Visual Art Resources Online: Issues, Trends and Challenges
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Introduction

In recent years there has been a dramatic expansion of online visual materials. This development has been spurred by two powerful forces: advances and convergence in computing and communications that make it possible and create demand, and the visual orientation of our world that encourages that demand.

Digital images are used in a vast variety of applications. With increasing speed, they are finding their way into the creation, study, and teaching of art and art history, inherently visual disciplines that depend on images as primary material. This lends special urgency to the need to create conditions wherein the potential of digital imagery in the arts may be developed. Readily available plentiful high-quality images documenting the artistic patrimony of mankind, in tandem with high-quality accurate textual information, are essential components. Such images must be easily retrievable and accessible for flexible use with minimal hindrance, and free, or at an affordable cost, to all users for the purposes of study and enjoyment.

The study of art deals with images as much as it deals with words. Visual surrogates that sought to record and disseminate visual information have been in use since the fifteenth century, when reproductive engravings attempted to provide the images of famous masterpieces. Above all other developments, photography is credited with the rise of the history of art as a scholarly discipline. Photographic transparencies and slides, black-and-white and later color, promoted the teaching of art history. Digital imaging is the most recent step in this march toward ever richer visual resources indispensable for the study of art. While digital images do not, at the present time, measure up to earlier formats in every respect, they are vastly superior in many others. Our age of increasing visual literacy and visual sophistication welcomes them, and they are transforming how we relate to the world.

Increasing availability of archival digital art resources has resulted in their increased use in the humanities and most other disciplines. An easily communicated digital record of our common cultural heritage facilitates study in areas where images were formerly used as ancillary rather than primary sources, more for the purposes of illustration than argument. Visual information made available in digitized form expands traditional research fields and is leading to new and increasingly interdisciplinary forms of scholarly inquiry.

Both providers and users grapple with problems of multiple insufficiently developed protocols in dealing with the explosive growth of electronic visual resources.

I shall review and discuss some current themes, pressing issues, and developing trends in digital art image information, principally as employed in educational and non-profit environments. Where applicable, I shall point out outstanding, important and/or interesting specific approaches.

Current Practices and Issues

In their present state, digital, largely Internet-based, art resources resemble a map of visual representations of the surviving products of artistic creativity of all times and places. It is a very uneven map, really a patchwork, with immense empty areas as well as a lot of overlap, the patches varying in quality, reliability, and accessibility. While already offering much valuable and solid data, this patchwork is just a beginning, mere first steps when compared to the wishes and, increasingly, expectations of its equally heterogeneous creators and users. At the same time, the promise is real and its benefits persuasive, offering documentation that has the capacity of surpassing that in all other media in completeness, accessibility, and user-friendliness. Furthermore, the patchwork permits a new means of analyzing and manipulating the image. Electronic databases can be made voluminous and rich as well as widely available, overcoming obstacles of geography, time, access, and the need to safeguard the original, and can be used in myriad ways—study, enjoyment, and creative inspiration. A spectral computer screen is hardly a vehicle comparable to the rich array of media that are characteristic of our contemporary culture. At the same time, information technology promises to offer a near neutral vehicle for documentation of all media, without par in portability, reach, and ease of use. Improvements are continuous, including an increasingly faithful simulation of physical reality.

Online visual documentation is proceeding along two tracks: digitization of already existing surrogate images, and creation of new digital documentation of art objects. The first process is currently underway in many projects that aim at capturing the operational advantages of the electronic medium. By optically scanning existing prints, photographs, or slides, these projects replicate older reproductive media in a new format. The resulting digitized collection then lends itself to the new modalities of use,
but at the same time carries the internal limitations of the original artwork. Its content, however, is important when it records an earlier appearance of a work of art that has been altered or art that has been destroyed since it was originally photographed.

The second process, also in progress around the world, is carried out on art in the public domain or by bona fide owners of the artwork. The resulting image databases may be of high image quality, provided “best practices” were followed in the digital image capture process, and may offer rights of reproduction to applicants who agree to adhere to the database owner’s stated criteria. Hybrid databases exist as well. Some contextualize their own primary images by providing together with them secondary images that are borrowed from other sources, but used as reference or collateral material. Subject databases may be quite far-ranging, their inclusion of images depending on their creator’s reproduction rights and copyright decisions. This very fragmented environment is characterized by inconsistency and a variety of other obstacles.

New media applications are continually being tested in both the content and formats of digital image databases. A good image database is relatively simple, but flexible, stable, reliable, and capable of modification and development as needs, goals, and technologies change. It also must be easily searchable and retrievable, and responsive to the user. Good images carry full, authoritative identification (at least physical, but also ide- ally conceptual as well as contextual) of the imaged work. Effective linkage and effective interaction of the user with the database are essential.

Using text to find images introduces into the process a difficulty which can be minimized only by scrupulous adherence to good cataloging practices. Not only is text itself a language barrier, but cultural differences also frequently suggest variant verbal counterparts to an image. Standardization of indexing terms and description, requiring structured vocabulary tools, is a prerequisite for cooperative indexing and sharing of data, as well as a precondition for successful searching, browsing, and retrieval of digital images. Metadata, which as text lends itself to automatic extraction from digital objects, promises far more sophisticated retrieval than that commonly available today. The numerical classification system of visual content, ICONCLASS, holds promise in the digital environment. Visual characteristics (shape, color, texture) will soon join text as a search tool.

Access to Digital Images

Even as the trend toward free access to online research is gaining momentum, access to digital images is the most problematic component of this world of an as yet unparalleled cornucopia of new options. All have economic implications and put to the test the legal and ethical conventions developed for the earlier, less dynamic media. Numerous players are involved in the distribution of electronic visual resources: single-source providers share the field with collaborative activities such as institutional exchanges, working partnerships, and consortia, regional and national initiatives, and growing global online networks. Many allow access to their databases but not necessarily free use of the images in them. Many, namely networked educational databases, limit access to authorized users. Vendors offer high-resolution images to which they sell non-exclusive rights. Images of public domain art ought to be without problem, yet even that is not always so. In this connection, witness the ambiguous concept of “added authorship” when applied to digitization or the Italian cultural resource legislation that requires authorization to photograph both cultural objects and natural heritage sites. The political and socio-economic complexity of our world guarantees difficulties. Digital licensing and management of licensed resources is now a complex task for both parties to a transaction, while viable economic models are being developed. For now, the problem of inequality of access to information is troubling in an arena traditionally marked by communication and sharing.

The current energetic discussion of issues arising from the confluence of art, digital technologies, and intellectual property articulates the need to seek solutions to problems in the areas of intellectual property rights (including the complicated digital content ownership rights), copyright laws, and the “fair use” of copyrighted work that is authorized by law for use in education and scholarship. The networked environment gives rise to diverging expectations, and the recently accelerating trends towards narrowing the scope of fair use and extending copyright protection terms work against the dissemination of knowledge. Reasonable and realistic agreements are needed to balance the interests of rights holders and those of image users in ways that protect both while they reward and stimulate creativity for public benefit and ensure that the “information commons” of the world may thrive. Their operational mechanisms and practices will need to be fair, quick and easy, as well as flexible and accommodating to different kinds of rights, uses, and users.

Recently proposed positive developments include: copyright conservancies (building a body of public domain work); comprehensive copyright information portals including a rights information locator system (a virtual registry identifying intellectual property rights in individual artworks to ease access to images and probably reduce rights clearance costs to participants); mechanisms that might ease public access to copyrighted artworks for heritage purposes; and public education efforts to raise the awareness of creators, the public and policy makers about these issues. The European concept of artists’ moral rights—personal, non-economic rights—in their works has not as yet been proven immediately relevant to digital imaging. The World Intellectual Property Organization (WIPO), an international body of the United Nations responsible for “promoting the use and protection of works of the human spirit,” administers key international intellectual property and copyright agreements. In the United States, The National Initiative for a Networked Cultural Heritage (NINCH), a non-profit coalition of educational institutions and cultural organizations, represents the arts, the humanities, archives, libraries, museums, and others in policy discussions about the evolution of the digital environment. The Council on Library and Information Resources (CLIR) “works to expand access to information, however recorded and preserved, as a public good.” Recent initiatives to foster creativity by strengthening the public domain and intellectual commons, advocating open content, are encouraging.

For the end user, the principal challenge in working with digital images is still simply to find them. For occasional
consultation of a small number of images, the Web pages of the artwork’s owner, if applicable, might be visited. The user who searches for many or previously unidentified images, and who seeks economies of time and effort, needs to be served by large databases, intuitive and transparent retrieval tools and interfaces, powerful servers, agile software. For obvious practical reasons, it is in the interest of image users not to have to deal separately with numerous image providers (who very frequently are image users as well) but to operate in an open, friendly system that is easy to navigate and that functions with a minimum of obstacles. For optimal research, all relevant collections of art images and texts should be linked so that users could search and access information across a system of common, comprehensive, accurate, and coherent digital resources.26

**Current Challenges**

While the issues discussed above are being debated and slowly resolved, a new model is also gaining ground, that of entirely automated, super-powerful Web search services, which use vast amounts of computer power with simple algorithms to process large quantities of open-access Web pages with astounding speed and accuracy. (For mainstream material, the image-searching results delivered by Google, a Web search engine developed at the computer science department at Stanford University, already approach those achieved by a fairly sophisticated human searcher.) Moore’s Law that describes the rate of progress in computing power as doubling every eighteen months suggests that the computing power will be available and that automated Web search services will therefore continue to improve dramatically. Since computing power costs less than human expertise, this model will likely provide a low-cost substitute for some of the expensive information-discovery services of traditional research libraries.28

Semantic Web, built on the idea that the Web as a whole can be made more intelligent and perhaps even intuitive about how to serve a user’s needs, may promise another solution.29

Many problems remain to be solved, among them technological problems of hardware, software, bandwidth connectivity, infrastructure and user interfaces, image resolution, storage and memory size, longevity, maintenance and preservation of digital images, access for the visually-impaired, and the cultural-marketplace problems of access and cost. Internet2 will hasten some solutions.30 Innovations introduce new challenges and push the boundaries: for example, current research aims at wireless transmission of data; at enabling exploration of images rather than mere viewing (via wave compression techniques); at providing higher-resolution two- and even three-dimensional representations, digital video and laser scans; at elaboration of virtual reality visualization and modeling; at scientifically accurate color; at linking images to metadata including text, sound, and even touch. Desiderata include smart cameras, image trails, and equipment suitable for high-quality digital recording in the field. New tools will be needed in digital imaging campaigns to capture the world’s art and architecture, most of which remains undocumented even as decay and destruction take their toll. Automatic digital acquisition, metadata recording and search techniques promise to dramatically lower the costs and increase information and accessibility.32 A distributive system connecting public domain and “grassroots-efforts” databases would expand access.33

The stakes are high because of the growing integration of digital images into art disciplines. The Internet, nowhere as global as in its graphic dimension, attracts rapidly growing numbers of multilingual viewers. For many artists, digital images have become elements in the creation of their art. The cross-fertilization and mixing of media characterizing so much of modern and contemporary art make a kind of claim on these images that, as history has shown in regard to other media and technologies, is constant. In education, research, and scholarship, the advantages of digital imaging over earlier reproductive technologies guarantee wide acceptance.

**Digital Image Providers**

Pioneer work exploring the creation and delivery of digital images has been done in the United States by a number of organizations. These include the Research Libraries Group (RLG), “a not-for-profit membership corporation of institutions devoted to improving access to information that supports research and learning,”34 the Digital Image Access Project (DIAP) that investigated “strategies for improving access to and preservation of photographic image archives;” the Museum Educational Site Licensing Project (MELPL) that explored digital access of academic institutions to museum collections;35 the Consortium for Interchange of Museum Information (CIMI), an association of cultural heritage institutions and organizations working together to establish common standards for the creation and sharing of digital information; the Art Museum Consortium (AMICO), a not-for-profit corporation “enabling educational use of museum multimedia;” the J. Paul Getty Trust; the Society of Architectural Historians (SAH) through its Image Exchange Project; some research universities;36 and the six annual Museums and the Web conferences since 1997.37 ArtSTOR, as an independent, not-for-profit organization sponsored by the Andrew W. Mellon Foundation, aims to “make a large body of digital resources for the study of art, architecture and other fields in the humanities” available by subscription in the Fall of 2003. The European Community has sponsored ELISE (Electronic Library Service for Europe) and Van Eyck, the sophisticated, rapidly expanding visual arts network. Visual Arts Data Service (VADS), in England, provides visual arts digital resources and advises in their management. Electronic Imaging and the Visual Arts (EVA) conferences have been held since 1990.

Many resources serve to locate the thousands of art images on the Web. Free indexed image databases include, for instance, Art Links, Artchive, Artcyclopedia, Artist Index, ArtSource, Finding Images Online, the Internet Art Database, Internet Art Resources, the Web Gallery of Art, and World Wide Arts Resources. Many museums are digitizing their collections and offer searchable databases.38 Some public libraries have digitized their subject-based image archives.39 Other libraries have authored outstandingly useful guides.40 Many university Web sites host excellent image databases.41 Individual scholars have also posted significant art resources on the Web.42 Commercial providers of original digital images, such as Saskia and Art On File, and aggregators and resellers of images, such as CORBIS, offer searchable electronic image databases. Many general search engines, such as AlltheWeb, AltaVista, Ditto, Google, HotBot, Lycos, Metacrawler, and Yahoo are racing to improve searchable access to online images. The Web’s very fluidity (with frequent
changes of content and URLs), however, precludes guarantee of online access to sources, even to those with subscriptions.43

Use and Interpretation

As with textual sources, in the end the greatest challenge goes beyond productive navigation of the unregulated clutter of the Internet. To intelligently select, evaluate, and interpret the visual materials on the Web requires informed critical thinking in addition to good searching skills.44 The responsibility for a good product rests with the provider of the image. Developing effective strategies for working with visual documents in the fine arts and material culture studies, however, is the user’s responsibility. Successful retrieval and utilization of digital images will depend on how well today’s educators and learners succeed in developing their critical viewing and interpretive skills. For consideration of abstract concepts and of values, both building blocks in the study of art and the humanities, we can expect discerning human judgment to remain irreplaceable for a long time to come. Information professionals and librarians are essential in this educational process.

In the teaching of art and in scholarship, good use of digital images depends on the faculty’s and scholars’ acceptance of the medium. At present, reactions range from rejection (commonly rooted in ignorance and sometimes in fear of users’ coming to prefer the surrogate to the original) through indifference (often resting on the habit of using familiar collections of older media as well as in the objective obstacle of limited access to the necessary materials and equipment in many educational institutions—electronic classrooms are still rare) to acceptance. A growing number of art historians and teachers are now experimenting with the evolving new format, even “making serious explorations of the potential of new technology to rethink the goals of their enterprise and the means to their achievement.”45 To promote such advances, institutions must provide support in developing expertise and applications, including access to the required facilities, software, and digital materials as well as recognition of the scholarly and pedagogical value of this endeavor.

We should also briefly consider important relevant implications of global virtualization trends for our perceptions of cultural heritage information, because they have a direct bearing on our use of digital art images. This concern was voiced well before the advent of electronic media, when André Malraux, in formulating his concept of “musée imaginaire,” a virtual gallery of autonomous art images separated from the context of the works from which they derive, raised the specter of reproductions’ threat to create fictitious arts. Trevor Fawcett summarizes these thoughts very well when he says these were:

...dematerialized, endowed with a specious media likeness and reassembled in new stylistic hierarchies. Other commentators have postulated that the constant exposure to homogenized second-hand images fosters a casual response to art, and that in any case reproductions provide a diminished visual experience in comparison with direct confrontation of the originals, which may shock the viewer by their immediacy, sensuousness, scale and autographic intensity, when previously known only through surrogates. On the other hand reproductions tend to present art in a content of knowledge, so that aesthetic impressions might count for less than the information they convey. Even so the plausibility of photographic, and electronic, reproductions makes it easy to overlook that they are by no means transparent windows through which works of art may be examined free from distortion, but coded, problematic images in their own right. Without them, however, knowledge of the visual arts in any but a narrow, local sense would be impossible. They have completed the processes, so modestly begun in the 15th century, of making art universal and democratic.46

Notes

1. Well before the advent of digital images, photographic collections were a necessity for the study of art. The great European photographic archives were not matched by those in the United States, including the Frick Art Reference Library in New York City. Marily Snow, “‘Visual Copy’ Collections in American Institutions,” Art Documentation 21, no. 2 (2002): 4-7, has recently discussed the history of visual didactic copies in the United States. Not surprisingly, the qualities distinguishing the best photographic collections fairly correspond to the comparable desiderata of electronic image databases: scope, image quality, ease of searching, and access.

2. Richard Brilliant, “How an Art Historian Connects Art Objects and Information,” Library Trends 37, no. 1 (January 1988): 120-29, stressed the need of working with images (“ready access to large numbers of images is essential to the successful investigation ... the absolute need for the images of works of art”). Considering new technologies, he remarked “These and other developments will surely extend the visual memory of all art historians (who have access to them) in unprecedented ways, since the hunger for images is ultimately insatiable.”

3. At the outset, we must define what we mean by “digital art resources.” The World Wide Web hosts two kinds: digital art, and digitized images of independently existing art objects. The first, art created with the help of digital technology—often called computer art—is an expanding realm of its own. Produced, showcased, and archived on the Web, it is also extensively represented in exhibitions, such as the 2002 Whitney Biennial, and in galleries. Digital art belongs with other art media and will not be part of this discussion of digitized images of art objects as documents of visual culture.

4. Relevant Web sites are listed in the Appendix below.


6. Marily Snow, “Millennial Musings on Image Databases: Prerequisites for Planning and Evaluation,” Art Documentation 17, no. 2 (Fall 1998): 17-23, 72, presents “the fundamental

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categories of image database information needed for creating an image database," which she identifies as metadata, data standards, image software, image protocols, electronic archiving and maintenance, system administration, and intellectual property.

7. "Cataloguing Cultural Objects: A Guide to Describing Cultural Objects and Their Images" (known as the CCO Guide), a current project of The Visual Resources Association, "is a manual for describing, documenting, and cataloging cultural objects and their visual surrogates." It is slated for web publication starting in the Spring of 2003 [http://vraweb.org/projects.html].


10. The CILMB (Computational Linguistics for Metadata Building) project, undertaken in 2002 by Columbia University Libraries' Center for Research on Information Access (CRIA), with funding from the Andrew W. Mellon Foundation, aims "to enhance access to digital images by exploring the use of existing computational linguistic techniques as a source of metadata." It will "bring together the most recent developments in natural language processing and apply them to the problems of automatically extracting metadata from text" (Angela Giralt, "Image Reference questions," online posting, 13 June 2002, ARLIS-L).

[http://www.columbia.edu/cu/cria/climb/].

11. ICONCLASS is a subject-specific international classification system for iconographic research and the documentation of images, developed by Henri van de Wall (1910-1972) at the University of Leiden and completed by his staff. [http://www.iconclass.nl].


15. The National Initiative for a Networked Cultural Heritage (NINCH), Guide to Good Practice in the Digital Representation and Management of Cultural Heritage Materials, 2002, is an online handbook intended for those digitizing and networking cultural resources. Its second edition is to include a decision-tree interface [http://www.ninch.org/programs/practice/].


17. It must be noted that while today the United States copyright law provides for "fair use" as an exception to copyright, originally copyright was conceived as an exception to fair use (compare the change from the first United States copyright law, 1790 to the Copyright Revision Act of 1976 and to its amendments of 1998, the Copyright Term Extension Act [CTEA] (recently upheld by the United States Supreme Court) and the Digital Millennium Copyright Act [DMCA]; consult also Baron, Copyright and Fair Use). Since 1960, copyright terms have been extended eleven times, from twenty-eight to ninety-five years, and applied retroactively. Accordingly, copyright law has undergone transformation from a narrow protection against a commercial competitor into an entitlement for copyright owners to control the use of copyrighted work (see the argument of the legal expert Lawrence Lessig that what constitutes copyright violation has been misconstrued in the current United States debate; interview "Copyright in the Balance: LJ Talks with Lawrence Lessig," Library Journal 127, no. 12 (15 July 2002): 44-46. [http://libraryjournal.reviewsnews.com/index.asp?layout=article&articleid=CA231610&display=searchResults; also his The Future of Ideas: The Fate of the Commons in a Connected World (New York, NY: Random House, 2001); and Code and Other Laws of Cyberspace (New York, NY: Basic Books, 2000)]. In a growing crisis in confidence regarding the United States copyright law's historic role, concerns that the diminishing public domain is being treated as a commodity are increasingly addressed by information professionals (e.g., the Intellectual Property in Academia Workshop Series offered by the Center for Intellectual Property at the University of Maryland University College, Adelphi, MD [http://www.umuc.edu/distance/odell/dip/ipla2002/]).

18. A term used to describe the various free and open public resources of information.

20. Among the recommendations of the 100th American Assembly of Columbia University, “Art, Technology and Intellectual Property,” held Feb. 7-10, 2002, Harriman, NY, http://www.americanassembly.org/ac/attp_na_fr.htm. The Assembly explored its topic “from across the arts and business, and from the perspectives of law, scholarship, philanthropy and government” and endorsed the primacy of the public interest. Two publications are expected to follow, the participants’ background reading ed. by Margaret J. Wyszomirski, and The Cultural Bargain: Arts, Copyright and the Public Interest by Michael S. Shapiro. Some of these initiatives have already been undertaken by the Creative Commons project http://www.creativecommons.org/, founded in 2001 with the support of the Center for the Public Domain http://www.centerpd.org/.

21. The Visual Artists Rights Act of 1990 (VARA) established for the first time in United States federal law a limited grant of moral rights to authors of visual artworks that are unique or have few copies.

22. The basic copyright principles for visual arts, to which the United States is obligated to adhere, are set out in the Berne Convention for the Protection of Literary and Artistic Works (1886), the Trade-Related Aspects of Intellectual Property Rights (TRIPS) Agreement of the World Trade Organization (WTO) (1994), and in the WIPO Copyright Treaty (1996).

23. Among targeted efforts are the Museum Educational Site Licensing Project (MESL), the Art Museum Consortium (AMICO), and the 1994-97 Conference on Fair Use (CONFU) in education.

24. For information on the recent copyright debate (“copyright under fire” – see Lessig, interview, note 17, above), see .

25. The Creative Commons project http://www.creativecommons.org/ aims “to promote an ethos of sharing, public education, and creative interactivity” and is currently developing technology “to make it easier for people both to offer and find works that are available for creative collaboration.”


27. Moore’s Law refers to “[t]he observation made in 1965 by Gordon Moore, co-founder of Intel, that the number of transistors per square inch on integrated circuits had doubled every year since the integrated circuit was invented. Moore predicted that this trend would continue for the foreseeable future. In subsequent years, the pace slowed down a bit, but data density has doubled approximately every eighteen months, and this is the current definition of Moore’s Law, which Moore himself has blessed. Most experts, including Moore himself, expect Moore’s Law to hold for at least another two decades.” (Webopedia.com http://www.webopedia.com/TERM/M/Moores_Law.html).


30. “Internet2, led by 200 United States universities working in partnership with industry and government, is developing and deploying advanced network applications and technologies, accelerating the creation of tomorrow’s Internet.” http://www.internet2.edu/.


34. RLG’s Cultural Materials Initiative is the most recent in the Group’s collaborative, now international effort to “improve access to primary sources and cultural materials.” It promises shared access to a globally accessible “Web-based, integrated collection of electronic representations of … [cultural] materials.” http://www.rlg.org/culturalres.


37. The largest is the Virtual Gallery of the Fine Arts

Appendix: Useful Web Sites

AllTheWeb  
http://www.alltheweb.com/

AltaVista  
http://altavista.com

Art Links  
http://dart.fine-art.com/artlinks/

Art Museum Consortium (AMICO)  
http://www.amico.org/home.html

Art On File  
http://www.artonfile.com/

Artcliche  
http://www.artchive.com/

Artcyclopedia  
http://www.artcyclopedia.com/

Artist Index  
http://www.ibiblio.org/wm/paint/auth/

ArtSource  
http://www.ilpi.com/artsource/

Artstor  
http://www.artstor.org

Computer Interchange of Museum Information (CIMI)  
http://www.cimi.org/

Conference on Fair Use (CONFU)  
http://www.uspto.gov/web/offices/dcom/olia/confu/

Corbis  
http://www.corbis.com/

Council on Library and Information Resources (CLIR)  
http://www.clir.org/

Creative Commons  
http://www.creativecommons.org/

Digital Image Access Project (DIAP)  
http://scriptorium.lib.duke.edu/diap/diap_info.html

Ditto  
http://www.ditto.com

Electronic Imaging & the Visual Arts (EVA)  
http://www.vasari.co.uk/

ELISE (Electronic Library Image Service for Europe)  
http://severn.dmu.ac.uk/elise/

Finding Images Online  
http://www.berinsteinresearch.com/fiolinks.htm

Google  
http://www.google.com

HotBot  
http://hotbot.lycos.com/
ICONCLASS  
http://www.iconclass.nl/

Internet Art Database  
http://dart.fine-art.com/

Internet Art Resources  
http://artresources.com/

The J. Paul Getty Trust  
http://www.getty.edu/

Lycos  
http://multimedia.lycos.com/

Metacrawler  
http://www.metacrawler.com/

Museum Educational Site Licensing Project (MESL)  
http://www.inform.umd.edu/MESL/home.html

National Initiative for a Networked Cultural Heritage (NINCH)  
http://www.ninchn.org/ninch.html

Research Libraries Group (RLG)  
http://www.rlg.org/

Saskia Ltd. Cultural Documentation  
http://www.saskia.com/

Society of Architectural Historians (SAH)  
http://www.sah.org/

Van Eyck (A Visual Arts Network for the Exchange of Cultural Knowledge)  
http://www.vaneyck.org

Visual Arts Data Service (VADS)  
http://vads.ahds.ac.uk/

Web Gallery of Art  
http://www.kfki.hu/~arthp/index.html

World Intellectual Property Organization (WIPO)  
http://www.wipo.org/

World Wide Arts Resources  
http://wwar.com/

Yahoo  
http://gallery.yahoo.com/