Variable Media Glossary

This glossary does not pretend to provide an exhaustive overview of the jargon used in new media preservation, but simply an explanation for the technical terms used in this publication. Underlining indicates terms defined elsewhere in the glossary.

All of the terms apply most directly to at least one of the following categories:

🖉 Variable media behavior: one of several medium-independent traits an artwork can possess.

⟶ Variable media strategy: one of several philosophical approaches to solving a particular preservation issue.

⌨ Hardware: pertaining primarily to physical material or equipment.

▦ Software: pertaining primarily to immaterial computer programs or electronic signals.

▣ Format: pertaining primarily to a standard for storing electronic signals or data in a physical medium.

▦ **Authoring program** Software designed to help a nonprogrammer write source code, typically through a menu-driven or graphical interface.

▦ **Avatar** A virtual representation of a user on a network, typically in text or graphic form. Avatars are often assumed identities with only an oblique relationship to their real-world counterparts.

▦ **Bandwidth** The amount of information that can be transmitted through a connection, usually measured in bits per second. Low bandwidth connections (10,000–50,000 bps) are acceptable for text, but viewing full-screen video remotely requires a bandwidth a thousand times faster.

▣ **Beta** "Betacam," "Betamax," or "BetaSP": a professional-grade analog or digital videotape. The digital version is also referred to as "Digibeta."

▦ **Bitstream** The sequence of 1s and 0s passed among computers and input/output devices, typically containing a text message or audiovisual content.

▦ **Browser** A program that recognizes, interprets, and views Web documents (usually coded in HTML) on the World Wide Web. Netscape and Microsoft Internet Explorer are the most common Web browsers that display graphics as well as texts; others include Mozilla, Opera, and Safari. The same Web page may appear different on different browsers since browsers generally access and interpret codes differently.

▦ **Chat** A text-based interface allowing multiple users to write messages and reply to each other in real time. Examples include ICQ and Instant Messaging.

▦ **Clone** In digital media, a perfect copy of a given file or files. Unlike traditional media such as analog photography or film, cloned copies are indistinguishable from the original. See also duplicated, reproduced.

▦ **Code** Instructions written in a language a computer can understand and execute. Examples include Java and JavaScript. See also Source code, Object code, Machine code.

▦⌨ **Compatibility** The ability of one system to work with the standards of other systems. For example, Macintosh operating systems can read Windows-formatted disks, but most versions of the Windows operating system cannot read a Macintosh-formatted disk.

▦ **Compiled** Said of source code that has passed through an interpreter to render it readable by computers instead of humans. For example, Java source code is compiled into an applet, but HTML code is interpreted directly by the browser without being compiled. See also Object code, Machine code.

Contained In the variable media paradigm, even paintings and sculptures can provoke prickly questions when some aspect of their construction alters or requires an intervention. Such works are "contained" within their materials or a protective framework that encloses or supports the artistic material to be viewed. To account for these alterations in otherwise stable mediums, the variable media questionnaire asks questions such as whether a protective coating is appropriate, whether surface qualities such as brushwork or gloss are essential to the work, or whether an artist-made frame can be replaced.

Copyleft A strict version of the free software license that requires any modification of the original code to remain free software. For example, programmers who base a product on copylefted code cannot hide the source code from other users. The most common example of a copyleft license is Richard Stallman's GPL (GNU General Public License). See also Open source.

CP/M An operating system developed in the 1970s with a textual interface; a precursor to graphical interfaces such as Windows and Macintosh.

CSS The abbreviation for Cascading Style Sheets, an efficient tool for designing Web sites. By employing CSS, programmers can create style sheets that precisely define the look of Web site.

Cue points Time codes or other pointers in an audio or video stream that allow an application such as Director to access audiovisual segments in a different order than their original sequence.

Demagnetization A process that erodes audiovisual signals or data encoded onto magnetic tape. This degradation is a natural phenomenon whose speed varies with the type and condition of the tape.

Desktop 1. The background image and icons that represent the highest-level folder on a personal computer. 2. Said of applications or activities that operate on a personal computer, as in "desktop publishing."

DHTML A new version of HTML, developed by Netscape and expanded by the W3C (the World Wide Web Consortium). Combines JavaScript's ability to move or rewrite page elements with the CSS method of defining document layout and style to create dynamic Web sites. Unlike closed formats such as Flash, users can directly view the source code of DHTML documents.

Digibeta A digital video version of the professional-grade Beta video format.

Digital video A catchall term for a variety of video formats developed in the 1990s, all based on encoding video signals as 1s and 0s rather than analog signals. Although compressed digital video may have a lower image quality than analog video, it can be edited using nonlinear editors, stored on computer hard drives, streamed over the Internet, and incorporated into interactive presentations.

Director A software application developed by Macromedia Inc. for incorporating animation, video, and other interactive formats on the Web or on portable media such as a CD-ROM. The Director format used on the Web is known as "Shockwave."

Dubbing The process of copying the audiovisual signals from one magnetic tape onto another. Depending upon whether the medium is analog or digital, dubbed tapes can be duplicates or reproductions. Also: the process of adding sound to a silent video to complete a video production. See also migration.

VM̂ Duplicated To say that a work can be duplicated implies that a copy could not be distinguished from the original by an independent observer. This behavior applies to artifacts that can be perfectly cloned, as in digital media, or to artifacts comprising readymade, industrially fabricated, or mass-produced components. See also cloned; compare reproduced.

**V̅M̅→ Emulation** To emulate a work is to devise a way of imitating the original look of the piece by completely different means. The term emulation can be applied generally to any refabrication or substitution of an artwork's components, but it also has a specific meaning in the context of digital media. See also encapsulated, hardware-for-hardware, software-for-hardware, and software-for-software.

**Encapsulated** Said of a software file or application bundled with all of the other software required to run it. Software-for-hardware emulation of a Microsoft Word 97 document for Windows 95, for example, would require a copy of the Windows 95 operating system, Microsoft Word 97, and the document itself. Compare streaming.

VM̂ Encoded To say that a work is encoded implies that part or all of it is written in computer code or some other language that requires interpretation (e.g., dance notation). In the case of works with nondigital components, this code can sometimes be archived separately from the work itself.

Flash An animation technology developed by Macromedia Inc. for use on the Web. Compared to other image formats such as GIFs or JPEGs, Flash files download faster and can employ scripting to enable sophisticated interface design. Unlike open formats such as DHTML, Flash scripts cannot be viewed directly by a user.

Free software A software license developed by computer scientist Richard Stallman that permits other users to use, copy, modify, and distribute the source code, with or without a fee. Free software is often developed with an open source model and/or released under a copyleft license.

FTP File Transfer Protocol, a method for uploading files to and downloading files from Web sites and other computers connected to the Internet. FTP does not allow its users to view file contents, but to simply transfer them efficiently and securely. See also Protocol.

Go-tos Programming instructions that tell a computer to skip from one line of code to another. Go-tos are a typical hallmark of procedural, as opposed to object-oriented, programming.

Global conditionals Variables in a software program that represent the overall state of the system and can be used to modify it.

Hardware-for-hardware A type of emulation consisting of refabrication or substitution of an artwork's equipment or material. For example, to imitate the physical appearance of the obsolete video monitors in an original video installation by Nam June Paik, reconstructors might custom-build cathode-ray tubes or embed flat screens in old television casings.

HTML The abbreviation for HyperText Markup Language, the code used to generate hypertext documents on the World Wide Web through the use of tags and attributes. The "hyper" of the title means that users can jump quickly to other files on the Internet by clicking on linked text or images. Viewing an HTML document requires a Web browser.

VM̂ Installed For the purposes of variable media guidelines, to say that an artwork must be "installed" implies that its physical installation is

more complex than simply hanging it on a nail. Examples of artworks with this behavior are works that scale to fill a given space or make use of unusual placement such as the exterior of a building or a public plaza. For such works, the variable media questionnaire tracks issues of site-specific placement as well as scale, public access, and lighting.

Interactive While the word is most commonly applied to electronic media such as computer-driven installations and Web sites, interactivity also describes installations that allow visitors to manipulate or take home components of a physical artwork. The variable media questionnaire tracks such considerations as the type of inter-face; the method by which visitors modify the work; and the form in which traces of such input are recorded.

Internet art Art made specifically for viewing or distributing on the Internet. See also Net art, net.art.

Internet The global collection of interconnected networks based on dynamic routing of small packets of data. The Internet encompasses such subsystems as the Web, e-mail, instant messaging, FTP, and electronic bulletin boards.

Java A powerful, Web-friendly programming language developed by Sun Microsystems that gives programmers substantial control over the look and function of the interface. See also JavaScript.

Java Applet A miniprogram written in Java, typically downloaded and activated by visiting a Web site. Unlike full-fledged Java applications, applets cannot access a user's hard drive or third-party computers.

JavaScript A programming language originally developed by Netscape to build more interactivity in Web pages but now based on open standards.

Apart from some structural similarities, JavaScript bears no relationship to the Java programming language. JavaScript used in combination with CSS is called DHTML.

Laser discs An analog or digital video format popular in the late 1980s and early 1990s for storing movie-length files.

Linux An operating system originally authored by Linus Torvalds and developed according to the open source model. The original Linux design combined attributes of Richard Stallman's free software GNU and the popular UNIX operating system. The latest variants of Linux run on various hardware platforms, including Macintosh and PC.

List server A program that automatically routes messages via e-mail to all the participants in a discussion group. Examples of List server applications include majordomo and ListServ.

Mac "Macintosh," a popular operating system developed in the 1980s by Apple Computers, noted for its graphic interface and ease of use.

Machine code, **Machine language** The 1s and 0s that a software program sends to a computer's processor to run the program. Whether compiled or not, all source code eventually becomes machine code when it is running. See also Object code.

Main memory Also known as RAM (Random Access Memory), information stored in the active virtual memory of a running computer. Information in RAM is lost when the computer is turned off, unless it has been saved to disk first.

Migration To migrate an artwork involves upgrading equipment and source material. To migrate the video monitors of Nam June Paik's *TV Garden*, for example, would be to replace them with up-to-date models as TV sets change with industry trends. The major disadvantage of migra-

tion is that the appearance of the original artwork may change substantially when the technology undergoes an evolutionary jump, as when cathode-ray tubes give way to flat screens.

MiniDV A popular <u>digital video</u> format developed in the 1990s for handheld video cameras sold in the consumer market.

Mirroring <u>Duplicating</u> a file, typically a <u>Web</u> site, in another location so as to distribute access to or safeguard the original work. See <u>cloned</u>.

MOOs The abbreviation for Mud, <u>Object Oriented</u>, a variation on <u>MUD</u>-style multiuser environments in which participants can avail themselves of virtual objects with preprogrammed behaviors. A participant in MOO might access text hidden inside a "book" object by typing the command "open book."

Mosaic The first image-capable <u>browser</u> displaying the same interface to the <u>Web</u> on the <u>Macintosh</u>, Windows, and UNIX platforms. Initially developed as free software by the National Center for Supercomputing Applications (NCSA) in 1993, Mosaic became a prototype for many other Web browsers.

MUDs The abbreviation for Multi-User Dungeons (or Domains). Originally applied to "Dungeons and Dragons"-style adventure games in cyberspace, the term MUD is now generally used to refer to multiuser text-based environments where people often can act out roles and build simulated worlds online.

Net art A synonym for <u>Internet art</u>.

net.art A synonym for <u>Internet art</u>, sometimes used in a more specific sense to refer to artworks from the mid-1990s that took the network <u>protocols</u> as the subject of their investigation.

Netcasts Broadcasts that take place over the <u>Internet</u>, typically in <u>streaming</u> audio or video.

Networked A networked artwork is designed to be viewed on an electronic communication system, whether a Local Area Network (LAN) or the <u>Internet</u>. Networked media include <u>Web</u> sites, e-mail, and <u>streaming</u> audio and video.

New media New media are the means by which art, science, politics, economics, and other forms of culture are reinvented and manipulated as information. In contrast to <u>broadcast media</u>, new media such as the <u>Web</u>, e-mail, text messaging, and peer-to-peer networks encourage many-to-many communication and a "do it yourself" approach to innovation.

Object code <u>Source code</u> that has been <u>compiled</u>. A program called an assembler must still translate this intermediate code into <u>machine code</u> before a computer can execute it.

Object-oriented A style of computer programming that emphasizes writing chunks of code in a generic and <u>encapsulated</u> way in order to reuse these code "objects" for future projects.

Online art A synonym for <u>Internet art</u>. See also <u>Net art</u>, <u>net.art</u>.

Open source A technique for writing software in which original authors make <u>source code</u> freely available for modification and improvement by any programmer who wishes to collaborate on the project. The most well-known example of open source software is the <u>Linux</u> <u>operating system</u>. See also <u>Copyleft</u> and <u>Free software</u>.

Operating system The base-level software on which applications like word processors or <u>Internet</u> <u>browsers</u> run. Also known as a software "platform." Prominent operating systems include <u>Linux</u>, UNIX, <u>Macintosh</u>, and Windows platforms.

Pascal A programming language developed in the 1970s, popular for its logical structure and ability to run on the earliest personal computers.

PC 1. "Personal Computer," a self-contained or networked work station with its own processing and input/output devices. 2. Slang for the Windows operating system, in contrast to other operating systems like Macintosh, UNIX, or Linux.

Performed In the variable media paradigm, "performed" works include not only dance, music, theater, and performance art, but also works for which the process is as important as the product. For such works, the variable media questionnaire ascertains instructions that actors, curators, or installers must follow to complete the work, in addition to more conventional performance considerations such as cast, set, and props.

Plug-in A browser utility developed by a third party, typically for viewing special Web formats such as Flash animations or Realplayer videos.

Protocol A specified, agreed-upon format that determines how computers send and receive data to and from each other on a network. For example, e-mail obeys one protocol (SMTP) while Web pages obey another (HTTP).

Quicktime A proprietary digital video format easily encapsulated and downloaded over the Internet. The Quicktime format can accommodate multiple tracks, annotations, and interactivity.

Realplayer A proprietary software player designed to play streaming audio or video.

Real time Said of a continuous signal received or processed at the same rate as it is produced. Streaming and Web camera feeds can be real time signals.

Reinterpretation The most radical preservation strategy is to reinterpret the work each time it is re-created. To reinterpret a Dan Flavin light installation would mean to ask what contemporary medium would have the metaphoric value of fluorescent light in the 1960s. Reinterpretation is a dangerous technique when not warranted by the artist, but it may be the only way to re-create performed, installed, or networked art designed to vary with context.

Reproduced In the variable media paradigm, a recording medium is "reproduced" if any copy of the original master of the artwork results in a loss of quality. Such media include analog photography, film, audio, and video. Compare duplicated.

Silicon Graphics (SGI) A company that produces high-performance computer hardware and software used to create computer graphics and special effects.

Software art A genre of digital art that emphasizes the creation of original or revelatory software applications—such as alternative Web browsing, image manipulation, or video-editing tools—rather than any single image or output produced with such a tool. Software art is typically compiled, but often freely distributed over the Web.

Software-for-hardware A type of emulation that simulates a program's native hardware environment on a machine that it was never intended to run on. For example, a program running the 2000 Windows operating system might emulate the microprocessor of a 1985 Amiga computer, enabling users to play a vintage video game such as Pong on a contemporary operating system.

Software-for-software A type of emulation similar to software-for-hardware, but where the program emulates another kind of software (such as the Amiga operating system) rather than a piece of hardware (such as the Amiga chip).

Source code The language a programmer uses to write a computer program. Programmers usually rely on another computer utility, such as a compiler or browser to translate source code into a form the computer can understand and execute. See also Open source.

Stand-alone Said of programs or artworks that do not need to be connected to the Internet to operate or be viewed.

Storage The most conservative collecting strategy—the default strategy for most museums—is to store a work physically. Storing one of Dan Flavin's fluorescent light installations simply means buying a supply of the out-of-production bulbs and putting them in a crate. The major disadvantage of storing obsolescent materials is that the artwork will expire once these ephemeral materials cease to function.

Streaming A technique for transmitting lengthy audio or video programs over the Internet by transmitting a continuous signal in real time rather than downloading an entire clip at once. Streaming audio or video enables Web sites to serve as virtual radio or television stations. Compare encapsulated.

Telerobotic Referring to a machine or set of machines that can be operated remotely, especially over the Internet.

U-matic A video format developed in the late 1960s consisting of ¾-inch magnetic tape in a cassette; the precursor to Beta.

VCR "Video Cassette Recorder," a playback deck designed to record and play consumer-grade, ½-inch videotapes in various standards.

VHS "Vertical Helical Scan," a consumer-grade video format developed in the late 1970s, consisting of ½-inch magnetic tape in a cassette.

Compare professional-grade video formats such as U-matic and Beta.

Visual Basic A programming language developed by Microsoft Corporation in the 1990s, one of the first to use a graphical interface to help programmers write code.

VRML The abbreviation for Virtual Reality Modeling Language used to create navigable 3-D environments on the Internet. A VRML plug-in must be downloaded for a Web browser to view VRML files.

Web camera A video camera whose feed is passed to a Web site, typically in real time. Also known as "Webcam."

WebRing An Internet service that helps visitors navigate sites related to a specific topic, from Java programming to arm wrestling. Web sites grouped and linked together in this way often grow into an online community.

World Wide Web The Web (WWW) is a constellation of servers that supports a specific form of documents coded in HTML, a format that allows users to navigate via links to other documents in different servers. The Web is only part of the larger Internet, which also includes such non-Web protocols as e-mail and instant messaging.