collections management system (CMS) called Collection Images Text and Index (CITI), which also includes digital asset management, and a CITI-driven clone for its website. For this project the team contracted with the IMA Lab at the Indianapolis Museum of Art (IMA) to create a prototype-authoring environment built in Drupal, an open-source content management system. While the prototype is not connected to CITI, there will be an application programming interface (API) between the two. The Art Institute's OSCI team decided that the volumes published via this system will be immutable—curators author and edit, and then the volume is fixed in time and not dynamically updated as new information is incorporated into the CITI system. Art Institute of Chicago. Photo courtesy of Art Institute of Chicago.
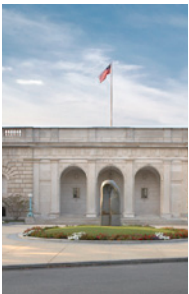
Freer Gallery of Art and Arthur M. Sackler Gallery of the Smithsonian's Museums of Asian Art, Washington, D.C.

In 2007 the Freer/Sackler Galleries acquired the Gerhard Pulverer Collection, a private collection of premodern Japanese illustrated books numbering 2,200 volumes, which includes 30,000 images. The goal of their OSCI project is to provide a model for museums with large collections of manuscripts and rare books. As the end of the planning phase approached, the team decided to focus its efforts on a smaller subset of the holdings and produce a microsite fully realizing the material in forty-six books representing the work of Edo period artist, ukiyo-e painter, and printmaker, Katsushika Hokusai.

The team leveraged an already-existing relationship with the Massachusetts Institute of Technology's (MIT) Visualizing Cultures, an online publishing platform dedicated to image-driven scholarship, along with outside scholars as part of their planning process. In terms of technology infrastructure, the Freer/Sackler Galleries use The Museum System (TMS) for collections management, and will employ it to hold the primary object data, images, and image metadata. Currently their website is managed without benefit of a content management system. To accomplish their OSCI project, the Freer/Sackler team is planning a greatly expanded web database and foresees the need to acquire some type of content management system to handle the complexity of their project. Freer Gallery of Art. Photo courtesy of Freer Gallery of Art and Arthur M. Sackler Gallery, Smithsonian Institution, Washington, D.C.
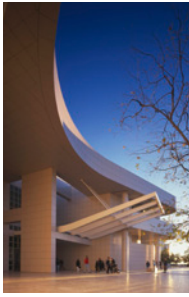
J. Paul Getty Museum, Los Angeles

When the Getty Foundation first initiated the Online Scholarly Catalogue Initiative, the J. Paul Getty Museum was in the early planning stages for its own online scholarly catalogue on paintings acquired over the last ten years. Initially, the Getty Museum's focus was on creating, culling, editing, and capturing rich documentation such as high-quality photography, scholarly essays, provenance, conservation reports, and a bibliography in a traditional presentation format used for printed catalogues. Soon, however, efforts were expanded to build a nimble publishing vehicle that would not only capitalize on digital-only functionality, such as zoomify and 360 rotation, but would also provide an engaging experience for users, be simple to use—so curators and other content creators could easily produce catalogues—and be used to develop other electronic catalogues. In addition, the Getty added the goal to create a benchmark for future digital publications.

At present, the Getty Museum is poised to launch its first online scholarly catalogue, focused on ambers in the antiquities collection. Besides the initial OSCI project on paintings, there are already several other collection catalogues under way. The Getty has focused on building a publication mechanism with responsive design and the flexibility to provide a quality experience on any device or browser whether mobile or desktop-based. Drawing upon content management and presentation applications for authoring and storing deep, long-form content required for museum catalogues, it also addresses the interface and functionality necessary for a scholarly publication online. The Getty plans to share their scalable publication framework gratis with other non-profit cultural heritage organizations to maximize its usefulness to the fullest extent. J. Paul Getty Museum. Photo: John Linden. © 2003 J. Paul Getty Trust.

Los Angeles County Museum of Art

The Los Angeles County Museum of Art (LACMA) is providing in-depth catalogue entries for sculptures in stone, metal, and ceramic from its Southeast Asian Collection. Two major goals for its online scholarly catalogue project have been identified: to be able to place objects into their cultural, architectural, political, historical, and ritual contexts, and to create a model for cataloging archaeological objects.

During the planning phase, LACMA's OSCI team utilized audience surveys to better define and understand their intended readers. They then worked with outside consultants with expertise in user experience, user interface, and information architecture to create a prototype for their online publishing environment. To address scalability and sustainability issues, they are currently reassessing their information architecture needs and are planning to use the open-source platform Drupal to support an authoring and content management system that will allow the LACMA team to retrieve and publish information from their collections information system and digital asset repositories. LACMA currently uses MIMSY for its CMS, but anticipates moving soon to TMS. LACMA's digital assets are handled through Piction, a digital collection orchestrator that can integrate with existing collections management and other business systems. LACMA. Photo © 2010 Museum Associates/LACMA.

National Gallery of Art, Washington, D.C.

The National Gallery of Art has a long history of producing systematic catalogues of its permanent collection. For the OSCI project, its team is updating and enriching an out-of-print catalogue of a collection of seventeenth-century Dutch paintings. The National Gallery of Art's new online publication will include full documentation of the twenty-nine works added to the collection since 1995, as well as updated scholarly and conservation information for the remaining works. The project is intended as a model for institutions choosing to repurpose, amend, and update previously published information. The technology plan for the project involves the use of a middleware layer to retrieve data from TMS, and Extensis Portfolio, which houses digital assets. Longer text files are stored in CQ5 (an Adobe Day product), the content management system that will be used for the new website. The needs of the OSCI project are being addressed as part of the institution's overall web strategy. View of the East and West Buildings of the National Gallery of Art at night, looking toward the U.S. Capitol. © 1991, Dennis Brack/Black Star. Courtesy of the National Gallery of Art, Washington, D.C.

San Francisco Museum of Modern Art

San Francisco Museum of Modern Art (SFMOMA) is developing an online scholarly catalogue of works in its permanent collection by American artist Robert Rauschenberg. The goal of SFMOMA's OSCI team is to provide a new design and information architecture for an online, internal catalogue raisonné of a single artist, which incorporates a variety of layered, media-rich content. During the project's planning phase, each object was thoroughly researched and a small group of pilot objects was chosen for its diverse needs regarding imaging, affiliated multimedia, archival documentation, and conservation. In addition, the team pursued an extensive user interview process. They came out of the process committed to providing their online visitors with as much primary documentation as possible. Toward the end of the planning phase, SFMOMA administration launched a museum-wide strategic planning initiative and the OSCI project team decided to use the process to evaluate their future information architecture with a view toward sustainable online publication models. SFMOMA currently deploys EmbARK, Gallery Systems' software tools, for cataloguing and managing its collections, and Autonomy Virage's MediaBin for digital asset management. SFMOMA as seen from Yerba Buena Gardens. Photo: Richard Barnes.

Seattle Art Museum

The Seattle Art Museum's (SAM) OSCI project is focusing on a core of approximately 200 works from the permanent collection of Chinese painting and calligraphy, many of which were recently acquired and have not yet been published. A significant goal for SAM's team is to develop a model for how technology can best be utilized to allow for viewing scrolls online. During the planning phase, the scope of the project changed to include commissioning scholarly essays from outside contributors and creating a means to obtain user-generated scholarly content related to the seals and inscriptions found on the works. SAM uses TMS for collections management, including the media module for managing its digital assets. As a medium-sized museum, SAM has little internal or external information technology support. The intent of its team is to enhance the online authoring and publishing process around TMS, creating add-ins within the existing system. They are working with Gallery Systems, the TMS vendor, to design a software component that will add desired functionalities and will use the company's e-Museum framework to publish their content online. Exterior of the Seattle Art Museum. Photo: Michael Burns, © Seattle Art Museum.

Tate, London

Great Britain's Tate, the only OSCI museum outside the United States, brings to the table a deep commitment to online publishing. For its OSCI project, participants have adapted and expanded on existing exhibition materials to create an online catalogue devoted to the art of the Camden Town Group. For online publishing Tate uses a process that combines TMS, a custom-built collections information system, and a tool called the Collection Research Asset Manager (CRAM). This system brings in object data from TMS, merges it with images, and publishes it to the website. Content is produced using an existing authoring system that has been retrofitted to take documents created in Word and parse them into the system, which publishes information online. Digital assets are stored in iBase Manager, which is integrated with TMS. Tate Britain. Tate Photography © Tate.

Walker Art Center, Minneapolis

The Walker Art Center collects the work of contemporary artists. For their OSCI planning grant, the Walker team proposed an online catalogue of works acquired since 2005 with a view toward developing a model whereby objects could be published as soon as they are acquired. This model requires the Walker's team to take a proactive approach to acquiring intellectual property rights at the time a work enters the collection whenever possible. The OSCI planning phase of this project has occurred simultaneously with the Walker's plans to adopt and implement CollectionSpace, an open-source collections management system, to replace their current collections management system built on FileMaker. Walker Art Center. Image courtesy Walker Art Center.

Intellectual Property Rights

Maureen Whalen, Associate General Counsel, The J. Paul Getty Trust

Museums have long published print catalogues of works in their collections. By and large, museum personnel seek permission to reproduce pictures in a catalogue either because the work depicted is protected by copyright and the museum does not own the copyright, or because the work is in the public domain but not in the museum's collections and the museum needs to obtain a high-quality digital copy from the owner of the work (permission is most commonly required for comparative illustrations of works not in the museum's collections). In many cases, owners of artworks claim copyright in the photograph or digital surrogate of two-dimensional, public domain works notwithstanding the court decisions in *Bridgeman Art Library, Ltd. v. Corel Corp*. (25 F. Supp. 2d 421 [1998] and 36 F. Supp. 2d 191 [1999]). Online Scholarly Catalogue Initiative (OSCI) participants recognized at the beginning of their projects that copyright law and permissions would impact their online catalogues, although no one was quite sure what that impact would be.

Just as all the OSCI museums have expertise in print publishing, they all have extensive websites, and they are familiar with granting and obtaining rights and reproductions permissions for the online environment. In many cases, the museums acquire licensed rights for use of images of works in their collections and for which they do not own the copyright. Museums also grant third parties the rights to use images of works in their collections for which they either own the copyright or in which they claim copyright, or for which they require a credit for the digital surrogate of a work in the public domain.

As explained elsewhere in this report, the questions and opinions about online scholarly catalogues are numerous and continue to challenge museums. Generally, however, the discussion to date about the catalogues focuses on two distinct aspects of the publication—content and functionality.

Content is not perceived to change substantially the rights and reproductions analysis from the more familiar print publishing practices. Website experience, however, indicates that the functionality embodied in online publications does make a difference to rights holders. The question for the rights analysis for online scholarly catalogues remains: To what extent will the differences between print and electronic publishing affect the permissions process and negotiations?

Online functionalities such as resolution size, downloading and printing, enlarging and magnifying details, storing, linking, and cutting and pasting materials from one document to another facilitate use of materials for scholars. For rights holders these functions appear to offer unlimited opportunities for unauthorized uses of images and continue to lead to cautious and limited grants of permission. Each

of the OSCI museums is determining what functionality its catalogue will offer; therefore, it remains to be seen how rights holders will react to permission requests for highly interactive exposure versus PDF, print-type publications.

To date, the major concern with online rights is the limited term offered by rights holders. While it seems that some rights holders are willing to extend the license term to ten years for copyright-protected works and for perpetuity for public domain works, no accepted practice for online scholarly catalogues has emerged. If online rights need to be renegotiated at least every ten years, the finances and administration of the electronic catalogue are endless.

The General Counsel's Office at the J. Paul Getty Trust drafted and distributed an online scholarly catalogue license to the OSCI museums. The major provisions are as follows:

1. The right to reproduce the Images on a royalty-free basis in digital format(s) as part of the Catalogue and to include the work title, attribution information, courtesy credit to rights holder and/or owner of the work, and/or copyright notice;

2. The right to allow users to download and/or print all or part of the Catalogue, including the Images;

3. The right to modify the digital format of the Images for compatibility with software applications and computer operating systems;

4. The right to make the Catalogue, including the Images, available at no charge in all media now known and hereinafter invented including, without limitation, the World Wide Web, DVDs, and handheld devices such as iPods, for an unlimited period of time; and

5. The right to make the Catalogue available on websites and via other digital distribution technologies that may include advertising.

Thus far, negotiations for permission have been limited, although as mentioned above, it has been difficult to obtain web use permission for an unlimited period of time.

As part of the rights and reproductions analysis, the OSCI museums (at least, those in the United States) may consider the fair use of images. In most, if not all, cases, a scholarly catalogue should meet the statutory four-factor test for fair use (17 U.S.C. 107). The courts have held that "thumbnail-size" digital images and reduced-size print reproductions qualify for the fair use defense, provided the four-factor test is met (see *Kelly v. Arriba Soft*, 280 F.3d 934 [2002]) and 336 F.3d 811 [2003]; *Bill Graham Archives v. Dorling Kindersley, Ltd.*, 448 F.3d 605 [2006]; and *Perfect 10 v. Amazon*, 508 F.3d 1146 [2007]). The courts, however, did not define a thumbnail-size image.

In January 2011 the Association of Art Museum Directors (AAMD) adopted the *AAMD Policy on the Use of "Thumbnail" Digital Images in Museum Online Initiatives* (see *http://aamd.org/papers/documents/AAMDFairUseGuidelinesHLP1-10-11_2_.pdf*). In this document, the AAMD defines (i) a thumbnail-size image as 250 x 300 pixels and (ii) the characteristics of an online scholarly publication. This is based on the definition of an online scholarly publication used by the Metropolitan Museum of Art in its license for ARTstor's Images for Academic Publishing (see *http://www.artstor.org/what-is-artstor/w-pdf/terms-conditions-iap.pdf*). Whether thumbnail-size images will meet the needs of

curators and users of online scholarly catalogues remains to be determined. While use of thumbnails may remove the need for labor intensive and expensive rights and reproductions work, thumbnail-size images also limit the opportunities technology offers and the resulting benefits that scholars could obtain from online publications.

Orphan works—works that may still be protected by copyright law but for which the rights holder is not identifiable or locatable—also pose some legal risk of infringement claims. Generally, OSCI participants expressed that they feel more comfortable including an orphan work in the online scholarly catalogue. If a claimant emerges and a reasonable license cannot be negotiated for use of the image(s), then removal of the image is thought to be easier in the online environment. Printing books is expensive and eliminating pages is difficult.

At this midpoint in the OSCI project, all participants know that rights and permissions are important issues that must be addressed before publication. They also recognize that the functionality of the catalogue will be shaped in part by copyright law. No clear answers to the thorny permissions issues have emerged, but OSCI participants will continue to grapple with these issues and seek fair and balanced solutions that benefit the scholarly community, the creators, and the rights holders.

Portrait of Alfonso d'Avalos, Marchese del Vasto, in Armor with a Page, Titian, 1533. Oil on canvas, unframed 43⁵⁄₁₆ x 31½ in. The J. Paul Getty Museum, Los Angeles.

Draft Intellectual Property Rights Permission Request

This draft permission letter requests rights similar to the Creative Commons Non-Commercial, Attribution, and No Derivative Works license. Much of the boilerplate contract language such as representations, warranties, indemnification, choice of law, and termination has been deleted intentionally. While this approach is designed to simplify the permissions process, it may result in less protection to the museum because the agreement does not provide any recourse against the rights grantor if there are infringement claims from others. Institutions should therefore consider the legal risks and its contractual requirements for online publishing projects before relying exclusively on this template.

Subject: Request to Publish and Distribute [Insert Description of Work(s)]

Dear Sir or Madam:

The **[insert name]** Museum (hereinafter "Museum"), a non-profit, charitable organization, is a participant in the Online Scholarly Catalogue Initiative being funded by The J. Paul Getty Trust in Los Angeles. For more information about the Initiative, please see *http://www.getty.edu/foundation/ funding/access/current/online_cataloging.html*.

As part of the Initiative, the Museum will be publishing a catalogue of **[insert description works]** from our collections in electronic form that may be accessed via the World Wide Web (hereinafter "Catalogue") without any access restrictions and at no cost to the user. We have no plans to publish the Catalogue in print; however, we will allow people to download all or part of the Catalogue and to print it **[optional: and we will offer people the right to obtain for a fee the Catalogue as a print-on-demand publication]**.

We are requesting permission to include **[insert description of work(s); may opt to list works on an exhibit or attachment to the letter depending on the number and description of works being requested; if so, it is necessary to incorporate by reference the exhibit or attachment]** (hereinafter "Images") in the Catalogue. Specifically, we are requesting permission to do the following:

1. The right to reproduce the Images on a royalty-free basis in digital format(s) as part of the Catalogue and to include the work title, attribution information, courtesy credit to rights holder and/or owner of the work, and/or copyright notice, all as set forth on the above-referenced list of Images;

2. The right to allow users to download and/or print all or part of the Catalogue, including the Images;

3. The right to modify the digital format of the Images for compatibility with software applications and computer operating systems;

4. The right to make the Catalogue, including the Images, available at no charge in all media now known and hereinafter invented including, without limitation, the World Wide Web, DVDs, and handheld devices such as iPods, for an unlimited period of time; and

5. The right to make the Catalogue available on websites and via other digital distribution technologies that may include advertising.

Other than as set forth above, we shall not authorize others to reproduce, publish, or distribute the Catalogue, including the Images, in whole or in part. We recognize the importance of copyright law exceptions such as fair use and the libraries and archives exception; we may use Images in accordance with such legal exceptions and we may allow others to do so as well. We realize this

request for rights may seem broad when compared to requests for rights for traditional print publications. While we recognize this concern, we are asking for rights because we know that twenty-first century scholarship is dependent upon free and easy access to quality materials on the World Wide Web. We agree to post prominently the terms and conditions relating to use of the Catalogue, including the Images. We hope you will agree to our request.

[If a high-quality digital surrogate of the work is needed in addition to permission to reproduce and distribute that digital image as part of the Catalogue, include the following paragraph:

We are also requesting that you provide us with a high-resolution digital copy of certain Images as identified on the above-referenced list. The digital copy will be used solely for the purposes described herein.]

Please let me know if you have any questions. If you agree to the requested grant of rights, please acknowledge that agreement by signing and dating this letter in the space designated below and returning a copy to me at **[insert contact information]**.

Sincerely,

Agreed to and Accepted by:

_____
Name

_____
Title

_____
Date

APPENDIX 3:
Functional Requirements

This document from the National Gallery of Art is intended to provide insight into the nature of a functional requirements document for readers who are unfamiliar with such material. Please note that the needs for each institution may vary widely (see Glossary of Abbreviations and Technical Terms, p. 51).

#	Functional Requirement	Category	Notes	Priority
1	System shall allow user to click on a link associated with a content object or search result item to generate a preformatted scholarly citation that can be cut and pasted by the user	citation	Which content objects can be cited? Texts for sure. Images?	High
2	System shall allow user to choose the format of the preformatted content object citation that can be cut/pasted	citation	APA, MLA, Chicago/Turabian	High
3	System shall generate a preformatted content object citation in a structured format that can be imported by EndNote, Zotero	citation	BibTeX, MODS, Refer/BiblX, RIS, Zotero RDF	High
4	System shall generate as part of the preformatted citation, a persistent URL that links to the version of the content object being cited	citation		High
5	System shall generate citation links back to specific points in a given text content objects	citation	HTML anchor jumps	High
6	System shall send an automated e-mail to a registered user who has recorded a citation to one or more content objects that have been updated/replaced by a newer version	citation		Low
7	System shall allow user to select a view of a content element (for example, essay, biography, exhibition history, but not art object tombstone) that displays all of its previously published versions	content display	Only "substantive" changes would count. Should this include tombstone data?	Medium
8	System shall display a link to a page listing traditional front matter and back matter	content display		High
9	System shall provide ability to link from in-text bibliographic and footnote references to a National Gallery of Art (NGA) library system record when the NGA holds the referenced work or a WorldCat record when the NGA doesn't hold the referenced work	content display		Medium
10	System shall display citations, footnotes, and bibliographic references associated with SysCat texts	content display		High
11	System shall display texts marked up in a structured format in a manner that supresses visibility of tagging structure	content display	If XML, a DTD and CSS are required, if RDF, an ontology is required along with DTD and CSS	High
12	System shall display a link allowing users to view the XML/RDF structure of a text	content display		Low
13	System shall handle the UTF-8 character set in display and input of all text	content display		High
14	System shall display artist biography texts, object summaries, object essays, conservation technical notes, and introductory essays along with the following content items where relevant: endnotes, bibliography, digital images, comparative figures, author name(s), peer reviewed, object tombstone, provenance, exhibition history, inscription texts, publication date	content display		High

15	System shall display "related items" from other NGA information resources alongside biography and essay texts and technical notes	content display	For example, public web content, gallery shops, digital media	High
16	System shall display NGA artist and object metadata from TMS++ data source	content display		High
17	System shall display digital image metadata from DAM data source	content display		High
18	System shall allow user to display bibliographic lists of "works cited" and "history of scholarship"	content display		High
19	System shall display an inventory of all images available in the NGA DAM relevant to the displayed art object	content display		Low
20	System shall allow user to sort master bibliographic lists by the following attributes: author, "where cited," publication type (for example, book, journal article, year)	content display		High
21	System shall allow user to create a persistent personal user account that allows the user to save and name multiple "My Stuff" lists of content objects and searches	data export	Anything else they might want to save?	Low
22	System shall allow download of large NGA object images to user's local storage	data export	NGA objects only. Need to establish maximum size rule(s)	High
23	System shall allow export of a text file containing the metadata associated with one or more images	data export	For example, EXIF, XMP, MODS	Low
24	System shall allow user to export content objects and their related information as a PDF file formatted to display only relevant information and eliminating extraneous website navigation and design elements	data export		High
25	System shall allow user to save a PDF aggregation of the entire SysCat content as a single file formatted to display only relevant information and eliminating extraneous website navigation and design elements	data export		High
26	System shall automatically generate an OAI-style harvestable XML file containing all SysCat data	data export	What XML schema(s)? RDF/OWL?	Medium
27	System shall publish metadata harvestable by Google Scholar	data export		Medium
28	System shall allow download of the 1995 version of Dutch SysCat in PDF format	data export		High
29	System shall provide contextual help to users	help	Hovering over a function displays a pop-up short description/explanation (for example, "Export")	Medium
30	System shall contextually display definitions of technical terms	help		High
31	System shall allow user to zoom in and out of digital images	image display	What level of maximum zoom? NGA mother file size? Smaller?	High
32	System shall allow user to display zoomed/compared images against a gray, white, or black background	image display	12% gray	High
33	System shall allow user to zoom into images by increasing magnification of the object to allow inspection of the fine detail of images of NGA art objects	image display	Includes object photos, technical photos. Likely does not include comparative figures	High
34	System shall display an option for user to view detailed rights and reproductions information associated with a digital image. Information shall minimally include name of rights holder, contact info for rights holder, and copyright/copyleft/open source/creative commons specifications	image display	Anything else?	High
35	System shall allow user to compare NGA object images as singletons, pairs, trios, or quartets	image display	Thumbnail grid?	High
36	System shall display comparative figures and their captions inline within texts	image display		High
37	System shall allow for designation of prefabricated links available to users that preset areas/levels of zoom in photos	image display	For example, artist signature	Medium
38	System shall display a thumbnail overview of current x/y/z axis status of image zoom	image display		High

#	Requirement	Category	Notes	Priority
39	System shall allow two versions of an art object's images to be overlayed atop one another (for example, master object images on technical images), with the ability for the user to cross-fade or wipe from one image to another	image display		High
40	System shall export images with their headers minimally stocked with the following metadata fields in EXIF and/or XMP format	image export	What fields? Other formats?	Medium
41	System shall allow user to add a search or browse result item to be added to an "Export items" list that will persist the length of the browser session	personal data storage		High
42	System shall allow user to e-mail the list of "My Stuff" content items to an e-mail address and allow specification of a subject line and a body message	personal data storage		High
43	System shall use a print style sheet to allow user to print SysCat site pages. The style sheet shall supress display of extraneous website navigation and design elements	printing		High
44	System shall allow field-based keyword searching of artist, title, date of birth and date of execution (of work), medium, essay texts, and so on	search/retrieval		High
45	System shall display, as the user types in the field-based form field, a drop-down suggestion list of available/potential field attributes	search/retrieval		High
46	System shall allow use of Boolean operators (and, or, not) in field-based search form via explicit operator selection fields	search/retrieval		High
47	System shall display as the user fills in field-based search form fields, an auto-refreshed calculation of the number of search results a user will retrieve based on the search criteria	search/retrieval		Medium
48	System shall index site content so as to facilitate retrieval of relevant results from a field-based search	search/retrieval		High
49	System shall display field-based search results by default with the most relevant results at the top of the list and descending in relevance	search/retrieval	Possible relevance factors: keyword frequency, phrase matching, and so on	High
50	System shall display 20 field-based or browse results per page by default	search/retrieval		High
51	System shall display paginated search results allowing the user to navigate forward and backward in both field-based or browse results	search/retrieval		High
52	System shall allow user choice to display 20, 50, or 100 field-based or browse results on a page	search/retrieval		High
53	System shall persist a user's selection of the number of field-based or browse search results to display per page throughout the user's browser session	search/retrieval		High
54	System shall persist display of a user's selection of multiple search results across paginated search result pages	search/retrieval	This facilitates selecting while perusing multiple result pages	High
55	System shall allow user to refine current search results by modifying the search criteria, the result being a subset of the original search results	search/retrieval		Medium
56	System shall track and display a list of the user's field-based searches performed in a given browser session	search/retrieval		High
57	System shall allow user to recall any field-based search previously performed in a given browser session by clicking on an item in the displayed list of previous searches	search/retrieval		High
58	System shall allow user to sort field-based or browse search results by clicking on headers of the result display	search/retrieval	Need to mock this up so we know what sort of handles to offer	High
59	System shall display the user's search string in context with the field-based search results	search/retrieval	For example, [TITLE]="%skate%" AND [ARTIST]="%averk%"	Medium
60	System shall allow administrative management of a synonym ring and/or authority file in support of field-based/browse search	search/retrieval		High
61	System shall use synonym ring and/or authority file to display alternative options for search criteria based on comparison of the ring/file to the search criteria input by the user in a field-based search	search/retrieval		High
62	System shall display a pop-up box preview of a search result item content element when the user hovers the mouse over the search or browse result item	search/retrieval		Low

63	System shall display the content object when a user clicks on a search or browse result item	search/retrieval		High
64	System shall allow user to filter field-based searches based on the type of content object they wish to search. The type sort list shall minimally include images and text object types	search/retrieval	Text object types, for example, synopsis, entry, exhibition history, provenance, bibliography, biography, endnotes	High
65	System shall allow user to specify "wider" in field-based search index terms selected from a controlled vocabulary resulting in results that include all of the "Broader than" terms associated with the applied index term	search/retrieval	Expands the result set by returning broader concepts	Low
66	System shall allow faceted browse searching	search/retrieval	Possible facets: artist, period, style, school, of-ness, about-ness, tag cloud, content object type	High
67	System shall allow user to click on links embedded in texts to initiate searches based on keywords contained within the link	search/retrieval		High
68	System shall allow user to generate a URL for linking back to any page displayed in the site	search/retrieval	Consider offering shortened URL for sharing links with others?	Medium
69	System shall support a technical interface with web services-based controlled vocabularies minimally including ULAN, AAT, TGN, ICONCLASS	search/retrieval		Medium
70	System shall display field-based search results that highlight the keyword terms in the displayed text	search/retrieval		Medium
71	System shall allow linking from a "works cited" bibliography record to a search result of all objects citing that record	search/retrieval	Consider option for showing individual essays in results of citation link	High
72	System shall provide a persistent link from a displayed object/artist to the public website view of the same object/artist	search/retrieval		High
73	System shall display a link on all SysCat pages back to the public website main collection search page	search/retrieval		High
74	System shall allow user to add and subtract browse search facets into the current or past browser search result	search/retrieval		Medium
75	System shall display a visual timeline of artists, works of art, and other world events. Clicking on an artist, work of art, or world event displays additional information	timeline		Low

Glossary of Abbreviations and Technical Terms

AAT: The Art & Architecture Thesaurus, Getty Vocabularies (*http://www.getty.edu/research/tools/vocabularies/aat/index.html*)

APA: American Psychological Association style, a formatting and citation method for scholarly writing in the social sciences

BibTeX: a program and file format used to manage lists of references

Boolean Operators: used in searching to create relationships between words, includes "and," "not," "or"

CSS: Cascading Style Sheets, a type of formatting for Web documents

DAM: Digital Asset Management system

DTD: Document Type Definition (for XML documents)

EndNote: bibliographic software tool (*http://www.endnote.com/*)

EXIF: Exchangeable Image File Format

Google Scholar: Google search engine for scholarly materials (*http://scholar.google.com/*)

HTML: Hyper Text Markup Language, main language used to create content on the World Wide Web

ICONCLASS: a classification system designed for art and iconography

Metadata: Descriptive information about a particular data set, object, or resource

MLA: Modern Language Association style, a formatting and citation method for scholarly writing in the humanities

MODS: Metadata Object Description Schema

OAI: Open Archives Initiative

OWL: Web Ontology Language

PDF: Portable Document Format

RDF: Resource Description Framework

RIS: a standardized file format developed by Research Information Systems, Incorporated for bibliographic citations

SysCat: Systematic Catalog

TGN: The Getty Thesaurus of Geographic Names (*http://www.getty.edu/research/tools/vocabularies/tgn/index.html*)

TMS: The Museum System, a collections management system

ULAN: Union List of Artist Names Online (*http: www.getty.edu/research/tools/vocabularies/ulan*)

URL: Uniform Resource Locator, an address identifying the location of a file on the Internet

UTF-8: Unicode Transformation Format-8

WorldCat: global catalogue of library collections

XML: Extensible Markup Language

XMP: Extensible Metadata Platform

Zotero: bibliographic research tool (*http://www.zotero.org/*)

APPENDIX 4:

Citation Guide for
Online Scholarly Catalogues

■ Creating a Persistent Identifier (PID) for your resource ensures that citations remain valid

As an institution, you need to ensure that your electronic resources have stable, unique identifiers. Uniform Resource Locators (URLs) are unstable and increasingly unacceptable; instead, there are several types of PIDs that serve as permanent references. The PID allows institutions to change URLs—where things are located on the web—without having to change every link to those things, and without user citations leading to dead ends. Only one change is needed: the new URL must be connected to the unchanged PID. This means that the user will always find your catalogue at the same web address: for example, the catalogue will appear at *www.museum.edu/catalogue* even if the actual location of it is no longer at *www.museum.edu*. The PID ensures that your resource will always be locatable. The type of PID you choose to generate depends on your level of access to a technical team.

■ For institutions with technology experts on their OSCI team, a handle is a good PID to use

To create a handle, register with *http://www.handle.net/*. This requires a small fee ($50), along with an annual service fee ($50 for one year or $425 for ten years). Then, after your technical team sets up the system, a program will run continually on a computer within your organization—this is the "server" for your handles. Each time you generate a new digital object, a new handle is created as well.

If you do not have a technical team available, the Online Computer Library Center (OCLC) offers open-source software for creating persistent URLs (PURLs), and maintains the back end for you on their servers. Register at *http://purl.oclc.org/*. Note that OCLC intended this program as a first step toward encouraging widespread responsibility in preserving digital resources, and may eventually discontinue the service; however, they expect inexpensive and mechanical conversion from OCLC PURLs to other servers.

■ Further measures to assist users with citations and address updates

Institutions often incorporate recommendations for citations into their online resources. This gives a measure of control over the way work is attributed and also encourages scholarly accountability. Including a "last modified" date in conjunction with the citation methodoloy is also a good practice as it allows the user to track versions of the catalogue.

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